Introducing:

The First Summit On Upper Tract Urothelial Carcinoma: A Special SUO Symposium

Wednesday, November 28, 2012

This special symposium focuses solely on UTUC, including translational aspects, clinical research and knowledge gaps.
# Table of Contents

Board of Directors 2012 – 2013 ......................................................... 2
Committees ..................................................................................... 2
2012 Faculty Listing .......................................................................... 3
Promotional Partners and Contributor ............................................... 5
Exhibitors and Educational Grant Provider .......................................... 6
Industry Sponsored Symposia ........................................................... 7
General Meeting Information .......................................................... 8
Educational Needs and Objectives .................................................... 9
Accreditation Information ................................................................ 11
Program ....................................................................................... 12
Young Urologic Oncologists Dinner Podium Session – Full Abstracts ............................................................ 22
Young Urologic Oncologists Program Podium Session – Full Abstracts ................................................................. 25
Oral Abstract Session – Full Abstracts ................................................ 28
Poster Session I – Summary ............................................................. 33
Poster Session I – Full Abstracts ....................................................... 51
Poster Session II – Summary ........................................................... 130
Poster Session II – Full Abstracts ..................................................... 147
Alphabetical Index of Presenting Authors .......................................... 227
SUO Fellowship Programs .............................................................. 233
Mark Your Calendars .................................................................... 238
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2012 – 2013

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<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Location</th>
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<tr>
<td>James L. Mohler, MD</td>
<td>Roswell Park Cancer Institute</td>
<td>Buffalo, NY</td>
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<td>Michael J. Morris, MD</td>
<td>Memorial Sloan-Kettering Cancer Center</td>
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<td>Craig Nichols, MD</td>
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<td>Michael A. O’Donnell, MD, FACS</td>
<td>University of Iowa Hospitals and Clinics</td>
<td>Iowa City, IA</td>
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<td>Orhan Oz, MD, PhD</td>
<td>University of Texas Southwestern Medical Center</td>
<td>Dallas, TX</td>
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<td>Allan J. Pantuck, MD, MS, FACS</td>
<td>University of California – Los Angeles, CA</td>
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<td>W. Kimryn Rathmell, MD, PhD</td>
<td>University of North Carolina at Chapel Hill</td>
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<td>Jonathan Rosenberg, MD</td>
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<td>Mark A. Rubin, MD</td>
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<td>Kevin J. Shannon, MD</td>
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<td>Columbia University Medical Center</td>
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<td>Arnulf Stenzl, MD</td>
<td>University of Tübingen</td>
<td>Tübingen, DE</td>
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<td>Jack Welch, MD, PhD</td>
<td>National Cancer Institute</td>
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<td>Michael E. Woods, MD</td>
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<td>Chapel Hill, NC</td>
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<td>Samir S. Taneja, MD</td>
<td>Posters</td>
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<td>Joel B. Nelson, MD</td>
<td>Posters</td>
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Thank You to Our 2012 Promotional Partners
(As of 11/15/12)

**Platinum Level**
Janssen Biotech, Inc.

**Gold Level**
Dendreon Corporation

**Silver Level**
Medivation

Thank You to Our 2012 Contributor
(As of 11/15/12)

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Thank You to Our 2012 Exhibitors
(As of 11/15/12)

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Myriad Genetic Laboratories, Inc.
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Prometheus Laboratories Inc.

Thank You to Our Educational Grant Provider
(As of 11/15/12)

Amgen, Inc.
### Thursday, November 29, 2012

<table>
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<tr>
<th>Time</th>
<th>Event Description</th>
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| 7:00 a.m. – 8:00 a.m. | *Industry Sponsored Breakfast Symposium  
Sponsored by Myriad Genetic Laboratories, Inc.  
Location: Grand Ballroom B & C  
“Prolaris: A Novel Molecular Biomarker for Prostate Cancer”  
Michae... |
| 12:30 p.m. – 1:30 p.m. | *Industry Sponsored Lunch Symposium  
Sponsored by Janssen Biotech, Inc.  
Location: Grand Ballroom B  
“Androgen Biosynthesis Inhibition and Metastatic Castration-Resistant Prostate Cancer”  
Chris... |
| 12:30 p.m. – 1:30 p.m. | *Industry Sponsored Lunch Symposium  
Sponsored by Medivation  
Location: Grand Ballroom C  
“Introducing XTANDI® (enzalutamide) capsules A New Therapeutic Option for Patients with Metastatic Castration-Resistant Prostate Cancer: Targeting the Androgen Receptor Signaling Pathway”  
Neal D. Shore, MD, FACS  
Carolina Urologic Research Center/Atlantic Urology Clinics  
Myrtle Beach, SC  
*Not CME Accredited |

### Friday, November 30, 2012

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<th>Time</th>
<th>Event Description</th>
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| 12:25 p.m. – 1:25 p.m. | *Industry Sponsored Lunch Symposium  
Sponsored by Dendreon Corporation  
Location: Grand Ballroom B & C  
”PROVENGE: Activate the Power of the Immune System to Extend Survival”  
Raoul S. Concepcion, MD, FACS  
Urology Associates, PC  
Nashville, TN  
*Not CME Accredited |
The 13th Annual Meeting of the Society of Urologic Oncology is held November 28 – 30, 2012 at the Bethesda North Marriott Hotel & Conference Center. This interactive meeting, where all attendees participate in the discussions, presents state-of-the-art topics on prostate, kidney and bladder cancer, as well as strategies in urologic oncology. This year’s meeting also features the first ever special symposium on Upper Tract Urothelial Carcinoma, chaired by Drs. Dean Bajorin, Theresa M. Koppie, Surena F. Matin and Shahrokh F. Shariat.

Attendee Participation
This meeting is designed to be a discussion of issues among members of the urologic oncology community. All attendees participate in the discussions and are encouraged to interact with program faculty.

Registration/Information Desk
Location: Grand Ballroom Foyer
Wednesday, November 28, 2012: 2:00 p.m. – 6:00 p.m.
Thursday, November 29, 2012: 6:30 a.m. – 6:00 p.m.
Friday, November 30, 2012: 6:30 a.m. – 5:00 p.m.

Exhibit Hall
Location: Grand Ballroom A & D
Thursday, November 29, 2012: 7:00 a.m. – 7:30 p.m.
SUO Welcome Reception: 6:00 p.m. – 7:30 p.m.
Friday, November 30, 2012: 7:00 a.m. – 11:00 a.m.

Evening Functions
Young Urologic Oncologists (YUO) Dinner
Date: Wednesday, November 28, 2012
Time: 6:00 p.m. – 9:30 p.m.
Location: Grand Ballroom G & H
Cost: One ticket is included in the registration fee. Please let us know if you will be attending.
Attire: Business casual
Membership in the YUO Section of the Society of Urologic Oncology consists of fellows, scientists and board certified or eligible physicians who are members of the SUO and have some post-residency training in urologic oncology. Membership is limited to the first seven years after completion of fellowship.

SUO Dinner
Date: Thursday, November 29, 2012
Time: 7:30 p.m. – 10:00 p.m.
Location: Grand Ballroom B & C
Cost: $70.00 per person/$40.00 for fellows, nurses and residents
Attire: Business casual
Enjoy dinner with friends and colleagues.

Other Events
First Summit on Upper Tract Urothelial Carcinoma: A Special SUO Symposium
Date: Wednesday, November 28, 2012
Time: 12:00 p.m. – 5:30 p.m.
Location: White Flint Amphitheater
Cost: $50 per person
This is the first symposium focusing solely on UTUC, including translational aspects, clinical research and knowledge gaps. This course aims to set a pathway for future collaborative work for this challenging disease.

The First Summit on Upper Tract Urothelial Carcinoma: A Special SUO Symposium is open to all registrants of the SUO 13th annual meeting.

SUO-CTC Board Meeting
Date: Wednesday, November 28, 2012
Time: 4:45 p.m. – 6:00 p.m.
Location: Brookside

SUO Board of Directors Meeting
Date: Wednesday, November 28, 2012
Time: 6:00 p.m. – 9:00 p.m.
Location: Forest Glen

2012 Young Urologic Oncologists (YUO) Program
Moderator: Fernando J. Bianco, Jr., MD
Date: Friday, November 30, 2012
Time: 8:00 a.m. – 8:30 a.m.
Location: Grand Ballroom E – H

SUO Welcome Reception
Date: Thursday, November 29, 2012
Time: 6:00 p.m. – 7:30 p.m.
Location: Grand Ballroom D
Cost: One ticket is included in the registration fee.
Attire: Business casual
The Society of Urologic Oncology welcomes its members to the 13th annual meeting. Members can visit with exhibitors and connect with fellow members all while enjoying delicious drinks and hors d’oeuvres.
First Summit on Upper Tract Urothelial Carcinoma: A Special SUO Symposium

Educational Needs
Upper tract urothelial carcinoma is an orphan disease, frequently overlooked during kidney cancer and bladder cancer conferences. There have been no venues providing a multidisciplinary approach to this disease which, despite its relative rarity, is frequently encountered by urologists and medical oncologists. It represents a watershed disease without a subspecialty champion; in urologic discipline it is incidentally managed by those who treat kidney cancer by nature of its anatomy, endoscopically managed by those with the technical means and incidentally managed by those who treat bladder cancer by nature of its biology. Medical oncologists look for a high level of evidence to guide them for systemic therapy strategies yet little such evidence exists for this disease.

This First Summit on UTUC offers a unique educational venue for the dissemination of research, diagnostic, evaluation and treatment advances and to identify high impact areas of need to improve our understanding and treatment of this challenging disease.

Educational Objectives
After attending the symposium, participants should be able to:

1. Recognize the unique biological aspects of UTUC and similarities to bladder urothelial carcinoma
2. Describe known clinical predictors of stage and prognosis, and the current limitations in clinical risk stratification
3. Explain methods for optimizing diagnostic sampling and optimal local management as well as patient selection for lymphadenectomy and methods of bladder cuff excision and their limitations
4. Contrast outcomes of various systemic regimens and recognize unique patient comorbidities that limit use of these regimens
5. Interpret appropriately the limited level of evidence for guidance on treatment decisions, while appreciating the unique challenges of performing clinical trials for such a rare disease

Annual Meeting

Educational Needs
This year’s bladder cancer sessions will provide the following new information which physicians need to be knowledgeable about to provide patients with the best treatment options and outcomes:

- Use of new agents for intravesical chemotherapy, and new uses of intravesical immunotherapy for treatment of patients with high risk non-muscle invasive disease.
- Novel approaches of electromotive therapy as a means potentially to improve the results of intravesical therapy.
- Recent results from a pivotal phase 3 trial on the use of fluorescence cystoscopy, with emphasis on its utility and impact in the subset of high risk patients.
- The major common ground agreement and minor areas of differences, of the EAU and ICUD guidelines for evaluation and treatment of patients with muscle invasive disease.
- Evolving information on molecular and genetic classification of unique predictive and prognostic tumor genetic signatures. Hopefully in the near future this approach will allow for more effective and specific treatments.
- Data driven analysis of best use of current imaging techniques for diagnosis and staging of bladder cancer.
- The first public presentation of results of a drug trial that may improve the speed of recovery of gastrointestinal function following radical cystectomy.

Kidney cancer experts in the audience need to have a rational and well-balanced strategy for determining a plan of treatment for patients with either low or high risk disease. As therapies develop, a strong understanding of the current literature and practice guidelines are needed to successfully integrate all facets of an effective multidisciplinary team in the care of these complex patients. Finally, the emerging genetics of this cancer will inform new therapeutic approaches, and understanding how patients tumors are uniquely impacted by the underlying genetics will be essential in the years ahead. Pertinent to considering the disease today is the realization that these tumors can be highly heterogeneous entities, and as such, proper skepticism...
regarding the role of biopsy or primary tumor sample directed management is warranted. Overall, an understanding of the limitations of genetic sampling are the potential wide disparity between the genetic biology of a primary tumor and it’s lethal metastasis is a message that should be considered by everyone who treats this disease.

Testis cancer is a rare but, in most cases, a highly curable malignancy. Recent efforts have strived to maintain the high cure rates associated with this disease, yet reduce treatment-related sequelae.

There have been many advances in the delivery of external beam radiation that have allowed safer administration of larger doses of radiation that appear to control prostate cancer better while minimizing side effects. There are two new alternative means of delivering external beam radiation, and physicians need to learn more about these options.

In 2012, USPSTF evaluated new data from the American and European prostate cancer screening trials and additional treatment side effect data. The USPSTF changed their recommendation to “D” and recommended against the use of PSA screening for anyone. Urologists need to understand better the methodology used to evaluate a screening test and capture appropriately quality adjusted life years as an endpoint and whether USPSTF recommendations can be extended to men at higher risk of prostate cancer.

Prostate cancer that recurs during ADT has been shown to remain androgen receptor and androgen dependent in almost all cases. Advanced prostate cancer has been treated with anti-androgens alone or ADT with anti-androgens, where anti-androgens have proven useful in some studies but not others. Physicians need an update on the newer, most effective treatments for advanced prostate cancer.

**Educational Objectives**

At the conclusion of the meeting, attendees should be able to:

1. Identify pharmacologic and immune-biologic bases for new strategies for high-risk non-muscle invasive disease
2. Integrate evidence based recommendations into common practice
3. Evaluate molecular and genetic predictive genetic signatures as a possible approach for future effective and specific treatments
4. Identify the best use of current imaging techniques for diagnosis and staging of bladder cancer
5. Review results of a drug trial that may improve the speed of recovery of gastrointestinal function following radical cystectomy
6. Describe the EORTC trial of nephron sparing vs radical nephrectomy, the results of the study, and the limitations of the trial methodology
7. Identify the modern genetic lesions in renal cell carcinoma
8. Integrate a well-developed plan for post-nephrectomy surveillance of renal cell carcinomas
9. Explain the rationale for or against undertaking cytoreductive nephrectomy in the setting of metastatic disease
10. Describe when and how to approach metastectomy in patients with renal cell carcinoma
11. Translate the findings of primary tumor heterogeneity to practical considerations regarding tumor biopsy-directed therapy and the genetic drivers of metastatic disease
12. Identify the advantages, disadvantages, prognostic factors of radiation therapy, chemotherapy, and observation for men with clinical stage I seminoma
13. Identify the advantages, disadvantages, prognostic factors of RPLND, chemotherapy, and observation for men with clinical stage I NSGCT
14. Describe the role, patient selection, outcome of patients with isolated retroperitoneal relapse initially treated with surveillance for stage I NSGCT and seminoma
15. Describe the possible merits of proton beam or SBRT as alternatives to IMRT
16. Identify how the USPSTF PSA recommendations should be evaluated and used
17. Recognize the pros and cons of IADT
18. Identify the risks of prostate biopsies
19. Review the controversies about moving newer methods for interfering with the androgen axis earlier in the course of disease
Accreditation Statement
This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the University of Oklahoma College of Medicine and the Society of Urologic Oncology (SUO). The University of Oklahoma College of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

The University of Oklahoma College of Medicine designates this live activity for a maximum of 17.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Conflict Resolution Statement
The University of Oklahoma College Of Medicine, Office of Continuing Professional Development has reviewed this activity’s speaker and planner disclosures and resolved all identified conflicts of interest, if applicable.

Equal Opportunity Statement
The University of Oklahoma is an equal opportunity institution.

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Special Assistance
We encourage participation by all individuals. If you have a disability, advance notification of any special needs will help us better serve you. Call (847) 264-5901 if you require special assistance to fully participate in the meeting.
## FIRST SUMMIT ON UPPER TRACT UROTHELIAL CARCINOMA: A SPECIAL SUO SYMPOSIUM

All sessions are located in **White Flint Amphitheater** unless otherwise specified.

### WEDNESDAY, NOVEMBER 28, 2012

<table>
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<th>Time</th>
<th>Session</th>
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<tr>
<td>11:30 a.m. – 11:50 a.m.</td>
<td>Registration <em>(light snacks will be provided)</em>&lt;br&gt;Location: Grand Ballroom Foyer</td>
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<tr>
<td>11:50 a.m. – 12:00 p.m.</td>
<td>Welcome and Announcements&lt;br&gt;Surena F. Matin, MD</td>
</tr>
<tr>
<td>12:00 p.m. – 1:40 p.m.</td>
<td>Etiology and Biology&lt;br&gt;Moderator: Surena F. Matin, MD</td>
</tr>
<tr>
<td>12:00 p.m. – 12:20 p.m.</td>
<td>UTUC: Unraveling the Mystery of an Environmental and Global Disease&lt;br&gt;Arthur P. Grollman, MD</td>
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<td>12:20 p.m. – 12:30 p.m.</td>
<td>Q&amp;A</td>
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<tr>
<td>12:30 p.m. – 12:45 p.m.</td>
<td>Overcoming Barriers in the Study of a Rare Cancer&lt;br&gt;Jack Welch, MD, PhD</td>
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<td>12:45 p.m. – 1:00 p.m.</td>
<td>Unique Gene Expression Signatures in UTUC&lt;br&gt;Donna Hansel, MD, PhD</td>
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<tr>
<td>1:00 p.m. – 1:15 p.m.</td>
<td>Epithelial Mesenchymal Transition in Urothelial Cancer&lt;br&gt;Colin P. N. Dinney, MD</td>
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<tr>
<td>1:15 p.m. – 1:35 p.m.</td>
<td>Discussion: Future Research Needs and Improved Understanding of UTUC Biology—How Do We Go Forward?&lt;br&gt;Panelists: Colin P. N. Dinney, MD&lt;br&gt;Arthur P. Grollman, MD&lt;br&gt;Donna Hansel, MD, PhD&lt;br&gt;Tim O'Brien, MA, DM, FRCS&lt;br&gt;Jack Welch, MD, PhD</td>
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<tr>
<td>1:35 p.m. – 1:40 p.m.</td>
<td>Q&amp;A</td>
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<tr>
<td>1:40 p.m. – 2:45 p.m.</td>
<td>Diagnostics, Prognostic Factors and Risk Stratification&lt;br&gt;Moderator: Shahrokh F. Shariat, MD</td>
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<tr>
<td>1:40 p.m. – 1:55 p.m.</td>
<td>What is the Role of Biomarkers in Diagnosis and Risk-Stratification?&lt;br&gt;Wassim Kassouf, MD</td>
</tr>
<tr>
<td>1:55 p.m. – 2:10 p.m.</td>
<td>Novel Endoscopic Technologies for Detection and Staging&lt;br&gt;Surenra F. Matin, MD</td>
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<tr>
<td>2:10 p.m. – 2:25 p.m.</td>
<td>Risk Stratification of Patients with Invasive UTUC&lt;br&gt;Arnulf Stenzl, MD</td>
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</table>
2:25 p.m. – 2:45 p.m. Discussion: Achieving Consensus on Clinical Risk Stratification
Panelists: Wassim Kassouf, MD
Surena F. Matin, MD
Tim O’Brien, MA, DM, FRCS
Shahrokh F. Shariat, MD
Arnulf Stenzl, MD

2:45 p.m. – 3:00 p.m. Break

3:00 p.m. – 4:15 p.m. Management of Localized Disease
Moderator: Theresa M. Koppie, MD

3:00 p.m. – 3:15 p.m. Minimally-Invasive Approaches Management of Localized Disease – from Endoscopy to Laparoscopy and Robotics
Jonathan A. Coleman, MD

3:15 p.m. – 3:30 p.m. Improving the Quality of Surgery for Upper Tract Disease: Lymphadenectomy and the Bladder Cuff
Antonio Finelli, MD

3:30 p.m. – 3:45 p.m. Intravesical Therapy to Decrease Risk of Bladder Cancer Recurrence After NU—Challenges of a Randomized Trial in UTUC
Tim O’Brien, MA, DM, FRCS

3:45 p.m. – 4:15 p.m. Discussion/Q&A
Panelists: Jonathan A. Coleman, MD
Antonio Finelli, MD
Tim O’Brien, MA, DM, FRCS
Shahrokh F. Shariat, MD
Arnulf Stenzl, MD

4:15 p.m. – 5:30 p.m. Systemic Therapy and Novel Targets
Moderator: Dean Bajorin, MD

4:15 p.m. – 4:30 p.m. A Review of Peri-Operative Chemotherapy in UTUC, and Chemotherapy for the Renally-Impaired Patient
Arlene O. Siefker-Radtke, MD

4:30 p.m. – 4:45 p.m. Urothelial Cancer Biology 2012: “Actionable” Targets for Current TKIs and Future Targets Based on the TCGA and Other Recent Studies
Jonathan Rosenberg, MD

4:45 p.m. – 5:00 p.m. Can Markers Select Patients Likely to Benefit from Either Neo-Adjuvant of Adjuvant Treatment of the Patient with UTUC?
Mathew I. Milowsky, MD

5:00 p.m. – 5:30 p.m. Discussion: Developing a Consensus on Conducting a National, Multicenter Protocol—What is Needed in Terms of Collaborations, Infrastructure and Funding
Panelists: Jonathan A. Coleman, MD
Theresa M. Koppie, MD
Mathew I. Milowsky, MD
Tim O’Brien, MA, FRCS
Arlene O. Siefker-Radtke, MD

5:30 p.m. Adjourn
# GENERAL SCIENTIFIC PROGRAM

All sessions will be located in the **Grand Ballroom E – H** unless otherwise noted

## WEDNESDAY, NOVEMBER 28, 2012

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</table>
| 2:00 p.m. – 6:00 p.m. | Registration/Information Desk Open  
*Location: Grand Ballroom Foyer* |                             |
| 4:45 p.m. – 6:00 p.m. | SUO-CTC Board of Directors Meeting  
*Location: Brookside* |                             |
| 6:00 p.m. – 9:00 p.m. | SUO Board of Directors Meeting  
*Location: Forest Glen* |                             |
| 6:00 p.m. – 9:30 p.m. | *Young Urologic Oncologist Dinner*  
*Location: Grand Ballroom G & H*  
Chair: Fernando J. Bianco, Jr., MD |                             |
| 6:00 p.m. | Hors d’oeuvres |                             |
| 6:30 p.m. | YUO Business Meeting |                             |
| 6:45 p.m. | Research Collaboration Proposals  
Coordinator: Steven Boorjian, MD (YUO President-Elect) |                             |
| 7:00 p.m. | Top YUO Abstracts Presentations*  
See page 22 for full abstracts |                             |
| Podium #1 | EFFECT OF STUDER POUCH VERSUS T-POUCH ORTHOTOPIC URINARY DIVERSION ON LATE COMPLICATIONS IN BLADDER CANCER PATIENTS UNDERGOING RADICAL CYSTECTOMY: THE USC-STAR RANDOMIZED TRIAL  
(Presented by: Adrian Fairey) |                             |
| Podium #2 | GLEASON SCORE UPGRADING SEEN IN MRI/ULTRASOUND FUSION GUIDED PROSTATE BIOPSY VERSUS TRADITIONAL 12-CORE TRUS BIOPSY  
(Presented by: M. Minhaj Siddiqui) |                             |
| Podium #3 | PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL OF SUPRAPUBIC TUBE VERSUS URETHRAL CATHETER DRAINAGE FOLLOWING ROBOT-ASSISTED RADICAL PROSTATECTOMY  
(Presented by: Sandip Prasad) |                             |
| 7:25 p.m. | Urological Research Network Award to Best Clinical Trial  
Presented at SUO Winter Meeting |                             |
| 7:30 p.m. | YUO Presidential Debate: Does Gleason Pattern 3 Have the Characteristics of Cancer  
Proposition: William Catalona, MD  
Composition: Laurence Klotz, MD  
Moderator: Joel Nelson, MD |                             |
| 8:45 p.m. | Closing Remarks |                             |

*Only podiums 1 – 3 from 7:30 p.m. – 8:00 p.m. are CME accredited. All other sessions in the Young Urologic Oncologist Dinner are **NOT** CME accredited.*
THURSDAY, NOVEMBER 29, 2012

6:30 a.m. – 6:00 p.m. Registration/Information Desk Open
Location: Grand Ballroom Foyer

7:00 a.m. – 7:30 p.m. Exhibit Hall Open
Location: Grand Ballroom A & D

7:00 a.m. – 4:00 p.m. Speaker Ready Room Open
Location: Timberlawn

7:00 a.m. – 8:00 a.m. *Industry Sponsored Breakfast Symposium
Location: Grand Ballroom B & C
See page 7 for details
*Not CME Accredited

7:00 a.m. – 8:00 a.m. Continental Breakfast
Location: Grand Ballroom A & D

8:00 a.m. – 8:05 a.m. Welcome and Introduction
Adam S. Kibel, MD
Seth P. Lerner, MD

8:05 a.m. – 9:25 a.m. Bladder Cancer Session I
Session Chair: Arthur I. Sagalowsky, MD

High Risk Non-Muscle Invasive Disease (Ta/T1 High Grade, CIS)
Moderator: Ashish M. Kamat, MD

8:05 a.m. – 8:10 a.m. Introduction
Arthur I. Sagalowsky, MD

8:10 a.m. – 8:19 a.m. Novel Approaches to Intravesical Chemotherapy
James M. McKiernan, MD

8:19 a.m. – 8:34 a.m. Electromotive Intravesical Therapy
Savino M. Di Stasi, MD

8:34 a.m. – 8:43 a.m. The Role of Fluorescence Cytoscopy—Treatment Advancement for High Risk Disease
Leonard G. Gomella, MD

8:43 a.m. – 9:05 a.m. Panel Discussion
Moderator: Ashish M. Kamat, MD
Panelists: Savino M. Di Stasi, MD
Leonard G. Gomella, MD
James M. McKiernan, MD
Tim O’Brien, MA, DM, FRCS
Michael A. O’Donnell, MD, FACS

9:05 a.m. – 9:25 a.m. State of the Art: Improving Efficacy and Safety of Intravesical Immunotherapy
Michael A. O’Donnell, MD, FACS
9:25 a.m. – 10:25 a.m.  **Prostate Cancer Session I**
Session Chair: James L. Mohler, MD

**Cutting Edge Radiation – SBRT to Protons**
Moderator: Howard M. Sandler, MD

9:25 a.m. – 9:30 a.m.  **Introduction**
Howard M. Sandler, MD

9:30 a.m. – 9:45 a.m.  **Hypo Fractionated and Extreme Hypo Fractionated (SBRT) are Better than IMRT**
Himu Lukka, MD

9:45 a.m. – 10:00 a.m.  **Proton Beam is Better than IMRT**
Jason A. Efstathiou, MD, DPhil

10:00 a.m. – 10:15 a.m.  **Which Modality is Best?—A Comparative Effectiveness Approach**
Ronald C. Chen, MD

10:15 a.m. – 10:25 a.m.  **Discussion/Q&A**

10:25 a.m. – 10:50 a.m.  **Break**
Location: Grand Ballroom A & D

10:50 a.m. – 12:00 p.m.  **Kidney Cancer Session I**
Session Chair: W. Kimryn Rathmell, MD, PhD

**Localized Disease**
Moderator: Jodi K. Maranchie, MD

10:50 a.m. – 11:00 a.m.  **Overview and Case Presentation: Managing Renal Mass Associated Lymph Nodes**
Christopher G. Wood, MD, FACS

11:00 a.m. – 11:10 a.m.  **Value Added from Lymph Node Dissection for Diagnosis, Prognosis and Oncologic Control**
Michael L. Blute, MD

11:10 a.m. – 11:20 a.m.  **Futility of Lymph Node Dissection in Managing Renal Masses**
Allan J. Pantuck, MD, MS, FACS

11:20 a.m. – 11:30 a.m.  **Why Do the Results of Randomized Phase III Trials Fail to Change Practice? Methodological Issues and Opportunities for Modernizing Trial Design**
Steven C. Campbell, MD

11:30 a.m. – 11:40 a.m.  **Optimal Oncological and Functional Follow-Up of Patients Post–Renal Surgery for RCC**
Bradley C. Leibovich, MD

11:40 a.m. – 12:00 p.m.  **Panel Q&A**
Moderator: Jodi K. Maranchie, MD
Panelists: Michael L. Blute, MD
Steven C. Campbell, MD
Christopher G. Wood, MD, FACS
Allan J. Pantuck, MD, MS, FACS
<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>12:00 p.m. – 12:20 p.m.</td>
<td><strong>State of the Art: Renal Tumor Genetics in 2012</strong>&lt;br&gt;James Brugarolas, MD, PhD</td>
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<tr>
<td>12:20 p.m. – 12:30 p.m.</td>
<td><strong>Discussion/Q&amp;A</strong></td>
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<tr>
<td>12:30 p.m. – 1:30 p.m.</td>
<td><strong>Industry Sponsored Lunch Symposium</strong>&lt;br&gt;&lt;em&gt;Location: Grand Ballroom B&lt;/em&gt;&lt;br&gt;See page 7 for details.&lt;br&gt;*Not CME Accredited</td>
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<tr>
<td>12:30 p.m. – 1:30 p.m.</td>
<td><strong>Industry Sponsored Lunch Symposium</strong>&lt;br&gt;&lt;em&gt;Location: Grand Ballroom C&lt;/em&gt;&lt;br&gt;See page 7 for details.&lt;br&gt;*Not CME Accredited</td>
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<td>1:45 p.m. – 1:55 p.m.</td>
<td><strong>SUO Huggins Medal Presentation</strong>&lt;br&gt;*Not CME Accredited</td>
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<td>1:55 p.m. – 2:15 p.m.</td>
<td><strong>Huggins Medal Lecture</strong>&lt;br&gt;Mark A. Rubin, MD</td>
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<td>2:15 p.m. – 4:00 p.m.</td>
<td><strong>Prostate Session II</strong>&lt;br&gt;Session Chair: James L. Mohler, MD</td>
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<td>2:15 p.m. – 2:20 p.m.</td>
<td><strong>Introduction</strong>&lt;br&gt;H. Ballentine Carter, MD</td>
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<tr>
<td>2:20 p.m. – 2:32 p.m.</td>
<td><strong>Mortality is Not an Appropriate Endpoint</strong>&lt;br&gt;Gerald L. Andriole, Jr., MD</td>
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<td>2:32 p.m. – 2:44 p.m.</td>
<td><strong>The “D” Recommendation for Prostate Cancer Screening: “Difficult Data Deserve Due Diligence”</strong>&lt;br&gt;Ruth Etzioni, PhD</td>
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<td>2:44 p.m. – 2:56 p.m.</td>
<td><strong>What PROTECT Can Teach Us About PSA Screening</strong>&lt;br&gt;Freddie C. Hamdy, MD</td>
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<tr>
<td>2:56 p.m. – 3:15 p.m.</td>
<td><strong>Discussion/Q&amp;A</strong></td>
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<td>3:15 p.m. – 3:30 p.m.</td>
<td><strong>Scheduled Surveillance Prostate Biopsies: Harmful to Men on Active Surveillance?</strong>&lt;br&gt;Anthony J. Schaeffer, MD</td>
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<td>3:30 p.m. – 3:45 p.m.</td>
<td><strong>Intermittent vs. Continuous ADT for Treatment Failure</strong>&lt;br&gt;Benjamin A. Spencer, MD</td>
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<tr>
<td>3:45 p.m. – 4:00 p.m.</td>
<td><strong>Discussion</strong></td>
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</table>
4:00 p.m. – 6:00 p.m.  *Poster Session I  
Poster Walks  
Location: Grand Ballroom A & D  
*Not CME Accredited  
See page 51 for full abstracts

6:00 p.m. – 7:30 p.m.  SUO Welcome Reception  
Location: Grand Ballroom D

7:30 p.m. – 10:00 p.m.  SUO Dinner  
Location: Grand Ballroom B & C

FRIDAY, NOVEMBER 30, 2012

6:30 a.m. – 5:00 p.m.  Registration/Information Desk Open  
Location: Grand Ballroom Foyer

7:00 a.m. – 11:00 a.m.  Exhibit Hall Open  
Location: Grand Ballroom A & D

7:00 a.m. – 4:00 p.m.  Speaker Ready Room Open  
Location: Timberlawn

7:00 a.m. – 8:00 a.m.  Breakfast in Exhibit Hall  
Location: Grand Ballroom A & D

8:00 a.m. – 8:30 a.m.  Young Urologic Oncologists (YUO) Program  
Abstracts selected by the YUO  
Moderator: Fernando J. Bianco, Jr., MD  
See page 25 for full abstracts

8:00 a.m.  Podium #4  
LARGE REGIONAL VARIATION IN QUALITY OF PROSTATE CANCER CARE  
HIGHLIGHTS OPPORTUNITY FOR QUALITY IMPROVEMENT  
(Presented by: Florian Schroek)

8:10 a.m.  Podium #5  
TO BIOPSY OR NOT TO BIOPSY: RESULTS OF 1000 RENAL MASS BIOPSIES AT A  
SINGLE INSTITUTION  
(Presented by: Adam Feldman)

8:20 a.m.  Podium #6  
INTRODUCTION OF A TOBACCO-SCREENING INITIATIVE FOR THOSE WITH OR  
AT RISK FOR BLADDER CANCER: THE CASE OF A HIGH VOLUME UROLOGY CLINIC  
(Presented by: Jeffrey Bassett)

8:30 a.m. – 9:30 a.m.  Bladder Session II  
Session Chair: Arthur I. Sagalowsky, MD  
What’s New in Muscle Invasive Disease  
Moderator: Eila C. Skinner, MD

8:30 a.m. – 8:40 a.m.  Molecular Pathology Phenotype of Invasive/High Risk Disease  
Hikmat A. Al-Ahmadie, MD
8:40 a.m. – 8:50 a.m. Update and Perspectives on Recent ICUD and EAU Guidelines for Muscle Invasive Disease
Arnulf Stenzl, MD

8:50 a.m. – 9:00 a.m. Current and Future Applications of PET Imaging
Orhan Oz, MD, PhD

9:00 a.m. – 9:10 a.m. Optimizing Recovery from Cystectomy: Results from the Phase III Alvimopan Trial
Ashish M. Kamat, MD

9:10 a.m. – 9:30 a.m. Panel Discussion/Q&A
Moderator: Eila C. Skinner, MD
Panelists: Hikmat A. Al-Ahmadie, MD
Ashish M. Kamat, MD
Orhan Oz, MD, PhD
Arnulf Stenzl, MD

9:30 a.m. – 10:30 a.m. Testis Cancer Session
Session Chair: Andrew J. Stephenson, MD

9:30 a.m. – 9:46 a.m. Debate: Clinical Stage I Seminoma Carboplatin vs. Surveillance
Surveillance: Padraig Warde, MB
Carboplatin: Robert Huddart, MA, MBBS, MRCP, FRCR, PhD

9:46 a.m. – 9:55 a.m. Discussion/Q&A

9:55 a.m. – 10:05 a.m. RPLND for Relapse of CS I Seminoma/NSGCT: Is there a Role?
Richard S. Foster, MD

10:05 a.m. – 10:21 a.m. Debate: Clinical Stage I NSGCT – Observation vs. RPLND vs. BEPx2
Surveillance for All: Craig Nichols, MD
RPLND: Siamak Daneshmand, MD
Chemo: Robert Huddart, MA, MBBS, MRCP, FRCR, PhD

10:21 a.m. – 10:30 a.m. Discussion/Q&A

10:30 a.m. – 10:50 a.m. Break
Location: Grand Ballroom A & D

10:50 a.m. – 12:25 p.m. Kidney Cancer Session II
Session Chair: W. Kimryn Rathmell, MD, PhD

10:50 a.m. – 11:00 a.m. Case Presentation: Management of Metastatic Disease
Moderator: Gennady Bratslavsky, MD

11:00 a.m. – 11:10 a.m. Cytoreductive Nephrectomy—Where Are We Now?: Upfront Cytoreductive Nephrectomy: Still the Standard of Care
Axel Bex, MD, PhD

11:10 a.m. – 11:20 a.m. Cytoreductive Nephrectomy—Where Are We Now?: New Agents When is Cytoreductive Nephrectomy Still Necessary?
Eric Jonasch, MD
11:20 a.m. – 11:35 a.m.  Panel Discussion
Moderator:  Gennady Bratslavsky, MD
Panelists:  Axel Bex, MD, PhD
Eric Jonasch, MD
Hyung L. Kim, MD
Michael E. Woods, MD

11:35 a.m. – 11:45 a.m.  Modern Role of Metastectomy
Michael L. Blute, MD

11:45 a.m. – 11:55 a.m.  Adjuvant Therapy after Metastectomy
Leonard J. Appleman, MD

11:55 a.m. – 12:10 p.m.  Panel Discussion
Moderator:  Gennady Bratslavsky, MD
Panelists:  Leonard J. Appleman, MD
Michael L. Blute, MD
Daniel George, MD
Antonio Finelli, MD

12:10 p.m. – 12:25 p.m.  Integrating Concepts of Tumor Heterogeneity into Current Paradigms
W. Kimryn Rathmell, MD, PhD

12:25 p.m. – 1:25 p.m.  *Industry Sponsored Lunch Symposium
Location: Grand Ballroom B & C
See page 7 for details.
*Not CME Accredited

1:25 p.m. – 2:25 p.m.  Oral Abstract Session
Moderator:  Christopher P. Evans, MD
See page 28 for full abstracts

1:25 p.m.  Podium #7  ADVERSE OUTCOMES IN CLEAR CELL RENAL CELL CARCINOMA WITH MUTATIONS OF EPIGENETIC REGULATORS BAP1 AND SETD2
(Presented by: A Ari Hakimi)

1:35 p.m.  Podium #8  PSA DOES NOT ADD TO A BASELINE PROSTATE CANCER RISK ASSESSMENT INCLUDING GENETIC RISK
(Presented by: Michael Liss)

1:45 p.m.  Podium #9  A CELL CYCLE PROLIFERATION SIGNATURE PREDICTS PROGRESSION AND OUTCOME IN BLADDER CANCER
(Presented by: Shandra Wilson)

1:55 p.m.  Podium #10  NEOADJUVANT CHEMOTHERAPY IN MUSCLE-INVASIVE BLADDER CANCER: TRENDS IN UTILIZATION AND IMPLICATIONS FOR PATHOLOGIC STAGING IN THE NATIONAL CANCER DATABASE (NCDB)
(Presented by: Sanjay Patel)
2:05 p.m. Podium #11  
**CORRELATION OF MULTIPARAMETRIC PROSTATE MRI SUSPICIOUS LESIONS WITH MRI/ULTRASOUND FUSION GUIDED BIOPSY FINDINGS**  
(Presented by: Soroush Rais-Bahrami)

2:15 p.m. Podium #12  
**CLINICAL ROLE OF THE SWI/SNF COMPLEX GENE PBRM1 IN CLEAR CELL RENAL CELL CARCINOMA**  
(Presented by: Carlos Morales)

2:25 p.m. – 3:25 p.m.  
**SUO-CTC Scientific Session**  
*Not CME Accredited*

**Changing the Paradigm for New Drug Registration for Bladder Cancer; A Collaborative Effort for Clinicians, Industry and the FDA**  
Moderator: Colin P. N. Dinney, MD  
Panelists: Alan Boyd, MD  
Matthew I. Milowsky, MD  
Mark P. Schoenberg, MD  
Kevin J. Shannon, MD  
Robert S. Svathek, MD  
Johannes W.G. Vieweg, MD

3:25 p.m. – 4:10 p.m.  
**Prostate Session III**  
Session Chair: James L. Mohler, MD

**Sequencing Treatments for Advanced Disease: How and Why – Principles**  
Moderator: Daniel W. Lin, MD

3:25 p.m. – 3:30 p.m.  
**Introduction**  
Daniel W. Lin, MD

3:30 p.m. – 3:40 p.m.  
**Immunotherapy – Sooner not Later**  
James Gulley, MD, PhD, FACP

3:40 p.m. – 3:50 p.m.  
**CYP17A1 Inhibition – Sooner not Later**  
Christopher Logothetis, MD

3:50 p.m. – 4:00 p.m.  
**New Anti-Androgens – Sooner not Later**  
Michael J. Morris, MD

4:00 p.m. – 4:10 p.m.  
**Discussion/ Q&A**

4:10 p.m. – 6:00 p.m.  
**Poster Session II and Reception**  
Poster Walk  
*Location: Grand Ballroom A & D*  
*Not CME Accredited*  
See page 147 for full abstracts

6:00 p.m.  
Adjourn
EFFECT OF STUDER POUCH VERSUS T-POUCH ORTHOTOPIC URINARY DIVERSION ON LATE COMPLICATIONS IN BLADDER CANCER PATIENTS UNDERGOING RADICAL CYSTECTOMY: THE USC-STAR RANDOMIZED TRIAL

Adrian Fairey¹, Donald Skinner¹, Susan Groshen¹, Kenneth Faber¹, Jie Cai¹, Gus Miranda¹ and Eila Skinner²

¹Los Angeles, CA; ²Stanford, CA

(Presented by: Adrian Fairey)

Introduction and Objectives: The USC−STAR (University of Southern California – Studer Pouch versus T−Pouch And Renal function) study was a parallel−group, randomized controlled, superiority trial designed to determine the effect of type of orthotopic urinary diversion on change in renal function in bladder cancer patients undergoing radical cystectomy. Here we compared the Studer Pouch and T−Pouch orthotopic urinary diversions with regard to the incidence of late complications and surgical re−intervention.

Methods: Between February 2002 and November 2009, 484 patients undergoing radical cystectomy for clinical stage TanyNanyM0 bladder cancer were randomly assigned to Studer Pouch (N=247) or T−Pouch (N=237) orthotopic urinary diversion. Secondary end points included late complications, urinary tract infection (UTI), any surgical re−intervention (SRI), and urinary diversion−associated surgical re−intervention (UDSRI) occurring greater than 90 days after surgery. All complications were analyzed and graded by a blinded adjudicator using the Clavien complication grading system. The cumulative incidence method and multivariable regression models were used to analyze the data.

Results: Baseline characteristics were similar between the groups. The cumulative incidence of late complications (P=0.31) and UTI (P=0.49) did not differ between the Studer Pouch and T−Pouch groups; however, the cumulative incidence of any SRI (P=0.01) and UDSRI (P<0.01) was higher in the T−Pouch group. Multivariable regression analysis showed that T−Pouch orthotopic urinary diversion was independently associated with an increased risk of any SRI (HR 1.79, 95% CI 1.26 to 2.54, P<0.01) and UDSRI (HR 2.32, 95% CI 1.50 to 3.58, P<0.01) but not late complications (HR 1.18, 95% CI 0.93 to 1.51, P=0.18) or UTI (HR 0.89, 95% CI 0.61 to 1.31, P=0.55).

Conclusions: In bladder cancer patients undergoing radical cystectomy, T−Pouch orthotopic urinary diversion was associated with an increased risk of surgical re−intervention compared to Studer Pouch urinary diversion.
GLEASON SCORE UPGRADING SEEN IN MRI/ULTRASOUND FUSION GUIDED PROSTATE BIOPSY VERSUS TRADITIONAL 12-CORE TRUS BIOPSY

M. Minhaj Siddiqui¹, Soroush Rais-Bahrami¹, Lambros Stamatakis¹, Srinivas Vourganti¹, Jeffrey Nix¹, Anthony N. Hoang¹, Annerleim Walton-Diaz¹, Michael Weintraub¹, Jennifer Logan¹, Todd Sterling¹, Hong Truong¹, Baris Turkbey², Peter L. Choyke², Bradford J. Wood³ and Peter A. Pinto¹
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, MD; ²Molecular Imaging Program, National Institutes of Health, Bethesda, MD; ³Center for Interventional Oncology, National Institutes of Health, Bethesda, MD (Presented by: M. Minhaj Siddiqui)

Introduction: Gleason score upgrading from traditional 12-core prostate biopsy has been reported in 25–33% of prostatectomy patients. Previous studies have shown multiparametric magnetic resonance imaging (mp–MRI) correlates well with high grade prostate cancer lesions. We assessed in this study the rate of Gleason score upgrading with an MRI/US fusion guided prostate biopsy.

Methods: Patients were enrolled in a prospective trial comparing traditional extended sextant 12-core TRUS prostate biopsy to targeted MRI/US fusion guided prostate biopsy with electromagnetic tracking. All patients underwent mp–MRI prior to biopsy. Imaging was reviewed and lesions were assigned a suspicion level based on pre–defined criteria. Patients then underwent a traditional 12-core biopsy followed immediately by the MRI/US fusion guided biopsy. Pathology was reviewed and the highest Gleason score from the traditional 12-core biopsies in each patient was compared to the highest Gleason score from the targeted biopsies. Chi–square statistics was used to test for differences between target and traditional biopsy as well as an association of Gleason upgrading and MRI suspicion.

Results: Of the 587 patients in the trial, 582 patients had sufficient data for analysis. Diagnosis of prostate cancer was made in 315 (54%) of the patients. Traditional 12-core and targeted biopsies both demonstrated cancer in 61% of the prostate cancer cases. In the remaining 39% of prostate cancer patients, only one modality (targeted or traditional biopsy) demonstrated cancer while the other was negative. Prostate cancers seen on traditional template but not targeted biopsies tended to be lower grade (72% Gleason 6, 27% Gleason 7, 2% Gleason 8+) versus cancers seen only in targeted biopsy (41% Gleason 6, 36% Gleason 7, 24% Gleason 8+) (p<0.001 for the difference). Overall, Gleason score upgrading by target biopsy was seen in 31% of the cases. MRI suspicion was correlated with Gleason upgrading in 38% of high and moderate suspicion lesions versus 12% of low suspicion lesions (p<0.0001).

Conclusions: MRI/US fusion guided biopsy identifies higher Gleason grade prostate cancer than that identified by traditional 12-core biopsy in 31% of patients in this series. High suspicion lesions on mp–MRI were furthermore associated with higher rate of Gleason score upgrading with targeted versus traditional biopsy.
Podium #3
PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL OF SUPRAPUBIC TUBE VERSUS URETHRAL CATHETER DRAINAGE FOLLOWING ROBOT-ASSISTED RADICAL PROSTATECTOMY
Sandip Prasad¹, Amit Patel², Fenwa Famakinwa³, Arieh Shalhav³ and Greg Zagaja³
¹Medical University of South Carolina, Charleston, SC; ²Dupage Medical Group, Naperville, IL; ³University of Chicago, Chicago, IL
(Presented by: Sandip Prasad)

Introduction: Urinary drainage following robot-assisted radical prostatectomy (RARP) may be achieved through utilization of a suprapubic tube (SPT) or urethral catheter (UC). Retrospective single institution data suggested that post-operative pain was reduced with early removal of UC with SPT drainage only after discharge, and we had performed more than 100 RARPs with early UC removal and SPT drainage at the time of study initiation. Our goal was to assess the impact of SPT drainage with early UC removal vs. UC drainage on post-operative pain and satisfaction in men undergoing RARP in a prospective randomized fashion.

Materials and Methods: Patients of two high-volume RARP surgeons (n > 1000 cases for each) were intraoperatively randomized to either combined SPT & UC with UC removal on postoperative day (POD) 1 or UC drainage alone following vesicourethral anastomosis. Patients with previous BPH treatment or BMI > 40 were excluded. The visual analog pain scale (VAS), RAND 12-item health survey, UCLA prostate cancer index and satisfaction questionnaires were administered on day of surgery and POD 1 and 7. One hundred two patients were required to detect a 1.5 point difference on the VAS pain scale (from 0–10) with 90% power and two-sided alpha = 0.05. All pain assessments were performed by non-study personnel.

Results: Twenty-two patients were randomized to UC vs. 28 to SPT plus early UC removal at the time of interim futility analysis. Mean VAS scores did not differ across groups on day of surgery, POD 1 & 7 (Figure). Similar percentages of patients in each group cited the catheter as their greatest bother on POD 1 & 7, with similar overall treatment-related satisfaction on POD 7. Complications within the first week of surgery (readmission, hematuria, catheter replacement) did not vary between groups, although there were more ER visits for catheter blockage in the SPT group.

Conclusions: Patients randomized to suprapubic versus urethral catheter drainage for the week following prostatectomy have similar pain, catheter-related bother, and treatment-related satisfaction in the perioperative period. We no longer routinely offer SPT with early UC removal at our institution.
Introduction and Objectives: There is significant variation in the kind of care prostate cancer patients receive. While regional variation in treatment selection has been described, the full extent of variation in quality of care has not been examined. In an effort to identify targets for future quality improvement, we evaluated regional variation in performance on several RAND quality measures.

Methods: We used Surveillance, Epidemiology, and End Results (SEER) – Medicare data for the years 2001 through 2009 to identify patients with newly diagnosed prostate cancer (n=80,755). Patients were assigned to their respective region (Hospital Service Area [HSA], n=654) based on the zip code of their primary residence. We then assessed compliance with seven RAND quality measures that have been endorsed by the National Quality Forum and the Physician Consortium for Performance Improvement. Hierarchical generalized linear models were used to examine adjusted regional compliance rates, and median odds ratios were calculated as a measure of regional effect size.

Results: We found significant regional variation in overuse of bone scans (median odds ratio [MOR] for a patient residing in a high performing versus low performing area 2.63, p<0.001; Figure) and use of adjuvant androgen deprivation therapy (MOR 1.88, p<0.001; Figure) among low and high risk patients, respectively. Variation was even larger for treatment by a high volume provider (MOR 3.28, p<0.001; Figure). There were also significant regional differences in patients being seen by both a urologist and radiation oncologist prior to treatment (MOR 2.00, p<0.001), having at least 2 follow-up visits with a treating surgeon (MOR 1.51, p<0.001) or radiation oncologist (MOR 1.91, p<0.001), and being treated within 90 days of diagnosis (MOR 1.38, p<0.001).

Conclusions: We found substantial regional variation in prostate cancer care quality, highlighting the opportunity for future quality improvement efforts. However, implementing these on a broad basis will remain a challenge and area for future mixed methods research.

Grant support: NIDDK T32 DK07782 and American Cancer Society PF–12–118–01–CPPB.
TO BIOPSY OR NOT TO BIOPSY: RESULTS OF 1000 RENAL MASS BIOPSIES AT A SINGLE INSTITUTION
Adam Feldman, Sameer Desmukh, Manish Dhyani, Francis McGovern, W. Scott McDougal, Aria Olumi, Douglas Dahl, Ronald Arellano, Anthony Samir and Michael Blute
Massachusetts General Hospital, Boston, MA
(Presented by: Adam Feldman)

Introduction and Objectives: Renal mass biopsy (RMB) is an option for evaluation of a suspicious renal mass. Current guidelines offer little direction for appropriate selection of renal masses for RMB. We investigated our database of 1000 RMB to assess the utility of this method.

Methods: Under IRB approval, we performed a retrospective review of 1000 renal masses which underwent percutaneous RMB at the Massachusetts General Hospital from 1997−2010. The decision for RMB was at the discretion of the urologist and patient, although any mass considered for ablative therapy was biopsied routinely. Core biopsies were performed with 15−18 gauge coaxial needles and fine needle aspirations (FNA) were performed with 20−23 gauge Chiba needles.

Results Obtained: Mean age at RMB was 65 yrs (SD 13.7) and 62% of patients were male. 80% of tumors were 0−4cm, 16% were >4−7cm, 4% were >7cm. 82% were solid and 18% were cystic. 92% were obtained under CT guidance and 8% under ultrasound guidance. 94% underwent core biopsies + FNA, 5% had core biopsies only and 1% had FNA only. 216/1000(22%) biopsies were non−diagnostic, including 78 reported on pathology as “insufficient tissue” and 138 as “benign tissue.” Solid lesions had a non−diagnostic rate of 13%(104/821) compared with 63%(112/179) in cystic tumors (p<0.0001). The non−diagnostic rate increased with a decrease in tumor size (<2cm:21%, 2−4cm:9.5%, >4−7cm:11%, >7cm:6.3%; p<0.0001). Of diagnostic RMB, identification of RCC increased with size (<2cm:65%, 2−4cm:73%, >4−7cm:79%; >7cm:87%; p<0.0001). RCC subtype and grade were reported in 80% and 35% of RMB. 226 RCC by RMB went to surgery: RCC diagnosis was correct in 97%, subtype and grade were concordant with surgical pathology in 92% and 76%, respectively. Of 216 tumors with initial non−diagnostic RMB, 55 underwent repeat biopsy: 26(47%) were RCC or other malignancy and 32(58%) non−diagnostic. 33/216 non−diagnostic RMB eventually had surgery: 30 were RCC or other malignancy.

Conclusions: RMB is an effective method for diagnostic evaluation of RCC. However, smaller masses <2 cm and cystic masses are more likely to result in a non−diagnostic biopsy than larger and solid masses. We therefore typically recommend against RMB in masses <1−2cm and in cystic masses, with the exception of planned ablative therapy. Given the significant risk of malignant pathology on future repeat biopsy or surgery, tumors with a non−diagnostic RMB must still be surveyed closely or undergo intervention.
Introduction and Objectives: Tobacco use is causal or contributory in at least 50% of bladder cancer diagnoses and continued tobacco use after diagnosis may negatively impact recurrence, progression, and overall mortality. Despite its relevance, we observed low rates of tobacco screening in our regional urology clinic. We hypothesized that an electronic record–based tobacco–screening initiative would increase tobacco screening in these patients and increase their use of smoking cessation services.

Methods: An EMR–based tobacco–screening prompt was designed using the same informatics architecture and clinical reporting systems employed in primary care. The prompt was introduced for all new patient encounters beginning January 2010. Performance measures included the proportion of patients asked about tobacco use, advised to quit, and assisted with smoking cessation.

Results: For the two years ending December 2011, 4,617 patients were seen on a consultation basis. 31% (n = 1,444) were referred for tobacco–related diagnoses, 36% (n = 518) of whom were referred for bladder cancer or hematuria. Providers used the tobacco–screening prompt 57% of the time. Attending physicians utilized the template in 17% of consultations, resident physicians in 71%, and nurse practitioners in 97% (p < 0.001). In those referred for bladder cancer or gross hematuria, 42% and 44% were screened for tobacco use, respectively. Provider use of the prompt did not vary by the tobacco–relatedness of the urologic diagnosis.

Active smokers comprised 21% (n = 558) of those screened for tobacco use. Active smokers were more likely to be referred for bladder cancer or hematuria than former or never smokers (p = 0.005). 40% of active smokers desired to quit. Active smokers counseled by an attending were more likely ready to quit and choose an intensive cessation program (p = 0.004 and p = 0.07, respectively).

Conclusions: Our data suggest that urology clinics may be fertile ground for tobacco–screening initiatives, particularly for patients with tobacco–related diagnoses. Screening patients referred for bladder cancer or hematuria is likely high yield given the increased proportion of active smokers. Disparate provider utilization of the tobacco–screening prompt, and identification of provider–level facilitators and barriers to screening, is worthy of additional study.

Source of Funding: Tobacco–Related Disease Research Program of the University of California, Grant Number 20KT–0059.
Oral Abstract Session

Podium #7
ADVERSE OUTCOMES IN CLEAR CELL RENAL CELL CARCINOMA WITH MUTATIONS OF EPIGENETIC REGULATORS BAP1 AND SETD2
A. Ari Hakimi, Irina Ostrovnaya¹, Ying-Bei Chen², Mithat Gonen¹, Victor E. Reuter², Paul Russo³ and James J. Hsieh⁴
¹Department of Epidemiology and Biostatistics, Memorial Sloan-Kettering Cancer Center, New York, NY; ²Department of Pathology, Memorial Sloan-Kettering Cancer Center, New York, NY; ³Urology Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY; ⁴Human Oncology & Pathogenesis Program and Department of Medicine, Genitourinary Oncology Service, Memorial Sloan-Kettering Cancer Center, New York, NY
(Presented by: A Ari Hakimi)

Introduction: Historically, VHL was the only gene known to be frequently mutated in clear cell renal cell carcinoma (ccRCC) with no clinical relevance. Recent sequencing studies of ccRCC identified several novel, frequently mutated, histone modifying/chromatin remodeling genes, all of which are located in the commonly lost 3p locus. However, to date, there have been no reports of clinical associations with these mutations.

Patients and Methods: We sequenced the three most mutated chromatin modifiers genes (PBRM1, SETD2, BAP1) in addition to VHL in 188 patients who underwent primary resection at Memorial Sloan–Kettering Cancer Center with ccRCC (discovery set) to assess their frequency and associations with cancer specific and overall survival. We then validated our clinical findings with 424 patients enrolled in the Cancer Genome Atlas (TCGA) project (validation set) with available genomic and clinical data.

Results: All genes in the discovery set were frequently mutated (PBRM1 − 30.3%; SETD2 − 7.4%; BAP1 – 6.3%). BAP1 mutations were associated with advanced tumor grade and worse cancer specific survival (CSS) (log rank p=0.002, HR 7.71 (95% CI 2.08,28.6)) while SETD2 mutations trended toward associations with recurrent disease (log rank p=0.09, HR 5.98 (95% CI 0.54−66.1)). Further validation within the TCGA cohort confirmed that BAP1 and SETD2 mutations associate with worse CSS and overall survival.

Conclusion: The chromosome 3p locus harbors four ccRCC tumor suppressors located in close proximity that possess critical pathological and clinical significance. Loss of function mutations of PBRM1 (30−34%) constitute the second most common genetic event in ccRCC but does not impact clinical outcome, implicating its primary role in the tumor initiating processes. BAP1 and SETD2 mutations are associated with worse cancer specific survival, likely taking place during the disease progression phase. Future efforts should focus on these alterations for prognostic and therapeutic development.

Podium #8
PSA DOES NOT ADD TO A BASELINE PROSTATE CANCER RISK ASSESSMENT INCLUDING GENETIC RISK
Michael Liss¹, Karim Kader¹, Greg Trottier², Jianfeng Xu³, Seong-Tae Kim³, Jielin Sun³, Lilly Zheng³, Karin Chadwick², Gina Lockwood⁴ and Neil Fleshner³
¹UCSD, San Diego, CA.; ²University Health Network, Toronto, Canada; ³Wake Forest, Winston-Salem, NC.; ⁴Canadian Partnership Against Cancer, Toronto, Canada
(Presented by: Michael Liss)

Introduction and Objective: PSA based PCa screening has not lead to a definitive reduction in PCa mortality in North America. This has led the United States Preventative Task Force to recommend against PSA screening. However, it is known that early intervention can reduce PCa specific mortality. Therefore, screening should not be discouraged but rather improved. One assessment tool, which can be easily accessed, and does not change through out a man’s life is his germ–line DNA. A germ–line DNA test incorporating 33 PCa associated single nucleotide polymorphisms (SNP’s), the prostate cancer genetic score (PGS), has been developed. Herein we describe the use of the PGS in context with other baseline characteristics and demonstrate the limited utility of adding PSA in predicting PCa at the time of for–cause prostate biopsy.
**Methods:** After IRB approval, Caucasian men undergoing for-cause, initial prostate biopsy at the University Health Network in Toronto, Canada had DNA purified from peripheral blood. A panel of 33 PCa risk-associated SNPs was selected from all PCa GWASs reported before December 2009 was genotyped using the Sequenom MassARRAY platform and used to generate the PGS. Logistic regression and area under the receiver operating characteristic curves (AUC) were used to compare the different models.

**Results:** Among 670 subjects, 347 (51.8%) had a negative biopsy and 323 (48.2%) had prostate cancer found on prostate biopsy. The PGS was highly associated with biopsy detectable PCa (OR 1.66, p=5.86E−05), exceeding the association seen with PSA (OR 1.33, p=0.01). AUC values for clinical variables including age, family history (FH), and digital rectal exam (DRE) were 0.56, 0.52, and 0.61, respectively. The AUC for the PGS was 0.59 exceeding that of PSA at 0.55. An examination of a predictive baseline model (Age, FH, DRE, and GS) had an AUC of 0.66 for overall and 0.71 for high-grade PCa (Gleason ≥ 7). Interestingly, PSA did not improve risk prediction when added to this 4 variable model with an AUC of 0.66 (p=0.86) for overall and 0.73 for high-grade PCa (p=0.15).

**Conclusions:** In a model of PCa risk including baseline characteristics (age, family history, digital rectal exam and the PGS), PSA does not add to risk prediction for overall or high-grade PCa at the time of for-cause prostate biopsy. The PGS may be beneficial as the score stays constant throughout a man’s lifetime and is not subject to the value change and poor specificity of PSA.

**Podium #9**

**A CELL CYCLE PROLIFERATION SIGNATURE PREDICTS PROGRESSION AND OUTCOME IN BLADDER CANCER**

Garrett Dancik¹, Shandra Wilson² and Dan Theodorescu²

¹University of Colorado Comprehensive Cancer Center; ²University of Colorado Hospital Surgery Department

(Presented by: Shandra Wilson)

An important aspect of personalized medicine involves the identification of high risk patients likely to benefit from neoadjuvant or adjuvant therapy. In the case of bladder cancer, this entails identifying the 20−30% of patients with non−muscle invasive (NMI) tumors that will progress to muscle−invasive (MI) disease, and the approximately 50% of patients diagnosed with MI tumors who do not survive past 5 years. In breast cancer, independently derived prognostic gene signatures are enriched with cell cycle proliferation (CCP) genes. Recently, a CCP score obtained from the average expression level of 31 genes was found to predict recurrence free and disease specific survival (DSS) in prostate cancer. Here, we assess the prognostic value of the CCP score in 8 publicly available and heterogeneous microarray datasets (N = 654), with samples obtained from both cystectomy and transurethral resection of the bladder (TURBT) and profiled on 7 microarray platforms.

Without optimizing the CCP signature for bladder cancer, we found the CCP score to be significantly higher in MI compared to NMI tumors in 3/4 cystectomy datasets (P < 0.05), with AUC ranging from 0.62 to 0.84, and in 2/4 TURBT datasets (P < 0.05) with AUC ranging from 0.60 to 0.75. CCP score was significantly higher in high grade tumors compared to low grade tumors in 3/4 cystectomy datasets (P < 0.05), with AUC ranging from 0.63 to 0.88, and in all 5 TURBT datasets (P < 0.05), with AUC ranging from 0.76 to 0.91. Most notably, although nodal staging was the most consistent predictor of DSS in cystectomy datasets (P < 0.05), CCP score was the only clinical variable marginally predictive of DSS (P < 0.10) in multiple cystectomy datasets when only preoperative variables were considered. In TURBT datasets, CCP score was the only variable predictive of DSS (P < 0.05) in multiple datasets. CCP score was also predictive of NMI to MI progression in low grade tumors (AUC = 0.73, P = 0.020). Finally, a gene set enrichment analysis in genes predictive of progression found that the only consistently enriched pathways or biological processes were those associated with the cell cycle. Altogether, these results indicate that the prognostic value of gene signatures in bladder cancer depend on genes that reflect CCP and that optimization of the CCP signature may yield clinically relevant prognostic markers in bladder cancer.
NEOADJUVANT CHEMOTHERAPY IN MUSCLE-INVASIVE BLADDER CANCER: TRENDS IN UTILIZATION AND IMPLICATIONS FOR PATHOLOGIC STAGING IN THE NATIONAL CANCER DATABASE (NCDB)
Sanjay Patel, C.J. Stimson, Harras B. Zaid, Daniel A. Barocas, Matthew J. Resnick and Sam S. Chang
Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN
(Presented by: Sanjay Patel)

Introduction: Variations in use of neoadjuvant chemotherapy (NAC) exist despite Level I evidence demonstrating a survival advantage in patients with locally advanced bladder cancer (BC). We evaluated variations in NAC use among patients with ≥ clinical T2 (cT2) BC and determined changes in staging associated with therapy.

Methods: We analyzed all patients diagnosed with ≥ cT2 bladder diagnosed between 2006 and 2010 from the NCDB registry. We included patients with histology–proven urothelial cell carcinoma clinical stage ≥ cT2/cN0/cM0, who underwent RC either with or without NAC. Clinical and demographic covariates were examined including age, sex, race, Charlson Comorbidity Index (CCI), insurance status, distance from hospital, geographic location, median income, education, metro/urban/rural classification, year of diagnosis, tumor grade, and cT stage.

Results: A total of 5692 met our inclusion criteria, of which 962/5692 (16.9%) received NAC. NAC use increased from 10.2% in 2006 to 20.9% in 2010. In patients receiving NAC, the mean time from diagnosis to RC was 3.8 months, compared to 3.3 months in those who underwent immediate RC. Univariate analysis demonstrated statistically significant associations between age, CCI, insurance status, distance from hospital, geographic location, median income, year of diagnosis, tumor grade, cT stage and NAC use (all p<0.01). Controlling for clinical factors that influence use of NAC, variables that influence access to care, such as patient income, geographic region and distance from the hospital, remained significantly associated with use of NAC, while overall use increased over time (Table 1). Downstaging occurred more commonly in NAC patients than in those undergoing immediate RC (31.1% vs. 7.6%, p<0.01) with similar rates of upstaging at RC (30.9% vs. 44.6%, p<0.01).

Conclusion: While the use of NAC for ≥ cT2/cN0/cM0 BC is increasing over time and appears to be appropriately influenced by patient and disease characteristics, there appears to be significant variation based on access to care. As predicted by clinical trial results, patients receiving NAC are more likely to be downstaged and less likely to be upstaged than those undergoing immediate RC.
Podium #11
CORRELATION OF MULTIPARAMETRIC PROSTATE MRI SUSPICIOUS LESIONS WITH MRI/ULTRASOUND FUSION GUIDED BIOPSY FINDINGS
Soroush Rais-Bahrami¹, M. Minhaj Siddiqui¹, Lambros Stamatakis¹, Srinivas Vourganti¹, Jeffrey Nix¹, Anthony Hoang¹, Annerleim Walton-Diaz¹, Jennifer Logan¹, Michael Weintraub¹, Todd Sterling¹, Baris Turkbey², Peter Choyke², Bradford Wood³ and Peter Pinto¹
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, MD; ²Molecular Imaging Program, National Institutes of Health, Bethesda, MD; ³Center for Interventional Oncology, National Institutes of Health, Bethesda, MD (Presented by: Soroush Rais-Bahrami)

Introduction:
MRI has been proposed as an imaging modality to improve prostate cancer detection. An MRI/ultrasound (MR/US) fusion TRUS biopsy platform has been studied to target and map biopsies of foci with cancer suspicion based on multiparametric MRI (MP−MRI). Herein, we aim to determine the utility of MP−MRI in predicting cancer presence and grade in targeted biopsies.

Methods: 671 cases of MP−MRI followed by MR/US fusion guided biopsies at our institution were prospectively evaluated in 584 patients (some with repeat biopsies on active surveillance). Following MP−MRI, lesions were identified and scored as low, moderate, or high suspicion for prostate cancer. An MR/US fusion TRUS biopsy platform was used to identify and biopsy lesions deemed suspicious for prostate cancer in addition to conducting a systematic 12−core extended sextant TRUS biopsy. Correlations were assessed between the highest assigned MP−MRI cancer suspicion and biopsy presence of cancer and biopsy Gleason grade, per patient for the first biopsy session in cases of repeat MR/US fusion guided biopsies. Also, a separate analysis was conducted to assess the diagnostic yield of cancer presence and correlation with biopsy Gleason grade on an individual lesion basis.

Results: Analysis of 584 patients revealed a significant correlation between the highest assigned MP−MRI cancer suspicion score and the presence of prostate cancer (p<0.0001) and biopsy Gleason grade (p<0.0001). On multivariable analysis using a logistic regression model controlling for age, PSA, and prostate volume, MP−MRI cancer suspicion score was an independent prognosticator of biopsy Gleason score (p=0.0001). Parallel analysis of 1802 lesions revealed similar significant correlations between the assigned MP−MRI cancer suspicion score per lesion and the presence of cancer (p<0.0001) and biopsy Gleason score of that lesion (p<0.0001).

Discussion: MP−MRI evaluation of the prostate allows for identification of lesions suspicious for cancer with a high correlation with the presence of prostate cancer on targeted biopsies obtained using the MR/US fusion platform. Furthermore, levels of suspicion as scored based on pre−biopsy MP−MRI were highly correlated with biopsy Gleason grade and independently predicted higher grade disease.

Podium #12
CLINICAL ROLE OF THE SWI/SNF COMPLEX GENE PBRM1 IN CLEAR CELL RENAL CELL CARCINOMA
Carlos Morales¹, Ghada Kurban¹, Stanley Yap¹, Donco Matevski¹, Andrew Evans² and Michael A.S. Jewett¹
¹Division of Urology, Department of Surgical Oncology, Princess Margaret Hospital, University Health Network, Toronto, Canada; ²Department of Pathology Oncology, Princess Margaret Hospital, University Health Network, Toronto, Canada (Presented by: Carlos Morales)

Introduction and Objectives: Recently, the SWI/SNF chromatin remodeling complex gene PBRM1 was identified as the second major cancer tumor suppressor gene in clear cell Renal Cell Carcinoma (ccRCC), with mutations in 41% of cases. We have conducted a pilot study to assess the relationship of PBRM1 mutation on various clinicopathological parameters and outcome in ccRCC patients at the University Health Network.
Materials and Methods: Our cohort consisted of 40 patients who underwent surgery for ccRCC between 2005 and 2008, and who had consented to have tumor tissue frozen for future study. DNA was extracted from tumor and normal tissue and PCR performed using barcoded PBRM1 primers that covered the whole gene. 40 samples were pooled and processed with the Illumina Miseq sequencer. Mutations detected were confirmed by conventional sequencing. Associations between mutation and clinicopathological variables were tested using Chi-square and Student’s t tests. The association between PBRM1 mutation and time-to-progression and time-to-death was tested using the log-rank test; the progression-free survival and overall survival was estimated using the Kaplan Meier method.

Results: PBRM1 mutations, including frameshift insertions and deletions and non-synonymous single nucleotide variations were seen in 20 (50%) of patients. Patients with the mutations were more likely to have a smaller tumor size as well as lower Fuhrman grade. Also, the TNM stage distribution after treatment showed that patients with the mutation were more likely to have lower pT stage as well as localized disease. Seven (35%) of the patients without mutation and two (10%) of the patients with mutation had recurred or progressed by last visit. The 4-year recurrence/progression free survival was 65% vs 90% among patients without and with the mutation, respectively (log-rank p=0.041). Six (30%) of the patients without mutation and 1 (5%) of the patients with mutation died. The 4-year overall survival was 70% vs 95%, among patients without and with the mutation, respectively (log-rank p=0.022).

Conclusion: ccRCC patients with PBRM1 mutations may have a better natural history. Further studies with bigger samples are needed in order to confirm these findings.
POSTER SESSION I
Thursday, November 29, 2012
4:00 p.m. – 6:00 p.m.
Poster Walks
See page 51 for full abstracts

Poster #1
DETECTION AND CHARACTERIZATION OF BLADDER CANCER CELLS IN URINE USING A NOVEL MEMBRANE MICRO-FILTRATION DEVICE
Anirban Mitra¹, Marc Birkhahn¹, Anthony Williams², Nancy Barr¹, Eila Skinner³, John Stein¹, Donald Skinner¹, Yu-Chong Tai⁴, Ram Datar² and Richard Cote²
¹University of Southern California, Los Angeles, CA; ²University of Miami, Miami, FL; ³Stanford University, Stanford, CA; ⁴California Institute of Technology, Pasadena, CA
(Presented by: Anirban Mitra)

Poster #2
ARTIFICIAL INTELLIGENCE AND MACHINE-LEARNING ALGORITHMS WITH GENE EXPRESSION PROFILING: A POTENTIAL APPROACH TO PREDICTING SUPERFICIAL BLADDER CANCER RECURRENCE AT INITIAL PRESENTATION
Georg Bartsch, Anirban Mitra¹, Sheetal Mitra¹, Aprit Almal², Kenneth Steven³, David Fry², Peter Lenehan², William Worzel² and Richard Cote⁴
¹University of Southern California, Los Angeles, CA; ²Everist Genomics, Ann Arbor, MI; ³University of Copenhagen, Copenhagen, Denmark; ⁴University of Miami, Miami, FL
(Presented by: Georg Bartsch)

Poster #3
A DIAGNOSTIC STRATEGY BASED ON ASSESSMENTS OF THE TUMOR IMMUNE MICROENVIRONMENT IDENTIFIES BCG RESPONSIVE BLADDER CANCER PATIENTS PRIOR TO THERAPY
Rafael Nunez-Nateras, Erin Ferrigni, Cheryl Protheroe, Melissa Stanton, James Lee and Erik Castle
Mayo Clinic, Phoenix AZ
(Presented by: Rafael Nunez-Nateras)

Poster #4
SMOKING AND SMOKING CESSATION IMPACT THE OUTCOMES OF PRIMARY NON-MUSCLE-INVASIVE BLADDER CANCER
Michael Rink¹, Evanguelos Xylinas¹, Helena Furberg², Marko Babjuk³, Emily C. Zabor², Yair Lotan⁴, Armin Pycha⁵, Pierre I. Karakiewicz⁶, Giacomo Novara⁷, Brian D. Robinson¹, Douglas S. Scherr¹ and Shahrokh F. Shariat¹
¹Weill Cornell Medical College, New York, NY, USA; ²Memorial Sloan Kettering Cancer Center, New York, NY, USA; ³Hospital Motol, 2nd Faculty of Medicine, Charles University, Prague, Czech Republic; ⁴University of Texas Southwestern Medical Center, Dallas, TX, USA; ⁵General Hospital of Bolzano, Bolzano, Italy; ⁶University of Montreal, Montreal, QC, Canada; ⁷University of Padua, Padua, Italy
(Presented by: Evanguelos Xylinas)
Poster #5
INCIDENCE OF BLADDER CANCER AS A SECONDARY MALIGNANCY IN PATIENTS TREATED WITH RADIATION FOR UTERINE CANCER
Janet Baack Kukreja, Emelian Scosyrev, Edward Messing and Guan Wu
University of Rochester Medical Center Department of Urology, Rochester, NY
(Presented by: Janet Baack Kukreja)

Poster #6
TRANS-PACIFIC VARIATION IN OUTCOMES FOR MEN TREATED WITH PRIMARY ANDROGEN DEPRIVATION THERAPY FOR LOCALIZED PROSTATE CANCER
Matthew Cooperberg¹, Shiro Hinotsu², Mikio Namiki³, Peter Carroll¹ and Hideyuki Akaza⁴
¹UCSF, San Francisco, CA; ²Kyoto University, Japan; ³Kanazawa University, Japan; ⁴University of Tokyo, Japan
(Presented by: Matthew Cooperberg)

Poster #7
THE ASSOCIATION BETWEEN PIOGLITAZONE THERAPY AND BLADDER CANCER: A META-ANALYSIS OF EPIDEMIOLOGIC EVIDENCE
Alexei Shimanovsky, Juliet Appiah and Basile Njei
University of Connecticut, Farmington, CT, USA
(Presented by: Alexei Shimanovsky)

Poster #8
IDENTIFICATION OF BIOMARKERS FOR DETECTING BLADDER CANCER IN URINE USING A METABOLOMIC DISCOVERY APPROACH
Bruce Neri¹, Bryan Wittmann¹, Zhen Li¹, Aphrihl Dennis², Yair Lotan² and Robert Wolfert¹
¹Metabolon Inc. Durham NC; ²UTSW Medical Center Dallas, TX
(Presented by: Bruce Neri)

Poster #9
EXTERNAL VALIDATION OF A DNA METHYLATION URINE MARKER FOR UROTHELIAL CARCINOMA
Michael Abern and Brant Inman
Duke University School of Medicine, Durham NC
(Presented by: Michael Abern)

Poster #10
IMPACT OF SMOKING AND SMOKING CESSATION ON OUTCOMES IN BLADDER CANCER PATIENTS TREATED WITH RADICAL CYSTECTOMY
Evanguelos Xylinas¹, Michael Rink¹, Emily Zabor², Helena Furberg², Behfar Ehdai¹, Giacomo Novara³, Marko Babjuk¹, Armin Pycha¹, Yair Lotan², Maxine Sun⁷, Quoc-Dien Trinh⁷, Felix Chun⁸, Richard Lee¹, Pierre Karakiewicz⁷, Brian Robinson¹, Douglas Scherr¹ and Shahrokh Shariat¹
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(Presented by: Evanguelos Xylinas)
Poster #11
IDENTIFICATION OF RECURRENT, TARGETABLE GENETIC ALTERATIONS IN HIGH GRADE, INVASIVE BLADDER UROTHELIAL CARCINOMA
Philip Kim, John Sfakianos, Gopa Iyer, Sasinya Scott, Hikmat Al-Ahmadie, Jonathan Rosenberg, Dean Bajorin, Bernard Bochner, Michael Berger and David Solit
Memorial Sloan-Kettering Cancer Center, New York, NY
(Presented by: Philip Kim)

Poster #12
REPRODUCTIVE ORGAN INVOLVEMENT IN FEMALE PATIENTS UNDERGOING RADICAL CYSTECTOMY FOR UROTHELIAL BLADDER CANCER
Hooman Djaladat¹, H. Maxim Bruins², Gus Miranda², Jie Cai², Eila Skinner² and Siamak Daneshmand²
¹USC Institute of Urology, Los Angeles, CA; ²USC, Los Angeles, CA
(Presented by: Hooman Djaladat)

Poster #13
ADJUVANT CHEMOTHERAPY IS ASSOCIATED WITH DECREASED MORTALITY FOLLOWING RADICAL CYSTECTOMY FOR PATIENTS WITH LOCALLY ADVANCED BLADDER CANCER
Daniel Yelfimov¹, Igor Frank¹, Stephen Boorjian¹, Prabin Thapa², Cheville John³ and Tollefson Matthew¹
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(Presented by: Daniel Yelfimov)

Poster #14
INCIDENCE OF UROTHELIAL CELL CARCINOMAS IN PATIENTS WITH KNOWN GERMLINE MUTATIONS FOR LYNCH SYNDROME
Timothy Donahue, Vanessa Hui, Tullika Garg, Behfar Ehdaie, Zsofia Stadler, Jose Guillem and Bernard Bochner
Memorial Sloan-Kettering Cancer Center; New York NY
(Presented by: Timothy Donahue)

Poster #15
SURVIVAL AFTER RADICAL CYSTECTOMY (RC) FOR NON-MUSCLE-INVASIVE BLADDER CANCER (NMIBC): DOES CARCINOMA-IN-SITU (CIS) ON FINAL PATHOLOGY PREDICT POOR OUTCOME?
Ahmed Abd El Latif¹, Joseph Klink², Ranko Miocinovic² and Ryan Berglund²
¹Beni Suef University, Beni Suef, Egypt/Cleveland Clinic, Cleveland Ohio; ²Cleveland Clinic, Cleveland, Ohio
(Presented by: Ahmed Abd El Latif)

Poster #16
PATIENT SURVIVAL COMPARISON BETWEEN CONVENTIONAL VS. OTHER VARIANT SUBTYPES OF BLADDER UROTHELIAL CARCINOMA
Ahmed Abd El Latif¹, Ranko Miocinovic², Adrian Hernandez² and Ryan Berglund²
¹Beni Suef university, Beni Suef, Egypt/Cleveland Clinic, Cleveland Ohio; ²Cleveland Clinic, Cleveland, Ohio
(Presented by: Ahmed Abd El Latif)
Poster #17
TRENDS IN URINARY DIVERSION FOLLOWING RADICAL CYSTECTOMY: LONG-TERM EXPERIENCE AT THE UNIVERSITY OF SOUTHERN CALIFORNIA
Anirban Mitra, Anne Schuckman, Eila Skinner, Gus Miranda and Siamak Daneshmand
University of Southern California, Los Angeles, CA
(Presented by: Anirban Mitra)

Poster #18
PRE-CYSTECTOMY SERUM LEVELS OF CA19-9, CA125, AND CEA: CORRELATION WITH PATHOLOGIC STAGE AND ONCOLOGICAL OUTCOME IN UROTHELIAL CARCINOMA OF BLADDER
Hamed Ahmadi¹, Hooman Djaladat¹, Jie Cai¹, Gus Miranda¹, Eila Skinner² and Siamak Daneshmand¹
¹USC Institute of Urology, USC/Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, California; ²Department of Urology, Stanford University, Stanford, California
(Presented by: Hamed Ahmadi)

Poster #19
NUTRITIONAL PREDICTORS FOR COMPLICATONS FOLLOWING RADICAL CYSTECTOMY: AN ANALYSIS OF THE AMERICAN COLLEGE OF SURGEONS NATIONAL QUALITY IMPROVEMENT PROGRAM (ACS-NSQIP)
Jed Ferguson, David Johnson, Will Kirby, Jonathan Matthews, Matthew Nielsen, Raj Pruthi, Angela Smith, Eric Wallen and Michael Woods
Chapel Hill, NC
(Presented by: Jed Ferguson)

Poster #20
KARNOFSKY PERFORMANCE STATUS PREDICTS CANCER SPECIFIC OUTCOMES FOLLOWING RADICAL CYSTECTOMY IN PATIENTS WITH BLADDER CANCER
Joshua Logan, Patrick Evers and Arnold Chin
Institute of Urologic Oncology Department of Urology David Geffen School of Medicine at UCLA
(Presented by: Joshua Logan)

Poster #21
EVALUATING THE EFFECTIVENESS OF A SMOKING WARNING LABEL ON RAISING PATIENT AWARENESS OF SMOKING AND BLADDER CANCER
Benjamin Johnson¹, Robert Abouassaly², Daniela Ghiculete¹ and Robert Stewart¹
¹St. Michael's Hospital, University of Toronto, Toronto, Ontario; ²University Hospitals, Case Medical Center, Cleveland, Ohio
(Presented by: Benjamin Johnson)

Poster #22
CHEMOPROPHYLAXIS RECOMMENDATIONS AFTER RADICAL CYSTECTOMY: AN EVALUATION OF THROMBOEMBOLIC EVENTS
Katie Murray, Ernesto Lopez-Corona¹, William Parker², Moben Mirza² and Jeffrey Holzbeierlein²
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Poster Session I – Summary

(Presented by: Katie Murray)
Poster #23
MICROPAPILLARY BLADDER CANCER- STAGE AT PRESENTATION AND TREATMENT OUTCOME- ANALYSIS OF 121 PATIENTS FROM A CANCER DATABASE.
Joshua Holyoak¹, Zachary Panfili², Ravi P Kiran² and Naveen Pokala¹
¹University of Missouri, Columbia, MO; ²Cleveland Clinic, Cleveland, OH
(Presented by: Jerry Trulson)

Poster #24
NEUTROPHIL LYMPHOCYTE RATIO (NLR) IS PREDICTIVE OF UPSTAGING AT THE TIME OF RADICAL CYSTECTOMY FOR PATIENTS WITH UROTHELIAL CARCINOMA OF THE BLADDER
Tracy Downs, Aaron Potretzke, Luke Hillman, E Jason Abel and David Jarrard
University of Wisconsin, Madison, WI
(Presented by: Tracy Downs)

Poster #25
HOSPITAL VOLUME IS ASSOCIATED WITH 30- AND 90-DAY MORTALITY AFTER CYSTECTOMY: AN ANALYSIS OF THE NATIONAL CANCER DATABASE
Matthew Nielsen¹, Kathy Mallin², Mark Weaver¹, Bryan Palis³, Andrew Stewart³, David Winchester³ and Matthew Milowsky¹
¹UNC Chapel Hill, NC; ²American College of Surgeons, Chicago, IL
(Presented by: Matthew Nielsen)

Poster #26
DOES TUMOR LOCATION AFFECT THE PATTERN OF LYMPH NODE METASTASIS AND ONCOLOGICAL OUTCOME IN BLADDER CANCER?
Hamed Ahmadi, Gus Miranda, Jie Cai and Siamak Daneshmand
USC Institute of Urology, USC/Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, California
(Presented by: Hamed Ahmadi)

Poster #27
SURVIVAL IMPACT OF POSTOPERATIVE EXPENDITURES BY HIGH VOLUME SURGEONS FOLLOWING DEFINITIVE SURGERY FOR BLADDER CANCER
Gurdarshan Sandhu¹, Kenneth Nepple², Robert Grubb III¹ and Seth Strope¹
¹Washington University School of Medicine, St. Louis, Missouri; ²University of Iowa Carver College of Medicine, Iowa City, Iowa
(Presented by: Gurdarshan Sandhu)

Poster #28
COMPLICATIONS ASSOCIATED WITH OBESITY IN RADICAL CYSTECTOMY
Joshua Cohn, Michael Large, Kyle Kiriluk, Kyle Richards, Ali-Aria Razmaria, Norm Smith and Gary Steinberg
University of Chicago Hospitals, Chicago, IL
(Presented by: Joshua Cohn)

Poster #29
‘DYSPLASIA’ ON BLADDER BIOPSY: WHAT DOES IT MEAN AND HOW DOES IT FIT IN WITH THE DIAGNOSIS OF UROTHELIAL CARCINOMA IN SITU (CIS)?
Jeremy Miller
HealthTronics Laboratory Solutions
(Presented by: Jeremy Miller)
Poster #30
COMPARATIVE PERFORMANCE OF COMORBIDITY INDICES FOR ESTIMATING PERIOPERATIVE COMPLICATIONS AND ALL-CAUSE MORTALITY FOLLOWING RADICAL CYSTECTOMY
Alonso Carrasco, Igor Frank, Simon Kim, John Cheville, R. Houston Thompson and Stephen Boorjian
Mayo Clinic, Rochester, MN
(Presented by: Alonso Carrasco)

Poster #31
WOMEN ARE LESS LIKELY TO RECEIVE EVIDENCE-BASED PROCESSES OF CARE FOR THE TREATMENT OF BLADDER CANCER AS COMPARED TO MEN
Christopher Anderson¹, Joann Alvarez², Tatsuki Koyama³, David Penson⁴ and Daniel Barocas⁵
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(Presented by: Christopher Anderson)

Poster #32
ALTERATIONS IN PTEN, HIF AND RAPTOR CORRELATE WITH PATHOLOGICAL FEATURES AND ONCOLOGICAL OUTCOMES OF PATIENTS WITH PAPILLARY RENAL CELL CARCINOMA
Ramy Youssef, Oussama Darwish, Payal Kapur, Aditya Bagrodia, Michael Belsante, Bishoy Gayed, Feras Alhalabi, Yair Lotan and Vitaly Margulis
UT Southwestern Medical Center, Dallas, TX
(Presented by: Oussama Darwish)

Poster #33
IMPACT OF RENAL SURGERY ON DEVELOPMENT OF SURGICAL STAGE IV CHRONIC KIDNEY DISEASE AND OVERALL MORTALITY IN PATIENTS WITH STAGE I RENAL CELL CARCINOMA AND WITHOUT PREOPERATIVE RENAL INSUFFICIENCY
Ithaar Derweesh¹, Ryan Kopp¹, Michael Liss¹, Aditya Bagrodia², Reza Mehrzad³, Kerrin Palazzi¹, Anthony Patterson³ and Jim Wan³
¹University of California San Diego School of Medicine, La Jolla, CA; ²University of Texas Southwestern Medical Center, Dallas, TX; ³University of Tennessee Health Science Center, Memphis, TN
(Presented by: Ithaar Derweesh)

Poster #34
HISTOLOGIC DISTRIBUTION OF RCC IN YOUNG PATIENTS IS DIFFERENT FROM OLDER PATIENTS: RESULTS FROM THE SEER DATABASE
Michael Daugherty, Stephen Blakely, Oleg Shapiro and Gennady Bratslavsky
SUNY Upstate Medical University, Syracuse NY
(Presented by: Michael Daugherty)

Poster #35
HAS THE AUA GUIDELINE FOR MANAGEMENT OF THE CLINICAL STAGE 1 RENAL MASS IMPACTED RATE OF PARTIAL NEPHRECTOMY? CALIFORNIA AND NATIONAL TRENDS
Michael Liss, Kerrin Palazzi, Ryan Kopp, Ramzi Jabaji and Ithaar Derweesh
University of California San Diego School of Medicine, La Jolla, CA
ADULT XP11 TRANSLOCATION ASSOCIATED RENAL CELL CARCINOMA: TIME TO RECOGNIZE
Zachary Klaassen, Alexander Tatem, Jason O. Burnette, Jeffrey M. Donohoe and Martha K. Terris
Georgia Health Sciences University, Augusta, GA

PRE-OPERATIVE PULMONARY EMBOLISM IS NOT ASSOCIATED WITH WORSE OUTCOMES IN RCC PATIENTS AFTER NEPHRECTOMY WITH THROMBECTOMY; A CONTEMPORARY MULTICENTER ANALYSIS
E Jason Abel¹, Christopher G. Wood², Aditya Bagrodia³, Nathan Eickstaedt¹, Patrick A. Kenney², Justin E. Fang² and Vitaly Margulis³
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CLAVIEN CLASSIFICATION SYSTEM FOLLOWING NEPHRECTOMY AND INFERIOR VENA CAVA THROMBECTOMY WITH VASCULAR BYPASS FOR RENAL CELL CARCINOMA
Timothy Kim¹, Ross Simon², Tony Kurian², Einar Sverrisson¹, Wade J. Sexton¹ and Philippe E. Spiess¹
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AN IMMORTALIZED HUMAN TUMOR CELL LINE DERIVED FROM HEREDITARY PAPILLARY RENAL CELL CARCINOMA TYPE I
Young H. Lee, Fabiola Cecchi, Robert Worrell, Cathy Vocke, YouFeng Yang, Adam R. Metwalli, Peter A. Pinto, W. Marston Linehan and Donald P. Bottaro
Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, MD

DEFINING EARLY-ONSET KIDNEY CANCER: IMPLICATIONS FOR GENETIC COUNSELING
Brian Shuch¹, Srinivas Vourganti², Chris Ricketts², Lindsay Middleton² and W Marston Linehan²
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COMPARSED TO RADICAL NEPHRECTOMY, NEPHRON-SAVING SURGERY OFFERS A LONG-TERM SURVIVAL ADVANTAGE IN PATIENTS BETWEEN THE AGES OF 20 AND 44 WITH RCC ≤4CM: AN ANALYSIS OF THE SEER DATABASE
Michael Daugherty and Gennady Bratslavsky
SUNY Upstate Medical University, Syracuse NY

EXPRESSION PATTERNS OF SEVEN MOLECULAR MARKERS IN CHROMOPHOBIE RENAL CELL CARCINOMA WITH DISTINCT EXPRESSION CHANGES IDENTIFIED IN HIGH-GRADE LESIONS
Joshua Logan, David Finley, Nils Kroeger, Robin Jeffries, Abdelmonem Afifi, Jonathan Said, Fairooz Kabbinavar, Arie Beldegrun and Allan Pantuck
Institute of Urologic Oncology Department of Urology David Geffen School of Medicine at UCLA
Poster Session I – Summary

Poster #43
*TRIFECTA* IN PARTIAL NEPHRECTOMY
Andrew Hung, Sumeet Syan and Inderbir Gill
USC Institute of Urology, Los Angeles, CA
(Presented by: Sumeet Syan)

Poster #44
NEPHROMETRY SCORES AND RENAL MASS IMAGING CHARACTERISTICS CORRELATE WITH THE FINAL PATHOLOGY OF SMALL RENAL MASSES
Raed Azhar¹, Andre Luis De castro Abreu², Mehrdad Alemozaffar², Anthony T. Corcoran³, Isuru Jayaratna², Eric Yi-Hsiu Huang², Jie Cai², Monish Aron², Mihir Desai², Vinay A. Duddalwar⁴, Robert G. Uzzo³ and Inderbir S. Gill²
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(Presented by: Raed Azhar)

Poster #45
DOES TIMING OF TARGETED THERAPY FOR METASTATIC RENAL CELL CARCINOMA IMPACT TREATMENT TOXICITY AND SURGICAL COMPLICATIONS? A COMPARATIVE ANALYSIS OF PRIMARY AND ADJUVANT APPROACHES
Nishant Patel¹, Kerrin Palazzi¹, Reza Mehrazin², Michael Liss¹, Hossein Mirheydar¹, Ryan Kopp¹, Ramzi Jabaji¹, Seth Cohen¹, Samuel Park¹, Anthony Patterson², Christopher Kane¹, Frederick Millard¹ and Ithaar Derweesh¹
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(Presented by: Nishant Patel)

Poster #46
NATIONAL TRENDS IN PARTIAL NEPHRECTOMY USE BEFORE AND AFTER THE ESTABLISHMENT OF AUA GUIDELINES
Marc A. Bjurlin¹, Dawn Walter¹, William C. Huang¹, James S. Wysock¹, Ganesh Sivarajan¹, Stacy Loeb¹, Samir S. Taneja¹ and Danil V. Makarov²
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(Presented by: Marc A. Bjurlin)

Poster #47
VARIANCE AND CHARACTERISTICS OF PERITUMORAL PSEUDOCAPSULE OF RENAL CELL CARCINOMA BASED ON HISTOLOGIC TUMOR SUBTYPE
Joshua Leese, Sean R. Williamson, David J. Grignon and Ronald S. Boris
Indiana University School of Medicine, Indianapolis, Indiana
(Presented by: Joshua Leese)

Poster #48
ASSOCIATION OF RISE IN C-REACTIVE PROTEIN WITH DE NOVO CHRONIC KIDNEY DISEASE AFTER PARTIAL NEPHRECTOMY
Seth Cohen¹, Michael Liss¹, Kerrin Palazzi¹, Ryan Kopp¹, Reza Mehrazin², Samuel Park¹, Wassim Bazzi¹, Anthony Patterson² and Ithaar Derweesh¹
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 ASSOCIATIONS BETWEEN BODY MASS INDEX, STAGE AND SURVIVAL AMONG A LARGE CLINICAL COHORT OF CLEAR CELL RENAL CELL CARCINOMA PATIENTS

A. Ari Hakimi, Helena Furberg¹, Emily C. Zabor¹, Brandon Fiegoli², Melanie Bernstein² and Paul Russo²

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PREEXISTING HYPERTENSION IS ASSOCIATED WITH ADVANCED TUMOR STAGE BUT IMPROVED CANCER SPECIFIC SURVIVAL IN CLEAR CELL RENAL CELL CARCINOMA

A. Ari Hakimi, Helena Furberg¹, Emily C. Zabor¹, Brandon Fiegoli² and Paul Russo²

¹Department of Epidemiology and Biostatistics, Memorial Sloan-Kettering Cancer Center, New York, NY; ²Department of Surgery Urology Service, Memorial Sloan-Kettering Cancer Center, New York, NY

CLINICAL PREDICTORS FOR THE DEVELOPMENT OF PULMONARY METASTASES AMONG RCC PATIENTS WITH INDETERMINATE PULMONARY NODULES

Patrick Kenney¹, Jose Karam¹, Ryan Levey², Graciela Nogueras-González¹, Suresh Matin¹, Pheroze Tamboli¹, Nizar Tannir¹ and Christopher Wood¹

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COMPARISON OF RENAL FUNCTIONAL OUTCOMES AFTER RADICAL NEPHRECTOMY AND PARTIAL NEPHRECTOMY FOR LARGE RENAL MASSES

Ryan Kopp¹, Reza Mehrazin², Kerrin Palazzi¹, Michael Liss¹, Ramzi Jabaji¹, Hossein Mirheydar¹, Seth Cohen¹, Anthony Patterson² and Ithaar Derweesh¹

¹University of California San Diego School of Medicine, La Jolla, CA; ²University of Tennessee Health Science Center, Memphis, TN

THE IMPACT OF NON-CLEAR CELL HISTOLOGY ON OUTCOME FOR PATIENT WITH RENAL CELL CARCINOMA AND VENOUS TUMOR THROMBUS

Dharam Kaushik¹, R. Houston Thompson¹, Manuel S. Eisenberg¹, Christine M. Lohse², John C. Cheville³, Bradley C. Leibovich¹ and Stephen A. Boorjian¹

¹Department of Urology, Mayo Clinic, Rochester, Minnesota; ²Health Services Research Biomedical Statistics and Informatics; ³Department of Anatomic Pathology

INCREASING RENAL NEPHROMETRY SCORE IS ASSOCIATED WITH POSTOPERATIVE RENAL FUNCTIONAL DECLINE AFTER PARTIAL NEPHRECTOMY

Reza Mehrazin¹, Kerrin Palazzi², Sean Stroup³, Ryan Kopp², Michael Santomauro³, Michael Liss², Seth Cohen², James Masterson³, Samuel Park², Anthony Patterson¹, James L’Esperance³ and Ithaar Derweesh⁰

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(Presented by: Reza Mehrazin)

Poster #55
INCIDENCE OF POSTEMBOLIZATION SYNDROME AFTER RENAL ANGIINFARCTION: A SINGLE INSTITUTION EXPERIENCE OVER 4 YEARS
Anup Vora, Keith Horton and Mohan Verghese
(Presented by: Anup Vora)

Poster #56
PD-0332991, AN INHIBITOR OF CYCLIN-DEPENDENT KINASE 4/6, DEMONSTRATES DIFFERENTIAL INHIBITION OF PROLIFERATION IN RCC AT NANOMOLAR CONCENTRATIONS AND MOLECULAR MARKERS PREDICT FOR SENSITIVITY
Joshua Logan¹, Nikayeh Mostofizadeh², Amrita Desai², Erika von Euw², Dylan Conkling², Veerauo Konkankit², Habib Hamidi², Mark Eckardt², Lee Anderson³, Hsiao-Wang Chen³, Charles Ginther³, Eileen Taschereau³, James Christensen³, Arie Beldegrun³, Dennis Slamon³ and Fairooz Kabbnavar²
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(Presented by: Joshua Logan)

Poster #57
LONG TERM SURVIVAL AFTER RESECTION OF PANCREATIC METASTASIS
Timothy Brown¹, Mohummad Siddiqui¹, Carlos Fernandez-Del Castillo² and Francis McGovern¹
¹Department of Urology, Massachusetts General Hospital, Boston, MA; ²Department of Surgery, Massachusetts General Hospital, Boston, MA
(Presented by: Timothy Brown)

Poster #58
RADICAL NEPHROURETERECTOMY FOR PATHOLOGIC T4 UPPER TRACT UROTHELIAL CANCER: CAN ONCOLOGIC OUTCOMES BE IMPROVED WITH MULTIMODALITY THERAPY?
Ramy Youssef¹, Yair Lotan¹, Arthur Sagalowsky¹, Oussama Darwish¹, Shahrokh Shariat², Christopher Wood³, Jay Raman⁴, Cord Langner⁵, Richard Zigeuner⁶, Marco Roscigno⁷, Francesco Montorsi⁸, Christian Bolenz⁹, Wassim Kassouf⁹ and Vitaly Margulis¹
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(Presented by: Ramy Youssef)

Poster #59
URINE NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN (UNGAL) AS A MARKER FOR ACUTE KIDNEY INJURY IN KIDNEY SURGERY PATIENTS
Preston Sprenkle¹, James Wren², Andrew Feifer³, Nicholas Power⁴ and Paul Russo⁵
¹Yale University School of Medicine, New Haven, CT; ²Indiana University, Indianapolis, Indiana; ³Carlo Fidani Peel Regional Cancer Center, Toronto, Canada; ⁴London Health Sciences Centre, Victoria, Canada; ⁵Memorial Sloan-Kettering Cancer Center, New York, NY
(Presented by: Preston Sprenkle)
Poster Session I — Summary

Poster #60
PREDICTION OF TRUE NODAL STATUS FOR PATIENTS WITH PATHOLOGIC LYMPH NODE-NEGATIVE UPPER TRACT UROTHELIAL CARCINOMA AT RADICAL NEPHROURETERECTOMY
Evangelos Xylinas¹, Michael Rink¹, Vitaly Margulis², Talia Faison¹, Luis Kluth¹, Giacomo Novara³, Jay Raman⁴, Yair Lotan², Alon Weizer⁴, Armin Pycha⁴, Douglas Scherr¹, Christian Seitz⁵, Quoc-Dien Trinh⁶, Pierre Karakiewicz⁷, Francesco Montorsi⁵, Marc Zerbib⁸, Mithat Gonen¹¹ and Shahrokh Shariat¹
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(Presented by: Evangelos Xylinas)

Poster #61
PRE-DIAGNOSTIC CIRCULATING SEX HORMONES ARE NOT ASSOCIATED WITH MORTALITY FOR MEN WITH PROSTATE CANCER
Boris Gershman¹, Irene Shui², Meir Stampfer³, Elizabeth Platz⁴, Peter Gann⁵, Howard Sesso⁶, Natalie Dupré⁷, Edward Giovannucci⁸ and Lorelei Mucci²
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(Presented by: Boris Gershman)

Poster #62
ACTIVE SURVEILLANCE: AN UPDATE FROM A LARGE CONTEMPORARY COHORT
Allison Glass, Sanoj Punnen, Janet Cowan, Nannette Perez, Katsuto Shinohara, Maxwell Meng, Kirsten Greene, Matthew Cooperberg and Peter Carroll
University of California San Francisco
(Presented by: Allison Glass)

Poster #63
A NATIONAL SURVEY OF RADIATION ONCOLOGISTS AND UROLOGISTS ON ACTIVE SURVEILLANCE FOR LOW-RISK PROSTATE CANCER
Simon Kim, R. Jeffrey Karnes, Bradley Leibovich, R. Houston Thompson, Stephen Boorjian and Jon Tilburt
Mayo Clinic, Rochester, MN
(Presented by: Simon Kim)
Poster #64
AUTOPHAGY IS A SURVIVAL MECHANISM MEDIATING RESISTANCE TO ANDROGEN RECEPTOR SIGNALING INHIBITORS IN CASTRATE RESISTANT PROSTATE CANCER CELLS
Hao Nguyen¹, Joy Yang¹, Allen Gao¹, Hsing-Jien Kung² and Christopher Evans³
¹UC Davis Medical Center, Department of Urology, Sacramento CA; ²UC Davis Medical Center, Department of Biochemistry, Sacramento CA; ³UC Davis Medical Center, Department of Urology, Comprehensive Cancer Center Sacramento CA
(Presented by: Hao Nguyen)

Poster #65
BASELINE PROSTATE INFLAMMATION IS ASSOCIATED WITH DECREASED RISK OF PROSTATE CANCER IN MEN UNDERGOING REPEAT PROSTATE BIOPSY: RESULTS FROM THE REDUCE STUDY
Daniel Moreira¹, J Curtis Nickel², Leah Gerber³, Roberto Muller⁴, Gerald Andriole⁵, Ramiro Castro-Santamaria⁶ and Stephen Freedland⁷
¹The Arthur Smith Institute for Urology, North Shore-LIJ Hofstra School of Medicine, New Hyde Park, NY, USA; ²Department of Urology, Queen’s University, Kingston, ON, Canada; ³Division of Urologic Surgery, Department of Surgery, Duke University School of Medicine, Durham, NC, USA; ⁴Division of Urologic Surgery, Department of Surgery, Washington University School of Medicine, St. Louis, MO, USA; ⁵GlaxoSmithKline Inc., Metabolic Pathways and Cardiovascular R&D Unit, King of Prussia, PA, USA
(Presented by: Daniel Moreira)

Poster #66
UNDERUTILIZATION OF LOCAL SALVAGE THERAPY AFTER PROSTATE CANCER RADIATION
Jaime Kwok¹, Tom Pickles², Henry Tran¹, Scott Tyldesley² and Peter C. Black¹
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(Presented by: Jaime Kwok)

Poster #67
REDUCTION IN HOSPITAL ADMISSION RATES DUE TO POST-PROSTATE BIOPSY INFECTIONS AFTER AUGMENTING STANDARD ANTIBIOTIC PROPHYLAXIS
Mehrad Adibi, Brad Hornberger, Ganesh Raj, Claus Roehrborn and Yair Lotan
University of Texas Southwestern Medical Center, Dallas, TX
(Presented by: Mehrad Adibi)

Poster #68
CHARACTERISTICS AND PREDICTORS OF PROSTATE NEEDLE BIOPSY COMPLIANCE IN A SCREENING STUDY
Marc A. Bjurlin¹, Stacy Loeb², Phillip Cooper³, Brian T. Helfand⁴, Qiaoyan Hu³ and William J. Catalona⁵
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(Presented by: Marc A. Bjurlin)

Poster #69
VERIFICATION OF TRADITIONAL EXTENDED SYSTEMATIC 12-CORE TRUS PROSTATE BIOPSY LOCATIONS USING ELECTROMAGNETIC TRACKING.
Srinivas Vourganti¹, Jennifer Logan¹, Soroush Rais-Bahrami², Lambros Stamatakis¹, M. Minhaj Siddiqui¹, Jeffrey Nix¹, Anthony Hoang¹, Michael Weintraub¹, Annerleim Walton-Diaz¹, Jochen Kreucker², Baris Turkbey³, Peter L. Choyke³, Bradford J. Wood² and Peter A. Pinto¹
¹NIH/NCI/UOB, Bethesda, MD; ²NIH/Center for Interventional Oncology, Bethesda, MD; ³NIH/Molecular Imaging Program, Bethesda, MD
Poster Session I – Summary

(Presented by: Srinivas Vourganti)

Poster #70
DECREASED HOSPITAL ADMISSIONS AFTER GENTAMICIN AND CEFTRIAXONE PROSTATE BIOPSY PROPHYLAXIS
Sarah A Mitchell¹, Stacy Loeb², Pablo Torre² and Samir S Taneja²
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(Presented by: Sarah A Mitchell)

Poster #71
DOES AGGRESSIVE DISEASE IN A FAMILY PREDICT HIGHER-RISK PROSTATE CANCER AMONG SUBSEQUENT RELATIVES?
Marc A. Bjurlin¹, Stacy Loeb², Brian T. Helfand³, Phillip Cooper4, Qiaoyan Hu4 and William J. Catalona4
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(Presented by: Marc A. Bjurlin)

Poster #72
PRE-RADIOTHERAPY PSA IS PREDICTIVE OF BIOCHEMICAL PROGRESSION FREE SURVIVAL FOLLOWING POST-PROSTATECTOMY SALVAGE RADIOTHERAPY
Maria Carmen Mir, Monica Shukla, Andrew Stephenson, Chandana Reddy, Kevin Stephans, Eric Klein and Rahul Tendulkar
Cleveland Clinic, Cleveland, OH
(Presented by: Maria Carmen Mir)

Poster #73
IMPACT OF ANDROGEN DEPRIVATION THERAPY (ADT) ON MENTAL AND EMOTIONAL WELL-BEING IN MEN WITH PROSTATE CANCER: ANALYSIS FROM THE CAPSURE REGISTRY
Clint Cary¹, Janet Cowan¹, Nirmish Singla², Peter Carroll¹ and Matthew Cooperberg¹
¹University of California San Francisco, San Francisco CA; ²University of Michigan Medical School, Ann Arbor MI
(Presented by: Clint Cary)

Poster #74
LONG-TERM OUTCOMES OF ACTIVE SURVEILLANCE OF PROSTATE CANCER; 10 YEARS LATER
David Buethe, Christopher Russell, Binglin Yue, Hui-Yi Lin and Julio Pow-Sang
H. Lee Moffitt Cancer Center and Research Institute
(Presented by: David Buethe)

Poster #75
SIGNIFICANT DIFFERENCES OF ERG ONCOPROTEIN EXPRESSION IN HIGH GRADE PROSTATE CANCER IN AFRICAN AMERICAN AND CAUCASIAN AMERICAN PATIENTS
James Farrell¹, Denise Young², Yongmei Chen², Jennifer Cullen², Gyorgy Petrovics², Albert Dobi³, David McLeod¹,², Shiv Srivastava² and Isabell Sesterhenn³
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(Presented by: James Farrell)
Poster Session I – Summary

Poster #76
IMPACT OF MR-US FUSION TARGETED CONFIRMATORY BIOPSY ON PATIENT SELECTION FOR ACTIVE SURVEILLANCE
Geoffrey Sonn¹, Edward Chang¹, Shyam Natarajan², Frederick Dorey¹, Daniel Margolis³, Jiaoti Huang³, Patricia Lieu¹, Malu Macairan¹ and Leonard Marks¹
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(Presented by: Geoffrey Sonn)

Poster #77
MODIFIED ORGAN RETRIEVAL FOR EXAMINATION (MORE) DURING ROBOT-ASSISTED RADICAL PROSTATECTOMY: A NOVEL TECHNIQUE FOR REDUCING THE POSITIVE SURGICAL MARGIN RATE
Wooju Jeong, Khurshid R. Ghani, Akshay Sood, Craig R. Rogers, James O. Peabody and Mani Menon
Vattikuti Urology Institute, Henry Ford Health System
(Presented by: Wooju Jeong)

Poster #78
CONTEMPORARY PREVALENCE OF PROSTATE CANCER ON AUTOPSY: A PROSPECTIVE STUDY IN AN UNSCREENED POPULATION OF CAUCASIAN AND ASIAN MEN
Alexandre Zlotta¹, Shin Egawa², Dmitry Pushkar³, Alexander Govorov³, Takahiro Kimura³, Masahito Kido², Cynthia Kuk¹, Marta Kovylina², Najla Aldaoud³, Neil Fleshner⁴, Antonio Finelli³, Laurence Klotz⁶, Gina Lockwood⁴ and Theodorus H. van der Kwast⁶
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(Presented by: Alexandre Zlotta)

Poster #79
HEPATITIS C ANTIBODY TESTING IN AFRICAN AMERICAN AND HISPANIC MEN IN NEW YORK CITY WITH PROSTATE BIOPSY
Annika Krystyna, Divya Kumari, Tarang Safi, William Matthew Briggs and Murray David Schwalb
Lincoln Medical and Mental Health Center, Bronx, NY
(Presented by: Annika Krystyna)

Poster #80
SMOKING IS ASSOCIATED WITH ACUTE PROSTATIC INFLAMMATION IN MEN WITH A NEGATIVE PROSTATE BIOPSY: RESULTS FROM THE REDUCE STUDY
Daniel Moreira¹, J Curtis Nickel², Leah Gerber³, Roberto Muller³, Gerald Andriole⁴, Ramiro Castro-Santamaria⁵ and Stephen Freedland³
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(Presented by: Daniel Moreira)
Poster #81
METFORMIN USE AND ALL-CAUSE AND PROSTATE CANCER SPECIFIC MORTALITY AMONG DIABETIC MEN
David Margel¹, David Urbach², Lorraine Lipscombe³, Chaim M. Bell⁴, Girish Kulkarni¹, Peter C. Austin⁵ and Neil Fleshner¹
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(Presented by: David Margel)

Poster #82
THE ASSOCIATION BETWEEN METFORMIN USE AND RISK OF PROSTATE CANCER INCIDENCE AND GRADE AT PRESENTATION
David Margel¹, David Urbach², Lorraine L. Lipscombe³, Chaim M. Bell⁴, Girish Kulkarni¹, Peter C. Austin⁵ and Neil Fleshner¹
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(Presented by: David Margel)

Poster #83
NATURAL HISTORY OF THE TIME FROM FIRST DETECTABLE PSA FOLLOWING RADICAL PROSTATEC TOMY TO BIOCHEMICAL RECURRENCE- A COMPETING RISK ANALYSIS
Leonora de Boo¹, Melania Pintilie², Paul Yip², Neil Fleshner¹ and David Margel¹
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(Presented by: David Margel)

Poster #84
EFFICACY AND SAFETY OF A 3-MONTHLY DEPOT FORMULATION OF DEGARELIX COMPARED WITH GOSERELIN IN PROSTATE CANCER
Neal Shore¹, E. David Crawford², Marc Gittelman³, Bertrand Tombal⁴, Teuvo Tammela⁵, Johannes Wolff⁶, Heather Payne⁷, Tine Kold Olesen⁸, Bo-Eric Persson⁹ and Laurence Klotz¹⁰
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(Presented by: Neal Shore)

Poster #85
THE ROLE OF PROSTATE BIOPSY AFTER SALVAGE CRYOSURGERY FOR CLINICALLY LOCALIZED PROSTATE CANCER
Einar Sverrisson, Huy Nguyen, Timothy Kim and Julio Pow-Sang
Genitourinary Oncology Program, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL
(Presented by: Einar Sverrisson)
Poster #86
HOW DOES ROBOT-ASSISTED LAPAROSCOPIC RADICAL PROSTATECTOMY COMPARE TO OPEN SURGERY IN MEN WITH HIGH-RISK TUMORS?
Sanoj Punnen, Maxwell Meng, Matthew Cooperberg, Kirsten Greene, Janet Cowan and Peter Carroll
San Francisco, CA
(Presented by: Sanoj Punnen)

Poster #87
MEN WITH LOW PREOPERATIVE SEXUAL FUNCTION MAY BENEFIT FROM NERVE-SPARING RADICAL PROSTATECTOMY
Sanoj Punnen, Catherine Harris and Peter Carroll
San Francisco, CA
(Presented by: Sanoj Punnen)

Poster #88
RESIDENT EXPERIENCE AS A PREDICTIVE FACTOR FOR PERI-OPERATIVE OUTCOMES FOLLOWING RADICAL PROSTATECTOMY
Will Kirby, Jed Ferguson, David Johnson, Jonathan Matthews, Matthew Nielsen, Raj Pruthi, Eric Wallen, Michael Woods and Angela Smith
Chapel Hill, NC
(Presented by: Will Kirby)

Poster #89
DEVELOPMENT AND VALIDATION OF A MULTIVARIATE MODEL COMBINING CELL CYCLE PROGRESSION SCORE WITH CAPRA TO PREDICT PROSTATE CANCER MORTALITY IN A CONSERVATIVELY MANAGED COHORT
Michael Brawer¹, Mathew Cooperberg², Stephen Freedland³, Gregory Swanson⁴, Steve Stone⁵, Julia Reid⁶, Alexander Gutin⁵, Peter Carroll⁵ and Jack Cuzick⁶
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(Presented by: Michael Brawer)

Poster #90
PREDICTORS OF RECURRENCE IN PATIENTS WITH HIGH-RISK PATHOLOGY AFTER PROSTATECTOMY
David Moore¹, Matthew Resnick², Daniel Barocas³, Peter Clark², Michael Cookson², S. Duke Herrell², Chirag Kulahalli¹, Joseph Smith², Chaochen You² and Sam Chang²
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(Presented by: David Moore)

Poster #91
CCP SCORE SIGNIFICANTLY PREDICTS PSA FAILURE AFTER EBRT
Stephen Freedland¹, Leah Gerber¹, Julia Reid², William Welbourn², Alexander Gutin², Zaina Sangale², Joseph Salama¹ and Steven Stone²
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(Presented by: Stephen Freedland)
Poster #92
PREOPERATIVE STATIN USE ASSOCIATED WITH LOWER PSA BUT SIMILAR HISTOPATHOLOGIC OUTCOMES
Samadi David, Michael Leapman, Dov Sebrow, Adele Hobbs, Kristian Stensland, Adrien Bernstein and Hugh Lavery
Mount Sinai Hospital, Department of Urology, New York, New York
(Presented by: Michael Leapman)

Poster #93
EMPLOYING THE EPIGENETIC FIELD EFFECT TO DETECT PROSTATE CANCER IN BIOPSY-NEGATIVE PATIENTS
David Jarrard¹, Daniel Lin², Joel Nelson³, Rajiv Dhir¹, Wei Huang¹, Andrew Livermore¹, Bing Yang¹ and Matthew Truong¹
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(Presented by: David Jarrard)

Poster #94
GLEASON 6 PROSTATE CANCERS DIAGNOSED IN THE PSA ERA DO NOT METASTASIZE SUGGESTING A MORE APPROPRIATE DESIGNATION OF GLEASON 6 DISEASE INSTEAD OF CANCER
Nicholas Donin¹, Juliana Laze¹, Ming Zhou², Qinghu Ren² and Herbert Lepor¹
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(Presented by: Nicholas Donin)

Poster #95
GTX-758, BUT NOT LHRH BASED ADT, REDUCES BOTH SERUM PERCENT FREE TESTOSTERONE AND SERUM PSA IN MEN WITH ADVANCED PROSTATE CANCER
Robert Getzenberg, Christopher Coss, James Dalton, Michael Hancock and Mitchell Steiner
GTx, Inc., Memphis, TN
(Presented by: Robert Getzenberg)

Poster #96
MESSENGER RNA-MIRCO RNA GENE NETWORK ASSOCIATED WITH THE PROSTATE CANCER DISPARITIES IN AFRICAN AMERICAN AND CAUCASIAN AMERICAN POPULATIONS
Bi-Dar Wang¹, Ramez Andrawis², Dana Rice³, Faisal Ahmed², Fernando Bianco², Thomas Jarrett², Harold Frazier², Steven Patierno⁴ and Norman Lee¹
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(Presented by: Dana Rice)

Poster #97
ERECTILE FUNCTION AND URINARY SYMPTOMS AFTER TRANSRECTAL ULTRASOUND AND PROSTATE BIOPSY IN MEN: A PROSPECTIVE ANALYSIS
Katie Murray, Ernesto Lopez-Corona¹ and J Brantley Thrasher²
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(Presented by: Katie Murray)
Poster #98

SELECTION OF ACTIVE SURVEILLANCE CANDIDATES AMONG MEN WITH LOW-RISK PROSTATE CANCER: VALUE OF MULTIPARAMETRIC PROSTATE MAGNETIC RESONANCE IMAGING

Lambros Stamatakis¹, Jennifer Logan¹, M. Minhaj Siddiqui¹, Annerleim Walton-Diaz¹, Anthony Hoang¹, Jeffrey Nix¹, Soroush Rais-Bahrami¹, Srinivas Vourganti¹, Michael Weintraub¹, Todd Sterling¹, Baris Turkbey², Peter Choyke², Bradford Wood³ and Peter Pinto¹

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(Presented by: Lambros Stamatakis)

Poster #99

THE ASSOCIATION BETWEEN FINASTERIDE USE AND HIGH-GRADE OR LETAL PROSTATE CANCER

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(Presented by: Mark Preston)

Poster #100

LONG TERM TREATMENT REGRET AMONG MEN TREATED WITH RADICAL PROSTATECTOMY OR EXTERNAL BEAM RADIATION THERAPY FOR LOCALIZED PROSTATE CANCER: RESULTS FROM THE PROSTATE CANCER OUTCOMES STUDY

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(Presented by: Matthew Resnick)
Poster #1
DETECTION AND CHARACTERIZATION OF BLADDER CANCER CELLS IN URINE USING A NOVEL MEMBRANE MICRO-FILTRATION DEVICE
Anirban Mitra¹, Marc Birkhahn¹, Anthony Williams², Nancy Barr¹, Eila Skinner³, John Stein¹, Donald Skinner¹, Yu-Chong Tai⁴, Ram Datar² and Richard Cote²
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(Presented by: Anirban Mitra)

Introduction and Objectives: The low sensitivity of standard urine cytology, attributable largely to its inability to process an entire sample, paucicellularity, and presence of background cells, have limited its ability to substitute or reduce the need for cystoscopy for detection of urothelial carcinoma of the bladder (UCB). This study evaluated the performance and practical applicability of a novel portable microfiltration device for capture, enumeration and characterization of tumor cells in urine, and compared it with standard cytology for UCB detection.

Methods: A 1 cm × 1 cm parylene membrane with 90,000 evenly distributed circular pores of 7.5 µm diameter was assembled into a filtration device. 54 voided urine and bladder wash samples fixed in 25% ethanol from patients undergoing surveillance for UCB were prospectively evaluated by standard and microfilter-based cytology. UCB presence was definitively confirmed by cystoscopy. Comparison of quality and performance metrics, and cost effectiveness was conducted for both methodologies.

Results: Five samples were paucicellular by standard cytology; all microfilter cytology samples had sufficient cells for analysis. Standard cytologic processing had 33.3% more samples with confounding background cells that limited evaluation than microfilter-based processing (p<0.001). Microfilter cytology was more concordant (kappa=50.4%) than standard cytology (kappa=33.5%) with true UCB diagnosis. Sensitivity, specificity and accuracy were higher for microfilter cytology compared to standard cytology (53.3%/100%/79.2% versus 40%/95.8%/69.9%, respectively). Microfilter-captured cells were amenable to on-chip molecular (UroVysion fluorescence in situ hybridization) and genomic (polymerase chain reaction) analyses. A 40 mL sample was processed in under four minutes by microfilter cytology compared to an average of 5.5 minutes by standard cytology. Cost analysis showed that microfilter cytology processing costs were approximately 79% less expensive than standard cytology per specimen.

Conclusions: The portable microfiltration device represents a novel non-invasive, sensitive, rapid and cost-effective alternative assay for UCB detection and surveillance. It has substantially better quality and performance metrics than routine urine cytology, the current standard of care. It can also be integrated with sophisticated molecular diagnostic and prognostic tests downstream, thereby broadening its applicability.

Funding: NIH/NCI
Poster #2
ARTIFICIAL INTELLIGENCE AND MACHINE-LEARNING ALGORITHMS WITH GENE EXPRESSION PROFILING: A POTENTIAL APPROACH TO PREDICTING SUPERFICIAL BLADDER CANCER RECURRENCE AT INITIAL PRESENTATION
Georg Bartsch, Anirban Mitra¹, Sheetal Mitra¹, Aprit Almal², Kenneth Steven³, David Fry², Peter Lenehan², William Worzel² and Richard Cote⁴
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(Presented by: Georg Bartsch)

Introduction and Objectives: Tumor grade and multifocality are routinely used predictors of superficial bladder cancer recurrence. The high recurrence rates in this pathological subtype necessitate intense follow up and invasive treatment. This study used a machine-learning algorithm to identify genes that were most predictive of superficial bladder cancer recurrence at initial presentation, and used them in a molecular signature to predict recurrence risk within 5 years after transurethral tumor resection.

Methods: Whole genome expression profiling was performed using Illumina Human WG-6 BeadChips on 112 frozen primary superficial bladder tumors obtained at first presentation by transurethral resection. A genetic programming (GP) algorithm was applied to evolve classifier mathematical models for outcome prediction. Cross-validation-based resampling and feature usage frequencies were used to identify the most prognostic genes, which were combined into rules used in a voting algorithm to predict a sample’s target class. Key genes were validated by quantitative polymerase chain reaction.

Results: 88 (79%) patients recurred within 5 years of initial presentation. A GP algorithm was used to select a minimal set of markers grouped as a classifier for predicting recurrence, and cross-validation estimated its robustness by analyzing its ability to generalize to unseen samples. The classifier set included 21 genes that together predicted recurrence. For these genes, quantitative polymerase chain reaction was performed on a subset of 100 patients. With amplicon sizes limited to 100 bases and Ct values >35 not being considered, a 4-fold cross-validation (n=83) resulted in a 5-gene combined rule that predicted recurrence in the training set with 77% sensitivity and 85% specificity. The respective values in the test set were 69% and 62%. A singular 3-gene rule was also constructed that predicted recurrence with 80% sensitivity and 90% specificity in the training set. The respective values in the test set were 71% and 67%.

Conclusions: In superficial bladder cancers at initial presentation, GP identified transcripts in a reproducible fashion that may be helpful to predict recurrence. These findings could potentially impact bladder cancer management, including surveillance frequency, administration of adjuvant therapy, and selection of candidates for an expectant approach.
Funding: NIH

Poster #3
A DIAGNOSTIC STRATEGY BASED ON ASSESSMENTS OF THE TUMOR IMMUNE MICROENVIRONMENT IDENTIFIES BCG RESPONSIVE BLADDER CANCER PATIENTS PRIOR TO THERAPY
Rafael Nunez-Nateras, Erin Ferrigni, Cheryl Protheroe, Melissa Stanton, James Lee and Erik Castle
Mayo Clinic, Phoenix AZ
(Presented by: Rafael Nunez-Nateras)

Background: Transitional cell carcinoma is the most common form of bladder cancer (~90% of tumors) and clinical/pathology assessments have demonstrated that the pathologic subtype, carcinoma in situ (i.e., Tis), is present in ~50% of total bladder cancers diagnosed. There is currently no ability response to standard-of-care treatment at diagnosis, intravesical administration of Bacillus Calmette-Guerin (BCG)). Tis bladder cancer patients are treated using a "one size fits all" approach with only a 60% success rate (i.e., tumor-free).

Objective: To demonstrate that Tis bladder cancer responsiveness to BCG therapy is a function of the tumor immune microenvironment at the time of initial diagnosis (i.e., before the therapeutic decision-making process).
Materials and Methods: The immune microenvironments of tumor biopsies following cystoscopy of 20 bladder cancer patients responsive to BCG therapy (BCG+) were assessed relative to biopsies derived from 18 non-responsive patients (BCG−). Specifically, each tumor immune microenvironment was determined as a function of two immunohistochemical metrics: (i) The level of tumor eosinophil infiltration as well as the extent of eosinophil degranulation using monoclonal antibody specific for eosinophil peroxidase. (ii) The relative number of tumor-infiltrating GATA−3+ (i.e., Th2-polarized) vs. T−bet+ (i.e., Th1 polarized) lymphocytes.

Results: We have found that immunohistochemical studies of the bladder in otherwise healthy individuals display no eosinophil infiltrate, eosinophil degranulation, or tissue infiltrating lymphocytes. In contrast, Tis bladder tumors displayed a robust tissue eosinophilia and degranulation. The tumor immune microenvironments were also decidedly Th2 polarized with >3-fold more GATA−3+ relative to T−bet+ lymphocytes. These immune biomarkers had prognostic value, specifically: the data showed that the levels of each immune biomarker were statistically higher in patients subsequently shown to be BCG+ relative to BCG− subjects. In addition, we were able to construct an algorithm integrating these immune metrics that stratified bladder cancer patients prior to treatment (responsive vs. non-responsive) with a high degree of specificity.

Conclusions: The immunohistochemical assessments of Tis bladder tumors using antibodies linked with Th2 induced inflammation represents a clinically-relevant screening strategy of cancer patients as to their subsequent responsiveness to the standard-of-care treatment.

Poster #4
SMOKING AND SMOKING CESSATION IMPACT THE OUTCOMES OF PRIMARY NON-MUSCLE-INVASIVE BLADDER CANCER
Michael Rink¹, Evanguelos Xylinas¹, Helena Furberg², Marko Babjuk³, Emily C. Zabor², Yair Lotan⁴, Armin Pycha⁵, Pierre I Karkiewicz⁶, Giacomo Novara⁷, Brian D. Robinson¹, Douglas S. Scherr¹ and Shahrokh F. Shariat¹
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(Presented by: Evanguelos Xylinas)

Background: Cigarette smoking is the best established risk factor for urothelial carcinoma development, but the impact on oncological outcomes remains poorly understood. To analyze the effects of smoking status, cumulative exposure and time from cessation on prognosis of patients with primary non-muscle-invasive bladder cancer (NMIBC).

Material and Methods: We collected smoking data from 2,043 patients with primary NMIBC treated with transurethral resection of the bladder with or without intravesical instillation therapy. Smoking variables included smoking status, average number of cigarettes smoked per day (CPD), duration in years, and time since smoking cessation. Lifetime cumulative smoking exposure was categorized as light-short-term (≤19CPD,≤19.9years), light-long-term (≤19CPD,≥20years), heavy-short-term (≥20CPD,≤19.9years) and heavy-long-term (≥20CPD,≥20years). Uni- and multivariable logistic regression and competing risk regression analyses assessed the effects of smoking on outcomes.

Results: There was no difference in clinico-pathologic factors between never (24%), former (47%) and current smokers (29%). Smoking status was associated with the cumulative incidence of both, disease recurrence (p=0.044) and progression (p<0.001) in univariable analyses and disease progression in multivariable analysis (p=0.003); current smokers had the highest cumulative incidences. Among current and former smokers, cumulative smoking exposure was associated with disease recurrence (p<0.001), progression (p<0.001), and overall survival (p<0.001) in multivariable analyses that adjusted for the effects of standard clinico-pathologic factors and smoking status; heavy-long-term smokers had the worst outcomes, followed by light-long-term, heavy-short-term, and light-short-term smokers. Smoking cessation >10 years reduced risk of disease recurrence (HR: 0.66, 95%CI: 0.52–0.84, p<0.001) and progression (HR: 0.42, 95%CI: 0.22–0.83, p=0.036) in multivariable analyses.

Conclusions: Smoking status and a higher cumulative smoking exposure are associated with worse prognosis in patients with NMIBC. Smoking cessation >10 years abrogates this detrimental effect. These findings underscore the need for integrated smoking cessation and prevention programs in the management of NMIBC patients.
Poster #5
INCIDENCE OF BLADDER CANCER AS A SECONDARY MALIGNANCY IN PATIENTS TREATED WITH RADIATION FOR UTERINE CANCER
Janet Baack Kukreja, Emelian Scosyrev, Edward Messing and Guan Wu
University of Rochester Medical Center Department of Urology, Rochester, NY
(Presented by: Janet Baack Kukreja)

Introduction and Objectives: The risk of bladder cancer (BC) attributable to radiation therapy (RT) exposure in women treated with external beam radiation therapy (EBRT) with or without brachytherapy (BT) for uterine cancer has not been well evaluated. The main objectives of this study were to examine the incidence of bladder cancer following RT for uterine cancer and if the incidence, morbidity, and mortality are sufficient to justify urological surveillance.

Methods: Data was obtained from the Surveillance, Epidemiology and End−Results (SEER) program’s Multiple Primary−Standardized Incidence Ratio (MP−SIR) database. Women diagnosed with localized or regionally advanced uterine cancer as their first malignant primary during years 1980−2005 and managed either without RT or with external beam radiation therapy (EBRT) +/- brachytherapy (BT). The comparison groups were no RT, EBRT only, EBRT+BT, and EBRT +/- BT. Follow−up for incident BC ended on Dec 31, 2008. Adjustment of rates was performed by direct standardization to the age and stage−specific person−time distribution of all patients included in the analyses.

Results Obtained: During the study period, a total of 343 incident BC cases were recorded. The total number with no RT was 40,955, 197 developed BC. The total number with EBRT+/−BT, was 15,726, 146 developed BC, a statistically significant difference, p−value=0.0001. The overall incidence rate of BC was 1.7(95% CI: 1.4−2.2) times greater than the rate observed in the absence of RT. Fatal BC was 2.3(95% CI: 1.4−3.8) times greater in the EBRT+/− BT group. The cumulative incidence of BC was 1.6% for those followed 20 years out from EBRT+/− BT. The adjusted rate incidence of BC without RT was 5.8 (95% CI: 4.9−6.6), whereas as in the radiation group it was 10.1 (95% CI: 8.2−11.9). The number of BC deaths was 28 for those with no radiation and 33 for those with radiation, p−value=0.047.

Conclusions: We present a high risk population that may deserve more attention to screening for bladder cancer than the average woman. EBRT +/- BT administered for uterine cancer may increase the subsequent risk of fatal bladder cancer by more than two−fold. Given the increased risk of mortality in women with bladder cancer, this may be sufficient for routine urological surveillance in this specific population. Regardless, hematuria should be looked for in uterine cancer patients treated by RT and should result in prompt urology referral to evaluate for BC.

Poster #6
TRANS-PACIFIC VARIATION IN OUTCOMES FOR MEN TREATED WITH PRIMARY ANDROGEN DEPRIVATION THERAPY FOR LOCALIZED PROSTATE CANCER
Matthew Cooperberg¹, Shiro Hinotsu², Mikio Namiki³, Peter Carroll1 and Hideyuki Akaza4
¹UCSF, San Francisco, CA; ²Kyoto University, Japan; ³Kanazawa University, Japan; ⁴University of Tokyo, Japan
(Presented by: Matthew Cooperberg)

Introduction: Primary androgen deprivation therapy (PADT) is endorsed as an option for monotherapy for localized prostate cancer by guidelines in Asia but not in the United States (US) or Europe. PADT use is common, however, in both the US and Japan. Prior studies on either side of the Pacific have reported disparate outcomes for PADT; we aimed to explore these differences in a direct comparison study.

Methods: Data were drawn from the US community−based Cancer of the Prostate Strategic Urologic Research Endeavor (CaPSURE), and from the Japan Study Group of Prostate Cancer (J−CaP) database, comprising men in Japan treated with PADT. 1934 men treated with PADT were included from CaPSURE, and 16,300 treated in J−CaP. Risk adjustment was based on the Japan Cancer of the Prostate Risk Assessment (J−CAPRA) score, validated specifically for men treated with PADT. Cox proportional hazards regression was used to assess prostate cancer−specific mortality (CSM), adjusting for age, J−CAPRA, year of diagnosis, and treatment type (combined androgen blockade [CAB] vs. castration (medical or surgical) monotherapy).
Results: Men treated with PADT in J–CaP were older than those in CaPSURE (mean age 75.0 vs. 72.7, p<0.001 by t−test), and had higher risk disease (mean J−CAPRA score 3.0 vs. 2.1, p<0.001 by t−test). They were more likely to be treated with CAB: 67.1% vs. 44.5%, p<0.001 by chi2. In the Cox model, the hazard ratio (HR) for PCSM was 0.31 for J−CaP compared to CaP−SURE, 95% confidence interval (CI) 0.25–0.40. In J−CaP, CAB improved survival compared to castration alone (HR 0.81, 95% CI 0.66–1.0), but this effect was not observed in CaPSURE (HR 0.96, 95% CI 0.69–1.34). For all−cause mortality, the HR for J−CaP was 0.27 (95% CI 0.24–0.30).

Conclusions: Adjusting for multiple factors including disease risk and type of androgen ablation, men treated with PADT in Japan compared to the US have more than 3−fold lower CSM and 4−fold better overall survival. CAB improved outcomes compared to castration alone in J−CaP but not in CaPSURE. These findings support existing guidelines both encouraging PADT in Asia and discouraging its use in the West. The reasons for these substantial differences are likely multifactorial, including both genetic and dietary/environmental factors, as well as potential confounding variables such as comorbidities. Elucidating these explanatory factors will likely yield critical insights into the biology of prostate cancer on both sides of the Pacific.

Poster #7
THE ASSOCIATION BETWEEN PIOGLITAZONE THERAPY AND BLADDER CANCER: A META-ANALYSIS OF EPIDEMIOLOGIC EVIDENCE.
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(Presented by: Alexei Shimanovsky)

Background: Recently, anti−diabetic therapy has been investigated as one of the factors posing a risk for cancer in diabetics. Accumulating evidence suggest that pioglitazone use may be a risk factor for bladder cancer (BC). However, some studies have also reported controversial results. The aim of this meta−analysis was to review currently available studies and evaluate the association between pioglitazone and BC.

Methods: Two reviewers independently conducted a systemic search of the Cochrane Library, OvidSP and PubMed from January 1970 to April 2012. MeSH search terms included pioglitazone, actos, thiazolideniones, diabetes mellitus, and bladder cancer. Only studies reporting an effect measure for the association between pioglitazone and BC were eligible for inclusion. Identified articles were reviewed for additional references. In addition to overall effect of HP, subgroup analysis by study design and country of study were performed. Analysis was made using a random effect model after preliminary results showed some evidence of heterogeneity among our included studies. Between studies heterogeneity was assessed using the Cochrane's Q and I2 statistics. Publication bias was evaluated using the Begg's and Egger's tests.

Results: A total of 6 studies, including 3 cohorts and 3 case control studies met the inclusion criteria. The overall pooled risk ratio for the association between pioglitazone and BC was 1.12(95% CI 1.09, 1.15; P <0.001). By study design, the summary RR for cohort and case control studies were 1.13(95% CI 1.07, 1.19; P <0.001) and 1.11(95% CI 1.07, 1.15; P <0.001), respectively. The subgroup analysis by region of origin showed a significant association with bladder cancer in the USA and Europe, but not in Asia (RR 0.98, 95% CI 0.71, 1.34; P =0.88). The association of pioglitazone and bladder cancer was more sensitive for treatment duration of more than 12 months.

Conclusion: This study suggests that pioglitazone is associated with an increase risk of bladder cancer. However, this result should be interpreted cautiously as it was influenced by country of study. Larger, well−constructed and better−designed studies are needed to further evaluate this association.
Poster #8
IDENTIFICATION OF BIOMARKERS FOR DETECTING BLADDER CANCER IN URINE USING A METABOLOMIC DISCOVERY APPROACH
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(Presented by: Bruce Neri)

Introduction and Objective: The early detection of bladder cancer is of major importance in the management of potential bladder cancer patients. Patients who present with hematuria need to be assessed for bladder cancer, since ~10–15% may have a malignancy. Novel methods for detection of recurrent bladder cancer during the management of bladder cancer patients, as a complement to cytology and cystoscopy, would also be beneficial to the patient and physician. In this study, we investigated the feasibility of developing a non-invasive diagnostic test by identifying metabolites in urine samples as biomarkers to detect bladder cancer.

Methods: A retrospective cohort of 438 voided frozen urine samples were made up of bladder cancer (n=66), normal (n=89), hematuria (n=58), history of bladder cancer with no bladder cancer (n=119), prostate cancer (n=58), and renal cell carcinoma (n=48). The samples were cold methanol extracted and the biochemicals were analyzed using gas chromatography–mass spectrometry and ultra high performance liquid chromatography–tandem mass spectrometry. Statistics were performed to identify metabolites whose abundance profiles correlated with bladder cancer vs. all non-cancers or bladder cancer vs. hematuria.

Results: 499 structurally identifiable compounds were detected in the urine samples. Five biochemicals were identified which stratified bladder cancer patients from all other urological cancers and non-cancer patients. An additional eight biochemicals were able to stratify bladder cancer patients from all patients with no cancer. These thirteen biochemicals were evaluated in all combinations, using a predictive ridge algorithmic analysis, which resulted in an area under the ROC curve (AUC) of 0.885, with a minimum of seven biomarkers. When patients with bladder cancer were stratified from those with non-malignant hematuria, the predictive ridge algorithmic analysis resulted in an AUC of 0.880 with a minimum of seven biochemicals. These biochemicals are primarily associated with Warburg metabolism, lipid membrane remodeling, and fatty acid beta-oxidation.

Conclusion: Thirteen candidate biomarkers to detect bladder cancer in urine were identified by a metabolomic discovery approach, resulting in an AUC of up to 0.885. These findings will be validated against a larger prospective collection of urine samples from patients suspected of bladder cancer or during management of bladder cancer patients, to confirm test performance specifications.

Poster #9
EXTERNAL VALIDATION OF A DNA METHYLATION URINE MARKER FOR UROTHELIAL CARCINOMA
Michael Abern and Brant Inman
Duke University School of Medicine, Durham NC
(Presented by: Michael Abern)

Introduction: Several genes have been shown to be hypermethylated in urothelial cancer (UC), therefore DNA methylation tests show promise as non-invasive tests. Two candidate genes, TWIST1 and NID2, have been identified and internally validated to have sensitivity and specificity over 90% in a case-control study but external validation has yet to be performed.

Methods: A prospective clinical trial was performed enrolling patients either undergoing initial evaluation for UC or surveillance for non muscle-invasive bladder cancer (NMIBC) between 9/2008 and 12/2010. Voided urine was collected for quantification of methylated TWIST1 and NID2. The methylation test was positive if either TWIST1 or NID2 exceeded the threshold number of methylated copies. Cystoscopy and pathologically confirmed UC was the gold standard against which methylation accuracy was calculated.
**Results:** 111 patients completed the trial and had valid methylation tests. Of these, 64 (58%) had a prior diagnosis of NMIBC. The AUC of TWIST1 was 0.75 and the AUC of NID2 was 0.66. Using the previously reported cutpoints for each gene, the sensitivity was 42% and the specificity 84%. Using the optimal cutpoints on the ROC curve for each gene, the sensitivity was 79% and the specificity 63%, corresponding to a positive likelihood ratio of 2.2 and a negative likelihood ratio of 0.33. In patients without a prior UC diagnosis the sensitivity and specificity were 92% and 74%, respectively. The sensitivity of the methylation test was 67% for low grade UC.

**Conclusions:** At the previously reported thresholds, TWIST1 and NID2 methylation in urine provides a specific marker for UC with sensitivity comparable to that reported for cytology. When optimized using the data from this trial, the sensitivity was improved and was 67% for low grade Further study of this marker is needed, however it may provide a useful adjunct to currently available diagnostic tests for UC.

**Poster #10**

**IMPACT OF SMOKING AND SMOKING CESSATION ON OUTCOMES IN BLADDER CANCER PATIENTS TREATED WITH RADICAL CYSTECTOMY**

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(Presented by: Evangelos Xylinas)

**Objective:** Cigarette smoking is the best established risk factor for urothelial carcinoma development. To elucidate the association of smoking status, cumulative exposure and time since smoking cessation on outcomes of urothelial carcinoma of the bladder (UCB) patients treated with radical cystectomy (RC).

**Design, Setting, and Participants:** We collected clinico−pathologic and smoking variables including smoking status, number of cigarettes per day (CPD), duration in years, and time since smoking cessation on 1,506 patients treated with RC for UCB. Lifetime cumulative smoking exposure was categorized as light−short−term (≤19CPD, ≤19.9 years), light−long−term (≤19CPD, ≥20 years), heavy−short−term (≥20CPD, ≤19.9 years) and heavy−long−term (≥20CPD, ≥20 years).

All patients underwent RC without preoperative chemotherapy

Logistic regression and competing risk analyses assessed the association of smoking with outcomes.

**Results:** There was no difference in clinico−pathologic factors between never (20%), former (46%) and current smokers (34%). Smoking status was associated with the cumulative incidence of disease recurrence (p=0.004) and cancer−specific mortality (p=0.016) in univariable analyses and disease recurrence in multivariable analysis (p=0.02); current smokers had the highest cumulative incidences. Among ever−smokers, cumulative smoking exposure was associated with advanced tumor stages (p<0.001), lymph node metastasis (p=0.002), disease recurrence (p<0.001), cancer−specific mortality (p=0.001), and overall mortality (p=0.04) in multivariable analyses; heavy−long−term smokers had the worst outcomes, followed by light−long−term, heavy−short−term, and light−short−term smokers. Smoking cessation >10 years mitigated the risk of disease recurrence (HR:0.44;p<0.001), cancer−specific mortality (HR:0.42;p<0.001), and overall mortality (HR:0.69;p=0.012) in multivariable analyses. The study is limited by its retrospective nature.

**Conclusions:** Smoking is associated with worse prognosis after RC for UCB. This association seems to be dose−dependent and its effects are abrogated by >10 years smoking cessation. Health care practitioners should counsel smokers regarding the detrimental effects of smoking and benefits of smoking cessation even after diagnosis of UCB.
Poster #11
IDENTIFICATION OF RECURRENT, TARGETABLE GENETIC ALTERATIONS IN HIGH GRADE, INVASIVE BLADDER UROTHELIAL CARCINOMA
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(Presented by: Philip Kim)

Introduction: Invasive bladder cancer is an aggressive malignancy with limited therapeutic options in the advanced or metastatic setting. We performed a targeted genetic analysis of invasive bladder tumors to determine the prevalence of known cancer genes and identify potential targets for therapy.

Methods: We obtained tumor and germline DNA from 50 radical cystectomy patients with high grade, invasive bladder urothelial carcinomas. These specimens were analyzed using a targeted, deep-sequencing assay designed to identify point mutations, indels, and copy number alterations in 275 cancer-associated genes.

Results: TP53 and RB mutations were identified in 29 (58%) and 9 (18%) specimens, respectively. Alterations in the PI3K/AKT/mTOR pathway were also common. 9 (18%) tumors contained mutations in PIK3CA. Other specimens contained non-overlapping mutations in other genes in the pathway including alterations of AKT1, PTEN, and MTOR. We also identified common mutations in chromatin remodeling genes. 18 (36%) tumors had mutations in KDM6A, 16 (32%) had mutations in ARID1A, and 11 (22%) had mutations in MLL2. Overall, 36% of all analyzed tumors harbored potentially targetable genomic alterations, including those with alterations in ERBB2, BRAF, and FGFR3.

Conclusions: High grade, invasive bladder urothelial carcinoma is a genetically heterogeneous disease and includes alterations in genes that have been successfully targeted in other solid tumors. Further clinical correlation is needed to determine the prognostic significance of these genetic events in bladder cancer.
Poster #12
REPRODUCTIVE ORGAN INVOLVEMENT IN FEMALE PATIENTS UNDERGOING RADICAL CYSTECTOMY FOR UROTHE-LIAL BLADDER CANCER
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(Presented by: Hooman Djaladat)

Purpose: To evaluate the pathological involvement of the reproductive organs (RO) in a cohort of female patients undergoing anterior pelvic exenteration (APE) for invasive urothelial carcinoma (UC) of bladder.

Materials and Methods: Between 1971 and 2008, 2098 patients with bladder cancer underwent cystectomy at the University of Southern California. 458 were female of whom 411 had UC of bladder. Median follow-up was 12.2 years (0.1 to 35.5 years). Clinicopathological features of female cystectomy patients with pathologic RO involvement were reviewed. Recurrence-free survival (RFS) and overall survival (OS) was reported using Kaplan–Meier survival curves.

Results: Of the 411 patients with UC of bladder, 267 had RO removal with cystectomy. 20 patients (7.5%) had RO involvement. Ten patients (3.8%) had vaginal, 2 (0.7%) had cervical and 1 (0.3%) had uterine involvement only. The remaining 7 patients (2.6%) had multiple RO involved. Median age was 71 years. Clinical stage T4a was diagnosed in 25% of cases. Presence of a palpable mass (p < 0.001), hydronephrosis (p < 0.001) and positive lymph nodes at APE (p = 0.001) were associated with RO involvement. Fourteen patients (70%) recurred at median of seven months (1–22). Five year RFS and OS was 14.9% and 8.8%, respectively (Fig. 1A, B)

Conclusions: The risk of RO involvement in female patients undergoing APE for UC of bladder is about 7.5%, with the vagina being the most commonly involved organ. Presence of a palpable mass and hydronephrosis were among pre-operative clinical factors associated with RO involvement. Prognosis of patients with RO involvement is poor.
Poster #13

ADJUVANT CHEMOTHERAPY IS ASSOCIATED WITH DECREASED MORTALITY FOLLOWING RADICAL CYSTECTOMY FOR PATIENTS WITH LOCALLY ADVANCED BLADDER CANCER

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(Presented by: Daniel Yelfimov)

Introduction and Objectives: Controversy exists surrounding the optimal timing of chemotherapy in the perioperative management of patients with invasive urothelial carcinoma (UC). Our goal here was to determine if adjuvant chemotherapy was associated with a decreased risk of mortality for patients with locally advanced UC undergoing radical cystectomy (RC).

Methods: We identified 793 patients who underwent RC at our institution for pT2−4 and/or N+ UC from 1980−1999. Of these patients, 106 received adjuvant chemotherapy, defined as treatment within 90 days of RC. Survival was estimated using the Kaplan−Meier method and compared with the log rank test. Multivariate Cox models and hazard ratios (HR) were used to analyze the impact of adjuvant chemotherapy on disease progression and survival.

Results: Median patient age was 64 years (range 32−82), and median follow−up was 9.0 years (range 0.3−25.3). Among patients receiving adjuvant chemotherapy, 77.4% (82/106) of patients had pT3 or pT4 tumors and 73.1% (80/106) of patients had N+ disease. On univariate analysis, the 5−year cancer−specific survival rates in the adjuvant and non−adjuvant chemotherapy groups were 46% and 51%, respectively (p=0.63). The 5−year overall survival rates in the adjuvant and non−adjuvant chemotherapy groups were 39% and 38%, respectively (p=0.24). However, after controlling for age, sex, pathologic stage, and ECOG performance status, adjuvant chemotherapy was associated with a 23% decrease in the risk of bladder cancer death (HR 0.774, p=0.12) and a 27% decrease in the risk of all−cause mortality (HR 0.734, p=0.025).

Conclusions: The 5−year cancer−specific and overall survival rates were not significantly different between the adjuvant and non−adjuvant chemotherapy groups on univariate analysis. However, after controlling for age, sex, pathologic stage, and ECOG performance status, adjuvant chemotherapy was associated with a trend towards reduction in cancer−specific mortality and a statistically significant reduction in overall mortality for patients with locally advanced UC. Additional study is required to establish the optimal timing and regimen of perioperative chemotherapy in order to optimize outcome for patients with locally advanced bladder cancer undergoing RC.

Poster #14

INCIDENCE OF UROTHELIAL CELL CARCINOMAS IN PATIENTS WITH KNOWN GERMLINE MUTATIONS FOR LYNCH SYNDROME

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(Presented by: Timothy Donahue)

Objective: Lynch syndrome (LS) is a cancer syndrome caused by autosomal dominant inheritance of mismatch repair gene mutations (MMR). LS has traditionally been associated with an increased risk of colon cancer; however, malignancies of other organs, including urothelial cell cancers (UC), have also been implicated. The objective of this study was to assess the frequency of bladder and upper urinary tract tumors in patients with documented LS.

Methods: After IRB approval, a retrospective review of the Memorial Sloan–Kettering Cancer Center (MSKCC) Cologne and clinical genetics databases was conducted. We included all patients with a documented germline mutation for LS and a history of urothelial carcinoma of the bladder (B−UC), upper urinary tract (UUT−UC), or both. Family history obtained at the time of UC diagnosis was compared to the Amsterdam II criteria for the clinical diagnosis of LS.
**Poster Session I – Full Abstract**

**Results:** Of patients with known LS germline mutations and a LS–associated malignancy in our database, 14 had a history of B–UC, UUT–UC, or both. Average age at UC diagnosis was 52.2 yrs and 50% of subjects were male. The average age at first cancer diagnosis was 46.6 years for non–GU malignancies, an average of 5.6 yrs sooner than the diagnosis of a GU malignancy. Germ-line MSH2 mutations were present in 78.6%, MLH1 mutations in 7.2%, and PMS2 mutations in 14.2% of patients. Eight of 14 subjects (57%) had B–UC and for 5 subjects (35.7%) B–UC was the initial diagnosis of malignancy. Five B–UC subjects (62.5%) had MSH2 mutations, two (25%) had PMS2 mutations, and one (12.5%) had an MLH1 mutation. Four of 8 patients (50%) with bladder cancer also had UUT–UC. Ten of 14 (71.4%) patients had UUT–UC and all 10 patients had germline MSH2 mutations. Complete family history was available for 10 subjects and 7 subjects met Amsterdam II clinical criteria for LS at the time of first UC diagnosis.

**Conclusions:** In our series, 14 patients with a genetic diagnosis of LS had UC. In 35.7% of these patients, B–UC was the presenting malignancy leading to a diagnosis of LS. Nearly two-thirds of B–UCC tumors were associated with MSH2 mutations. UC may be more common than previously described in LS patients. Urologists should be aware of the possibility of LS in the UC population and perform screening through careful family history.

**Poster #15**

**SURVIVAL AFTER RADICAL CYSTECTOMY (RC) FOR NON-MUSCLE-INVASIVE BLADDER CANCER (NMIBC): DOES CARCINOMA-IN-SITU (CIS) ON FINAL PATHOLOGY PREDICT POOR OUTCOME?**

Ahmed Abd El Latif¹, Joseph Klink², Ranko Micicnovic² and Ryan Berglund²
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(Presented by: Ahmed Abd El Latif)

**Introduction and Objective:** Guidelines recommend RC for high risk NMIBC (Tis, high grade (HG) Ta, HG T1) because bladder preserving therapy is associated with worse survival. We sought to determine if pure CIS on final pathology (pTis) predicted increased mortality after RC compared to the other NMIBC stages (pTa, pT1).

**Methods:** From 2004 until 2010, we retrospectively reviewed 139 patients who underwent RC and had NMIBC on final pathology (pTis, HG pTa, HG pT1). We compared clinical and pathologic characteristics and survival outcomes between pure pTis (group 1, n=70) and pTa/pT1 (group 2, n=69). We compared survival between the groups using univariate log rank and multivariate Cox regression analysis, adjusting for age, smoking status, ASA score, initial treatment (bladder preservation or RC), perioperative chemotherapy, surgical margins and lymphovascular invasion.

**Results:** Clinical and pathologic characteristics were similar between the two groups (all p>0.1): 19% were female, 77% had a smoking history, 15% received perioperative chemotherapy (neoadjuvant or adjuvant), and 53% had bladder preservation attempted initially. On final pathology, 7% had positive lymph nodes, 16% had lymphovascular invasion, and 4% had positive surgical margins. During a median 24 months (range 0–72 months) of follow–up, 4 patients (6%) in group 1 died, while 21 (30%) in group 2 died (p<0.001, Figure 1). On multivariable analysis, patients in group 1 had significantly longer overall survival than those in group 2 (HR: 6.57; CI: 2.20–19.6; p=0.001). Predictors of improved survival on multivariable analysis included immediate radical cystectomy (HR: 4.07; CI: 1.3–12.7; p=0.015) and use of perioperative chemotherapy (HR: 5.5; CI: 1.6–18.9; p=0.006).

**Conclusions:** Patients with pure Tis after RC had more favorable overall survival in comparison to those with Ta/T1 on final pathology. Use of perioperative chemotherapy and immediate RC may benefit a subgroup of these patients. Several recent studies showed poor cancer outcomes for high–risk NMIBC managed initially with bladder preservation; however our data suggest that the poor outcomes are likely associated with HG Ta/T1 disease.
Poster #16
PATIENT SURVIVAL COMPARISON BETWEEN CONVENTIONAL VS. OTHER VARIANT SUBTYPES OF BLADDER UROTHELIAL CARCINOMA
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(Presented by: Ahmed Abd El Latif)

Introduction and Objective: We compared the overall survival (OS) between conventional urothelial carcinoma of the bladder (cUC) and variant subtype urothelial carcinoma (vUC) both treated with radical cystectomy (RC), and secondarily the differential effect of platinum−based perioperative chemotherapy on OS, recurrence and recurrence−free survival (RFS) in cUC and vUC.

Methods: We retrospectively evaluated 524 patients who underwent RC between 2004 and 2011; tumors were classified based on the presence of non−urothelial components as either cUC (n= 396) or vUC (n= 128). Patients had the following outcomes: death from any cause (n=179), recurrence (n=81), and alive without recurrence (n=321). Non−urothelial components included squamous, sarcomatoid, nested, glandular, micropapillary and mixed differentiation. Multivariable cox model and competing risk regression were used to assess the impact of perioperative chemotherapy on OS, recurrence and RFS adjusted for age, smoking, gender, American Society of Anesthesiology (ASA) score, path T stage, path N stage, surgical margins (SM), lymphovascular invasion (LVI) and carcinoma in situ (CIS).

Results: Using KM and cumulative incidence analyses, there was a difference in OS between the two groups, but no difference was observed regarding cancer recurrence rates (Fig 1). In multivariable analysis (MVA), there was a significant benefit of chemotherapy on OS (Hazard Ratio [HR] 0.63; 95% CI 0.42−0.93; P= 0.02) and on recurrence (subhazard HR [sHR] 0.65; 95% CI 0.44−0.96; P= 0.03) but there was no significant benefit of chemotherapy on RFS (HR 0.75; 95% CI 0.53; 1.07; P= 0.1). In secondary MVA, we found that in the vUC group patients receiving chemotherapy had significantly better OS than those who did not receive it (HR 0.42; 95% CI 0.21−0.83; p=0.01), however these results are limited by the small sample size and relatively few events. Patients with cUC had a non−significant improved survival with chemotherapy (HR 0.76; 95% CI 0.46−1.24; P= 0.2).

Conclusion: Patients with cUC seem to have a better OS in comparison to those with vUC disease. However, there may be a benefit in terms of improved OS in patients with vUC treated with perioperative platinum−based chemotherapy.
Introduction and Objectives: Orthotopic neobladder (ONB) reconstruction is arguably the current gold standard for urinary diversion following radical cystectomy for bladder cancer. While relative and absolute contraindications for orthotopic diversion are generally well defined, these may vary between centers depending on experience and philosophy. This study examined trends in urinary diversion, with associated patient factors, tumor characteristics and oncological outcomes in a large institutional cohort over 25 years.

Methods: Characteristics of patients who underwent radical cystectomy for bladder cancer with urinary diversion at our institution during 1986–2010 were retrospectively reviewed. Demographic, tumor-, diversion-, and outcome-related metrics were analyzed between 5-year eras using contingency, nonparametric and survival analyses.

Results: A total of 1,754 patients were identified (median age, 68 years; 79% males; median follow-up, 9 years). Patients were assigned to one of five eras: cystectomy during 1986–1990 (n=307), 1991–1995 (n=246), 1996–2000 (n=319), 2001–2005 (n=388), and 2006–2010 (n=494). Proportion of patients undergoing ONB reconstruction increased from 48% during 1986–1990 to 74% during 2006–2010; patients undergoing ileal conduits increased from 9% to 22%, and rates of continent cutaneous diversions decreased from 44% to 4% in the same eras (p<0.001). Over the 25-year period, median patient age increased from 65 years to 70 years; patients with ASA score ≥3 increased from 30% to 76% (both, p<0.001). Proportion of patients with extravesical disease increased from 20% to 24%, although this was not statistically significant. Of patients undergoing ONB, 59.8% had ≤pT2N0M0, 15.2% had pT3N0M0, 3.2% had pT4N0M0, and 21.8% had pTanyN+M0 disease. Median hospital stay decreased from 10 to 9 days during the same period (p<0.001). Compared to patients with ileal conduits and continent cutaneous diversions, patients with ONB had higher cancer-specific (median 5-year probability, 62%/63%/68%; p=0.002) and overall (21%/42%/49%; p<0.001) survival probabilities.

Conclusions: Our current institutional philosophy is to consider every patient undergoing cystectomy a potential candidate for ONB reconstruction, except for well-established contraindications related to oncologic, metabolic and/or functional status. ONB diversion is associated with excellent surgical and long-term outcomes, irrespective of age, stage, and surgical fitness. Funding: None
PRE-CYSTECTOMY SERUM LEVELS OF CA19-9, CA125, AND CEA: CORRELATION WITH PATHOLOGIC STAGE AND ONCOLOGICAL OUTCOME IN UROTHELIAL CARCINOMA OF BLADDER

Hamed Ahmadi¹, Hooman Djaladat¹, Jie Cai¹, Gus Miranda¹, Eila Skinner² and Siamak Daneshmand¹
¹USC Institute of Urology, USC/Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, California; ²Department of Urology, Stanford University, Stanford, California
(Presented by: Hamed Ahmadi)

Objectives: To evaluate the association between pre-cystectomy carbohydrate antigen 19–9 (CA19–9), carbohydrate antigen 125 (CA125), and carcinoembryonic antigen (CEA) levels and pathologic stage and oncological outcome of urothelial carcinoma of bladder (UCB).

Methods: Preoperative stored serum samples of 186 patients with UCB who underwent radical cystectomy at USC between 2004 and 2009 were randomly selected to measure CA19–9, CA125, and CEA levels. Reference laboratory cut-off point values were used to define abnormal marker levels (CA 19–9>35.5, CA125>35.5, CEA>3.8). Pathologic stage was categorized as organ confined (OC) (pT1, pT2), extravesical (EV) (>pT2), and lymph node positive (LN+) UCB. Cox regression model was used to identify independent predictors of recurrence-free survival (RFS) and overall survival (OS).

Results: The mean age of patients were 70 years (ranges, 36–91) and the median follow-up was 4 years (ranges, 0.1–7.2 years). 94 (50.5%) patients had OC, 45 (24%) had EV, and 47 (25.5%) had LN+ UCB. The mean CA 19–9, CA125, and CEA levels were 14 (0.6–278) U/mL, 11.8 (3–79) U/mL, and 2.3 (0.3–30) ng/mL. 30/186 (16%) patients had at least one abnormal marker. Percentage of abnormal CA19–9 was significantly higher in locally advanced UCB (EV and/or LN+) compared to OC UCB (85.7% vs. 48%; P=0.03). The percentage of abnormal CA125 and CEA levels were comparable between locally advanced and OC UCB. 4-year RFS and OS were 66% and 65%, respectively. After controlling for pathologic stage, age, and adjuvant chemotherapy; Abnormal CA19–9 and CEA were independent predictors of worse 5-year OS (HR: 2.7; P=0.04 and HR: 2; P=0.03). (Figure1A) Abnormal CA 19–9 was also an independent predictor of worse 5-year RFS (HR: 2.8; P=0.05). (Figure1B) Pre-cystectomy CA 125 level had no correlation with oncological outcome.

Conclusions: In patients with UCB, abnormal pre-cystectomy serum CA19–9 is correlated with advanced pathological stage and is an independent predictor of worse oncological outcome. Pre-cystectomy CEA and CA 125 showed no significant correlation with pathological stage and oncological outcome. Prospective studies are encouraged to elucidate the clinical value of these serum markers.
**Poster Session I – Full Abstract**

**Poster #19**  
**NUTRITIONAL PREDICTORS FOR COMPLICATIONS FOLLOWING RADICAL CYSTECTOMY: AN ANALYSIS OF THE AMERICAN COLLEGE OF SURGEONS NATIONAL QUALITY IMPROVEMENT PROGRAM (ACS-NSQIP)**  
Jed Ferguson, David Johnson, Will Kirby, Jonathan Matthews, Matthew Nielsen, Raj Pruthi, Angela Smith, Eric Wallen and Michael Woods  
Chapel Hill, NC  
(Presented by: Jed Ferguson)

**Introduction and Objectives:** Poor nutrition is a known risk factor for adverse outcomes following surgery. This has been reported in patients undergoing radical cystectomy, but there remains a need to further evaluate and define the significance of preoperative nutritional factors in this population. The aim of this study was to determine the impact of preoperative nutritional status on the development of surgical complications following cystectomy using the ACS-NSQIP.

**Methods:** We performed a retrospective review of the NSQIP 2010 Participant Use Data File. ACS-NSQIP collects data on 135 variables, including pre- and intraoperative data and 30-day post-operative complications and mortality on all major surgical procedures at participating institutions from 2005–2010. Preoperative albumin level (<3 or >3 g/dl), weight loss 6 months prior to surgery (>10%), and BMI (<30 vs. >=30) were identified as nutritional variables within the database. There were 344 patients who underwent radical cystectomy in which complete preoperative nutritional data was available. The overall complication rate was calculated and predictors of complications were identified using multivariate logistic regression models.

**Results:** The overall 30 day complication rate was 47% (n=162). Of these 162 patients, 121 (74.7%) had at least one nutritional risk factor. After controlling for age, race, sex, cardiac comorbidity, functional status, and surgery within 30 days; only albumin <3g/dl was a significant predictor of experiencing a postoperative complication (p=0.0083). (see table)

**Conclusion:** Poor nutritional status measured by serum albumin is predictive of an increased rate of surgical complications following radical cystectomy. This finding supports the importance of preoperative nutritional status in this population and highlights the need for the development of effective nutritional interventions in the preoperative setting.

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum Albumin</td>
<td>0.555</td>
<td>0.358</td>
<td>0.859</td>
</tr>
<tr>
<td>(&gt;3 g/dL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight loss</td>
<td>0.996</td>
<td>0.271</td>
<td>3.661</td>
</tr>
<tr>
<td>(&gt;10% / 6mo)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>BMI (&lt;3 vs &gt;=30)</td>
<td>0.940</td>
<td>0.573</td>
<td>1.543</td>
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</tbody>
</table>

(Continued on next page...
Poster #20
KARNOFSKY PERFORMANCE STATUS PREDICTS CANCER SPECIFIC OUTCOMES FOLLOWING RADICAL CYSTECTOMY IN PATIENTS WITH BLADDER CANCER
Joshua Logan, Patrick Evers and Arnold Chin
Institute of Urologic Oncology Department of Urology David Geffen School of Medicine at UCLA
(Presented by: Joshua Logan)

Introduction: Radical cystectomy (RC) can provide a survival advantage in bladder cancer patients with muscle invasive disease or non-muscle invasive disease refractory to intravesical therapy. Whether preoperative performance status metrics can stratify patients in overall survival (OS), cancer specific survival (CSS), and progression free survival (PFS) following RC are unclear. Here we analyze our RC experience at the UCLA from 2005 to 2010 to assess the prognostic power of American Society of Anesthesiologists score (ASA), Charlson Comorbidity Index (CCI), and Karnofsky Performance Status index (KPS) as they relate to OS, CSS and PFS.

Methods: A retrospective analysis of 234 patients who underwent RC between January 2005 to December 2010 included 148 patients with sufficient data for OS, CSS and PFS analysis. Multivariate Cox proportional hazard modeling generated hazard ratios using as independent variables: pre-operative KPS, CCI, and ASA, age, gender, ethnicity, pTNM staging, use of radiation therapy, neoadjuvant chemotherapy, and adjuvant chemotherapy. A Recursive Partition Analysis (RPA) tree divided the population into high and low KPS groups and 5−year survival outcomes were evaluated.

Results: Analysis of OS & CSS as the continuous dependent variable identified age, use of radiation therapy, pN− & pT−stage, and KPS as statistically significant independent predictors (p<0.05). Analysis of PFS as the continuous dependent variable identified pN−stage and KPS as statistically significant predictors of freedom from progression (p<0.05). No statistically significant predictive value was identified for neoadjuvant chemotherapy, adjuvant chemotherapy, gender, ethnicity, CCI, or ASA in terms of OS, CSS or PFS. The 5−year OS was 69.0%. For patients with a KPS≤89, 5−year OS was 40.0%, while for patients with a KPS≥90 the 5−year OS was 74.0%. Patients with a KPS≤89 also had a shorter survival than patients with a KPS≥90 both in terms of CSS (p<0.0001) and PFS (p<0.0001). Survival curves can be further stratified based on T−stage where patients with a KPS ≥90 and <T2 have a 5−year CSS of 83%, while patients with a KPS≥90 and >T2 have a 5−year CSS of 80%, whereas patients with a KPS≤89 and >T2 have a 5−year CSS of 43% (p<0.0001).

Conclusion: KPS, a known pre−operative factor, has predictive capacity in terms of OS, CSS and PFS. This information can be used to inform patients’ survival expectations prior to proceeding with RC.

Poster #21
EVALUATING THE EFFECTIVENESS OF A SMOKING WARNING LABEL ON RAISING PATIENT AWARENESS OF SMOKING AND BLADDER CANCER
Benjamin Johnson¹, Robert Abouassaly², Daniela Ghiculete¹ and Robert Stewart¹
¹St. Michael’s Hospital, University of Toronto, Toronto, Ontario; ²University Hospitals, Case Medical Center, Cleveland, Ohio
(Presented by: Benjamin Johnson)

Introduction: Cigarette smoke is a well established risk factor for the development of bladder cancer (BC), despite low public awareness. Smoking warning labels have been shown to be an effective tool in alerting individuals to the consequences of smoking. Until recently, there were no warning labels present on smoking packages in North America that depicted its association with BC. The aim of the current study was to assess the knowledge of patients with regard to the association between smoking and BC and to examine the impact of a novel warning label to raise public awareness.

Methods: We conducted a prospective cross−sectional study involving patients who presented to urology and family practice (FP) clinics. A questionnaire was developed to assess knowledge regarding the association between smoking and various diseases, as well as to evaluate a novel smoking warning label for BC.
Results: Two hundred ninety-one of the 300 patients approached completed the questionnaire (97%): 143 of 150 patients in urology clinics (95.3%) vs. 148 of 150 patients in family practice clinics (98.7%). Patients attending urology clinics differed from those attending FP clinics with respect to gender (male 84.6% vs. 52.4%, p<0.001), age (over 41yrs old 87.4% vs. 53.4%, p<0.01) and income level (over $51 000 53.8% vs. 37.8%, p=0.003). 49% of responders were either past or present smokers with 43% having smoked for more than 20 years. Overall, only 45.2% of people were aware of the association between smoking and BC, whereas 97.4% knew that there was a link between smoking and lung cancer. There were no significant differences in knowledge between those in urology and FP clinics. After viewing the warning label, 58.1% of responders stated that it had changed their opinion on smoking and BC and 74.8% felt that this label would be an effective tool to raise awareness of the issue. Patients who changed their opinion had statistically significant less initial knowledge about the association between smoking and BC (36.7% vs. 57.5% the ones who did not change their opinion, p<0.001).

Conclusions: Awareness of the link between smoking and BC remains low compared to other diseases for which smoking is a known risk factor. The use of a smoking warning label could help raise awareness of this important public health issue.

Poster #22
CHEMOPROPHYLAXIS RECOMMENDATIONS AFTER RADICAL CYSTECTOMY: AN EVALUATION OF THROMBOEMBOLIC EVENTS
Katie Murray, Ernesto Lopez-Corona¹, William Parker², Moben Mirza² and Jeffrey Holzbeierlein²
¹VA Medical Center Department of Urology, Kansas City, MO; ²University of Kansas Department of Urology, Kansas City, KS
(Presented by: Katie Murray)

Introduction and Objectives: Deep vein thrombosis (DVT) and pulmonary thromboembolism (PE) is one of the most common causes of nonsurgical death in patients undergoing urologic surgery. In 2008 the AUA put out a Best Practice Statement that pharmacologic prophylaxis should be considered in patients undergoing open urological surgery. It also stated that pre−operative patient risk factors should be taken into consideration. The American College of Chest Physicians indicate that chemoprophylaxis after surgery for abdominal or pelvic cancer should be initiated and continue for four weeks. Despite this, there appears to be a variable adherence to these guidelines.

Methods: We conducted a study of patients undergoing radical cystectomy who were treated initially with sequential compression device (SCD’s) only and compared the rate of DVT and PE in this group with patients who had SCD’s and chemoprophylaxis. All patients were screened for DVT on day three with lower extremity Doppler ultrasound. The rates of DVT and PE between groups were compared, and clinicopathologic characteristics were examined to identify risk factors.

Results: From July 2008 until January 2012, 291 patients underwent radical cystectomy with urinary diversion at the University of Kansas. Over a two year period of doing screening ultrasounds 19 (14.3%) out of 133 patients had an asymptomatic or symptomatic venous thromboembolism (VTE). Screening ultrasounds were continued after October 2010 but chemoprophylaxis with either heparin or low molecular weight heparin (LMWH) was added in all patients. The rate of VTE was decreased 9.3% in this group of patients. Among both groups individuals with a past history of DVT were at higher risk for post operatively DVT in both groups (p=0.013).

Conclusions: We present evidence that patients undergoing radical cystectomy with urinary diversion should be given chemoprophylaxis throughout their hospitalization for the prevention of venous thromboembolism (VTE). There are some individuals that may be at higher risk than others for VTE formation. This can be done safely without an increase in bleeding complications.
Poster Session I – Full Abstract

Poster #23
MICROPAPILLARY BLADDER CANCER- STAGE AT PRESENTATION AND TREATMENT OUTCOME- ANALYSIS OF 121 PATIENTS FROM A CANCER DATABASE.
Joshua Holyoak¹, Zachary Panfili¹, Ravi P Kiran² and Naveen Pokala¹
¹University of Missouri, Columbia, MO; ²Cleveland Clinic, Cleveland, OH
(Presented by: Jerry Trulson)

Objectives: The micropapillary variant of transitional cell cancer (MPTCC) is an aggressive pathological subtype of bladder cancer and radical cystectomy is recommended for patients with non–muscle invasive disease. This study compares the treatment patterns and survival outcome in 121 patients.

Methods: Patients with MPTCC (code 8131) were identified from the Surveillance Epidemiology and End Results (SEER 17) database. Data was analyzed for demographics, stage, treatment, overall (OS) and cancer specific survival (CSS). Appropriate statistical tests were used.

Results: 121 patients were identified (2001–08). Mean age was 73.3 years, 76.9% were male (76.9%, n=93), 82.7% were Caucasian. 40.5% (n=49) had non–muscle invasive (NMI) disease and 59.5% had muscle–invasive disease (MI) at diagnosis. The T stage was Ta or Tis (n=17), T1 (n=32), T2 (n=38) T3 (n=20) and T4 (n=14). 23 patients had node positive disease, the nodal status was not known in 4 patients. 10 patients had distant metastasis. Surgical procedures performed include, TURBT (n=83), Radical cystectomy (n=34), pelvic exenteration (n=1) and partial cystectomy (n=3). 8 patients received post–operative radiotherapy. The mean OS was 64.9, 42.9, 16.1 and 50.2 months and the mean CSS was 81.2, 56.3, 15.7 and 64.4 months for NMI, MI, distant and the whole group respectively. The 5–year OS was 40%, 54% and 34% and the 5 year CSS was 62%, 53% and 82% for the whole group, MI and NMI respectively. All patients with distant disease were dead by 28 months. On analysis of CSS by treatment type the 5–yr CSS for NMI was 81% (n=36) after TURBT and 100%(n=3) after Radical surgery. For MI disease the 3–yr CSS was 66% after TURBT (n=18) and the 5–yr CSS was 54% after radical surgery (n=29). On multivariate analysis, higher stage and age were associated with worse survival. TURBT was associated with better survival.

Conclusion: MPTCC is a rare variant of TCC. 81% survival can be achieved with TURBT for non–muscle invasive MPTCC.
NEUTROPHIL LYMPHOCYTE RATIO (NLR) IS PREDICTIVE OF UPSTAGING AT THE TIME OF RADICAL CYSTECTOMY FOR PATIENTS WITH UROTHELIAL CARCINOMA OF THE BLADDER

Tracy Downs, Aaron Potretzke, Luke Hillman, E Jason Abel and David Jarrard
University of Wisconsin, Madison, WI
(Presented by: Tracy Downs)

Introduction: Approximately 50% of patients undergoing Radical Cystectomy (RC) will be upstaged. Neutrophil–lymphocyte ratio (NLR) is an indicator of systemic inflammation and has been shown to be prognostic for outcomes in other cancers but evidence is lacking in bladder cancer. The purpose of our study was to evaluate the ability of preoperative NLR to predict pathologic upstaging to Non Organ Confined (NOC) disease.

Materials and Methods: After IRB approval, the records of consecutive patients undergoing RC for urothelial carcinoma from 2002 to 2012 at the University of Wisconsin Hospital were reviewed. Patients with NLR within 100 days of surgery were eligible for analysis. Pathological upstaging was defined as any increase in AJCC T stage recognized from cystectomy pathology. Differences in preoperative NLR between groups were evaluated with an unequal variance t-test.

Results: Of 390 consecutive patients undergoing RC, 102 patients met our study criteria. Overall, 56 (54.9%) patients were upstaged, 26 (25.5%) were unchanged, and 20 (19.6%) were downstaged. Fifty-one patients (50%) were upstaged to NOC. Patients who were upstaged to NOC demonstrated statistically significant greater NLRs (4.36 ± 0.87) as compared to patients who remained OC (2.62 ± 0.29 p<0.001).

Conclusions: Preoperative NLR is a simple measurement, that can be used to identify high–risk patients that may be upstaged at the time of radical cystectomy and who may benefit from neoadjuvant chemotherapy.
Introduction And Objectives: An inverse association between in−hospital and 30−day (30d) mortality after cystectomy has been reported. Recent evidence suggests the possibility of a similar relationship with 90−day (90d) mortality, raising the question of the extent to which hospital volume impacts on outcome beyond the 30d postoperative period.

Methods: The National Cancer Database, a national hospital−based cancer registry, was used to evaluate the 30− and 90d mortality for 21,164 bladder cancer cystectomy cases from 1,180 hospitals diagnosed between 2004 and 2008. Patient data were aggregated according to hospital volume categories that were based on the average annual number of procedures [<10 low volume hospital (LVH), 10−19, ≥20 high volume hospital (HVH)]. Associations between mortality and clinical, demographic and hospital characteristics were analyzed using hierarchical logistic regression models.

Results Obtained: Unadjusted 30 and 90d mortality rates were 2.8% and 7.2% overall, 1.7% and 5.7% among HVH, and 3.3% and 8.3% among LVH, respectively. Compared to HVH, the adjusted risks among LVH [OR (95% CI)] of 30d, overall 90d and 90d mortality conditional on having survived through 30 days from the hierarchical models were 1.9 (1.5−2.6), 1.5 (1.2−1.8) and 1.2 (1.0−1.6), respectively. 60% of procedures were performed in hospitals averaging <10 cases/year (92% of hospitals).

Conclusions: In a large national sample, low hospital volume was associated with increased 30 and 90d mortality. This is the first study to document a statistically significant association between hospital volume and 90d mortality after cystectomy, though the effect size is greatest for shorter term outcomes. These data support the need for further research to better understand the relatively high mortality rates seen between 30−90d, which show less variation across hospital volume strata. In addition, the stronger association between volume and 30d mortality suggests that quality−reporting efforts should focus on shorter term outcomes.
Poster Session I – Full Abstract

Poster #26
DOES TUMOR LOCATION AFFECT THE PATTERN OF LYMPH NODE METASTASIS AND ONCOLOGICAL OUTCOME IN BLADDER CANCER?
Hamed Ahmadi, Gus Miranda, Jie Cai and Siamak Daneshmand
USC Institute of Urology, USC/Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, California
(Presented by: Hamed Ahmadi)

Objectives: To evaluate the effect of tumor location on the pattern of lymph node metastasis (LNM) and oncological outcome in patients with bladder cancer (BC).

Methods: Based on pathology reports of radical cystectomy (RC) and extended pelvic lymph node dissection (ePLND) performed at USC Institute of Urology between 1971 and 2008, five discrete anatomical locations were defined as anterior wall, posterior wall, lateral wall, dome, and trigone (including uretrovesical junction and bladder neck). Tumors located exclusively in one anatomical location were considered as single-site tumor and assigned to the corresponding location group. Tumors that involved more than one anatomical location were considered as multiple-site tumor. Pattern of LNM, overall survival (OS), and recurrence free survival (RFS) was compared among five locations and between single-site and multiple-site tumors.

Results: Out of 1964 patients, we identified 1777 patients (1400 males/377 females) with the mean age of 67 (range, 23 – 93) yrs who had complete information on tumor location. Median follow-up was 12.9 (range, 0 – 36.6) yrs. 408/1777 (22.9%) patients had single-site tumor. There was no significant difference either among five locations or between single- and multiple-site tumors with regards to percentage of LN positive disease (P=0.4), number of positive LNs (P=0.3), and LN density (P=0.3). Regarding the level of LNM one PLND template, trigone tumors were less likely to involve LNs above aortic bifurcation (LN-AAB) when compared to other locations (2/13 (15%) vs. 10/24 (41.6%); P=0.02) but there was no difference between single-site and multiple-site tumors (12/47 (34%) vs. 15/83 (38%); P=0.5). Posterior wall tumors had worse OS compared to other locations (HR=1.7; P=0.03) but there was no difference in OS between single- and multiple-site tumors (P=0.9). There was no difference in RFS either among five locations (P=0.1) or between single- and multiple-site tumors (P=0.2).

Conclusions: There does not appear to be much difference in rate of LNM and RFS among different tumor locations. However, LNM in trigone tumors tend to be confined to area below aortic bifurcation and posterior wall tumors have worse OS.
Poster #27
SURVIVAL IMPACT OF POSTOPERATIVE EXPENDITURES BY HIGH VOLUME SURGEONS FOLLOWING DEFINITIVE SURGERY FOR BLADDER CANCER
Gurdarshan Sandhu¹, Kenneth Nepple², Robert Grubb III¹ and Seth Strope¹
¹Washington University School of Medicine, St. Louis, Missouri; ²University of Iowa Carver College of Medicine, Iowa City, Iowa
(Presented by: Gurdarshan Sandhu)

Introduction and Objectives: Improved survival in bladder cancer has been reported in high volume surgeons (HVS), but it is unknown whether variation exists in the outcomes of HVS based on surveillance patterns. We evaluated the postoperative expenditures of HVS and explored the association between these expenditures and survival.

Methods: Using Surveillance, Epidemiology, End Results data linked to Medicare records, we identified 2408 patients aged ≥66 years with bladder carcinoma and no other malignancies treated with definitive surgery from 1992 to 2005. Surgeons were defined as high volume for performance of ≥10 cystectomies in the cohort. Geography and time (2011) standardized outpatient postoperative Medicare expenditures were evaluated for two years after surgery. HVS were stratified into quartiles by median monthly postoperative expenditures, and survival for the quartiles was evaluated with the Kaplan–Meier (KM) method to generate unadjusted survival estimates. Multivariable Cox proportional hazard regression models were used to estimate mortality hazard ratios by expenditure quartile while controlling for covariates.

Results Obtained: A total of 29 of 833 surgeons were identified as high volume and had operated on 443 patients. Median monthly postoperative expenditures by individual surgeon ranged from $10.25 to $153.95 amongst the HVS. Differences in cancer specific survival (p=0.03) and overall survival (p=0.01) were seen between the surgeon expenditure quartiles on KM analysis. After adjusting for demographic, socioeconomic, comorbid, treatment, pathologic, hospital and surgeon factors no differences in cancer specific or overall mortality outcomes were consistently seen between the surgeon expenditure quartiles (Table).

Conclusions: In high volume surgeons, a broad range in postoperative management of patients following definitive surgery was observed, manifested by the large differences in postoperative expenditures. Despite the increased cost of postoperative care, no consistent differences in mortality were seen between surgeon expenditure quartiles implying that improved outcomes in HVS are more strongly related to the surgery itself than to strict postoperative surveillance.

<table>
<thead>
<tr>
<th>Table: Adjusted cancer specific and overall mortality by median monthly postoperative expenditure quartile for high volume surgeons.</th>
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<tr>
<td><strong>Cancer Specific Mortality</strong></td>
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<tr>
<td>Postoperative Expenditure Quartile</td>
</tr>
<tr>
<td>Average Median Expenditures $27</td>
</tr>
<tr>
<td>HR  95% CI  p value</td>
</tr>
<tr>
<td>Referent          --</td>
</tr>
<tr>
<td>$27.01-$37.00     0.58          0.33-1.01          0.05</td>
</tr>
<tr>
<td>$37.01-$50.00     0.36          0.18-0.69          &lt;0.01</td>
</tr>
<tr>
<td>$50.01            0.73          0.40-1.35          0.32</td>
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</table>

| **Overall Mortality**                                       |
| Postoperative Expenditure Quartile                          |
| Average Median Expenditures $27                             |
| HR  95% CI  p value                                         |
| Referent          --                                      |
| $27.01-$37.00     0.73          0.48-1.11          0.14 |
| $37.01-$50.00     0.59          0.37-0.95          0.03 |
| $50.01            0.89          0.56-1.42          0.62 |
**Poster #28**

**COMPLICATIONS ASSOCIATED WITH OBESITY IN RADICAL CYSTECTOMY**

Joshua Cohn, Michael Large, Kyle Kiriluk, Kyle Richards, Ali-Aria Razmaria, Norm Smith and Gary Steinberg

University of Chicago Hospitals, Chicago, IL

(Presented by: Joshua Cohn)

**Introduction:** The prevalence of obesity is increasing in the United States and is thought to increase the technical difficulty and incidence of perioperative complications associated with radical cystectomy (RC).

**Objectives:** To evaluate the impact of obesity on operative time and perioperative complications following RC.

**Methods:** A retrospective cohort of patients undergoing RC for urothelial carcinoma of the bladder between July 2007 and June 2010 was established. Patients were divided into four cohorts based on Body Mass Index (BMI): BMI<25, overweight (BMI 25−29.9), obese (BMI 30−34.9) and morbidly obese (BMI>35). Patients were excluded from operative time analysis if they had a preplanned procedure in addition to cystectomy. Primary endpoints were 30−day Clavien grade III−V complications and operative time.

**Results:** The study sample consisted of 286 patients: 81, 122, 51, and 32 in the BMI<25, overweight, obese, and morbidly obese groups, respectively. Overall median follow up was 579.5 days (IQR 221−1086). Baseline characteristics did not differ significantly with the exception of gender (Table 1). On univariate analysis, increased BMI was associated with urine leak (HR 1.66 for each increase in BMI group, 95% CI 1.06−2.59; p=0.026), 30−day Clavien complication III−V (HR 1.39, 95%CI 1.05−1.83; p=0.02) and increased operative time (15.7 min, 95%CI 9.7−21.6; p<0.005). On multivariate analysis, increased BMI was associated with urine leak (HR 1.66, 95%CI 1.03−1.70; p=0.04), increased operative time (14.3 minutes, 95%CI 8.7−19.9; p<0.005) and 30 day Clavien grade III−V complications (HR 1.47, 95%CI 1.10−1.96; p=0.009), but not muscle−invasion on final pathology (HR 0.89, 95%CI 0.68−1.14; p=0.36). Each 1 kg/m2 increase in BMI was associated with 2 minutes (95%CI 1.1−2.9 minutes) of increased operative time (p<0.005). Increased operative time was also associated with orthotopic neobladder (33.4 min, 95%CI 19.2−47.5; p<0.005) and Indiana Pouch (35.8 min, 95%CI 13.4−58.3; p<0.005) urinary diversion.

**Conclusions:** The risk of urine leak, increased operative time and postoperative Clavien grade III−V complications increases as BMI increases. These findings have implications for perioperative planning and counseling.
Poster #29
‘DYSPLASIA’ ON BLADDER BIOPSY: WHAT DOES IT MEAN AND HOW DOES IT FIT IN WITH THE DIAGNOSIS OF UROTHELIAL CARCINOMA IN SITU (CIS)?
Jeremy Miller
HealthTronics Laboratory Solutions
(Presented by: Jeremy Miller)

There are many terms currently used in pathology to define the process of potentially malignant cells that are confined to an epithelium; examples include carcinoma in situ (CIS), intraepithelial carcinoma, high-grade dysplasia, cervical intraepithelial neoplasia (CIN), and prostatic intraepithelial neoplasia (PIN). This broad spectrum of diagnoses creates the potential for miscommunication between the pathologist and treating clinician. One fairly common example is the diagnosis of high-grade dysplasia on bladder biopsy; this condition is equivalent to CIS, but in some instances the clinician can equate this with the term ‘dysplasia’ (without a qualifier), which is a currently accepted term in urologic pathology and has an entirely different prognosis and management paradigm than CIS. This course will clarify the correct terminology in urologic pathology, and will demonstrate the diagnostic and prognostic differences in these potentially confusing intraepithelial processes.

Poster #30
COMPARATIVE PERFORMANCE OF COMORBIDITY INDICES FOR ESTIMATING PERIOPERATIVE COMPLICATIONS AND ALL-CAUSE MORTALITY FOLLOWING RADICAL CYSTECTOMY
Alonso Carrasco, Igor Frank, Simon Kim, John Cheville, R. Houston Thompson and Stephen Boorjian
Mayo Clinic, Rochester, MN
(Presented by: Alonso Carrasco)

Introduction and Objective: Radical cystectomy (RC) is associated with a significant risk of perioperative complications, and patients remain subject to relatively high rates of all-cause mortality (ACM) after surgery consistent with the age and comorbidity profile of bladder cancer. Here, we investigated the comparative ability of various comorbidity indices to predict perioperative morbidity and 5-year ACM following RC.

Methods: We identified 891 patients who underwent RC at Mayo Clinic between 1994–2005. The associations of American Society of Anesthesiologists (ASA) score, Charlson comorbidity index (CCI), Elixhauser index (EI), and Eastern Cooperative Oncology Group performance status (ECOG) with outcome were assessed using Cox regression models. Model performance was compared with area under receiver operating curve (AUC).

Results: Median patient age was 69.1 years (interquartile range (IQR) 62.76). A total of 473 (53%) patients experienced a complication within 90 days of RC. CCI (HR 1.07;p=0.003), EI (HR 1.24;p<0.0001), and ASA (HR 1.33;p=0.02), but not ECOG (HR 1.18;p=0.19) were significantly associated with 90-day complication risk. Median follow-up after RC was 10.1 years (IQR 8.1,12.8), during which time 340 patients died. CCI (HR 1.22;p<0.0001), EI (HR 1.28;p<0.0001), ASA (HR 1.42;p=0.009), and ECOG (HR 1.95;p<0.0001) were each independent predictors of 5-year ACM. Moreover, CCI (AUC 0.797;p<0.0001), EI (AUC 0.769;p=0.02), and ECOG (AUC 0.769;p=0.01) significantly enhanced the performance of a base predictive model which did not include comorbidity status (AUC 0.756) for assessing the risk of 5-year ACM. Interestingly, only EI (AUC 0.591;p=0.01) significantly enhanced the ability of the base model, which included age, gender, year of surgery, and pathologic tumor stage/nodal status, to predict 90-day postoperative complications (AUC 0.544).

Conclusions: The incorporation of patient comorbidity status, in particular CCI, significantly improves prediction of ACM following RC, and should be used in patient counseling and risk stratification models. These data also suggest that while CCI, EI, and ASA are significantly associated with the risk of perioperative complications, only EI significantly improves the predictive ability of a model based on age, gender, year of surgery, and tumor features. Further study is warranted to validate the relative value of various measures of comorbidity for assessing outcomes following RC.

Source of Funding: None
Poster #31
WOMEN ARE LESS LIKELY TO RECEIVE EVIDENCE-BASED PROCESSES OF CARE FOR THE TREATMENT OF BLADDER CANCER AS COMPARED TO MEN
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(Presented by: Christopher Anderson)

Introduction: Although women are less likely to be diagnosed with bladder cancer, they experience a disproportionately high rate of cancer–specific mortality than men. While several explanations exist for this difference in the mortality–to–incidence ratio, under-use of evidence-based processes of care in women may be a contributing factor. Within the Donabedian framework of healthcare quality, processes measures describe the frequency that an intervention known to favorably impact outcomes is utilized. Thus, we sought to explore the utilization of two important processes of care in women with bladder cancer: radical cystectomy (RC) compared with partial cystectomy (PC) and pelvic lymphadenectomy (PLND).

Methods: Using data from three states within the State Inpatient Database (NY, MD and FL), we identified all patients that underwent either RC or PC from 1996–2009 by ICD–9 procedure code. All patients had an ICD–9 diagnosis code for bladder cancer. We obtained several patient and hospital descriptive characteristics. Surgeon and hospital volume were defined based on number of cystectomies per year. The effect of gender on use of RC, as compared to PC, and use of PLND were compared using logistic regression models allowing for clustering of outcomes within hospital and controlling for age, race, comorbidity, state, year, payer and hospital and surgeon volume.

Results: Of our cohort (n=16,864), 81% were men and 19% were women. The majority of patients were white, had ≤1 comorbidity and lived in a metropolitan area. Median patient age was 70 years old. As compared to men, a lower percentage of women received a RC (79.5% vs. 86.2%, p<0.001) and PLND (46% vs. 54.5%, p<0.001). On multivariate analysis, women had 36% lower odds of undergoing RC (OR 0.64, 95% CI 0.57–0.73) and 25% lower odds of undergoing PLND (OR 0.75, 95% CI 0.68–0.83) as compared to men. When accounting for surgeon and hospital volume, women treated by providers and hospitals in the highest volume decile still had a 31% lower odds of RC (OR 0.69, 95% CI 0.62–0.77) and 20% lower odds of PLND (OR 0.80, 95% CI 0.72–0.88).

Conclusion: Although we were unable to control for potential differences in disease characteristics, women were less likely to receive evidence–based processes of care, even when treated by high volume surgeons and at high volume hospitals. Lower use of these two important processes of care may contribute to the inferior bladder cancer outcomes observed in women.
ALTERATIONS IN PTEN, HIF AND RAPTOR CORRELATE WITH PATHOLOGICAL FEATURES AND ONCOLOGICAL OUTCOMES OF PATIENTS WITH PAPILLARY RENAL CELL CARCINOMA

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(Presented by: Oussama Darwish)

**Introduction and Objectives:** Mammalian target of rapamycin (mTOR) pathway has been implicated in renal cell carcinoma (RCC) tumorigenesis. The aim of the present study was to evaluate the association between PTEN, HIF–1α and Raptor; and pathological parameters as well as oncological outcomes of patients treated surgically for papillary RCC (pRCC).

**Methods:** Tissue microarray immunohistochemistry of PTEN, HIF–1α and Raptor was performed on pRCCs of patients treated with radical or partial nephrectomy between 1997–2010.

**Results:** From a retrospective cohort of 620 patients diagnosed with RCC, 74 patients with pRCC were identified, with a median follow up of 30 months (range 6–180). Of these, 56 were males (76%) and 18 were females (24%), with mean age of 58 years (range, 34–83). The tumors were confined to the kidney (pT1–T2) in 66 (89%) and demonstrated extrarenal extension (pT3–T4) in 8 (11%) patients. Regional nodal involvement and systemic metastases at the time of nephrectomy were present in 6 (8%) and 9 (12%) patients, respectively. Expression of one, two or all three biomarkers was altered in 15 (20.3%), 33 (44.6%) and 23 (32.1%) patients, respectively. Combined alterations of PTEN, HIF–1α and Raptor were associated with high grade (P = 0.003), regional lymph node (P = 0.049) and distant metastasis (P = 0.014). Moreover, alteration of all three biomarkers was associated with increased risk of cancer specific mortality (HR = 10 and p = 0.002; figure 1).

**Conclusions:** Alterations of constituents of the mTOR pathway (PTEN, HIF–1α and Raptor) correlate with aggressive pathological features, and may have prognostic role in pRCC. Utilization of tissue biomarkers in addition to the standard pathological features of kidney cancer may improve risk stratification and development of novel treatment approaches.

Source of Funding: none

**Fig. 1 Association of cancer-specific survival with altered markers**
**Poster #33**

**IMPACT OF RENAL SURGERY ON DEVELOPMENT OF SURGICAL STAGE IV CHRONIC KIDNEY DISEASE AND OVERALL MORTALITY IN PATIENTS WITH STAGE I RENAL CELL CARCINOMA AND WITHOUT PREOPERATIVE RENAL INSUFFICIENCY**

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(Presented by: Ithaar Derweesh)

**Introduction:** Partial nephrectomy (PN) has emerged as the reference standard for treatment of clinical T1a renal masses. However, its expanded utilization has been called into question, most recently by the EORTC clinical trial. We examined the impact of renal surgery on development of all-cause mortality and Surgical Stage IV chronic kidney disease (S−Stage IV CKD) in patients with Stage I Renal Cell Carcinoma (RCC) and who did not have pre-existing CKD (estimated glomerular filtration rate <60 ml/min/1.73 m²).

**Methods:** Multi-center retrospective analysis of 524 patients with Stage I RCC and without pre-existing CKD who underwent renal surgery [293 Radical Nephrectomy (RN)/231 PN, mean age 56 years, mean follow-up 6.8 years] at two institutions from 7/1992−6/2007. Demographics, renal and metabolic parameters were recorded. Data were analyzed within subgroups based on treatment (RN vs. PN). Primary outcome was all cause mortality rate, with secondary outcomes being cardiovascular disease (CVD) mortality and S−Stage IV CKD. Multivariate analysis (MVA) was conducted for risk factors for S−Stage IV CKD and all cause mortality.

**Results:** There were no significant differences with respect to demographics. Tumor size (cm) was significantly larger for RN (4.8 vs. PN 3.3, p<0.001). Postoperatively, significantly more S−CKD Stage IV developed in RN (RN 15.7 % vs. PN 6.9%, p=0.002). All cause mortality was significantly higher in RN (8.5% vs. PN 1.7%, p=0.001). CVD mortality was also higher in RN (5.5% vs. 0.9%, p=0.004). MVA for all-cause mortality demonstrated S−Stage IV CKD (OR 27.3, p<0.001), BMI ≥30kg/m2 (OR 3.7, p=0.014), preoperative hyperlipidemia (OR 3.7, p=0.039), preoperative proteinuria (OR 6.0, p=0.043), and RN (OR 6.2, p=0.007) as independent risk factors. MVI for S−Stage IV CKD demonstrated ASA ≥ 3 (OR 2.4, p=0.005), preoperative dyslipidemia (OR 5.6, p<0.001), and RN (OR 2.5, p=0.003) as independent risk factors.

**Conclusion:** For Stage I RCC, and in patients without pre-existing CKD, patients who underwent RN had significantly higher incidence S−Stage IV CKD, overall and CVD mortality, compared to a contemporary, well-matched cohort that underwent PN. In addition to RN, S−Stage IV CKD, obesity, and preoperative hyperlipidemia and proteinuria were risk factors associated with all-cause mortality. Further prospective investigation on impact of renal surgery is necessary to consider not only oncologic, but also cardiovascular and metabolic outcomes.

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**Poster #34**

**HISTOLOGIC DISTRIBUTION OF RCC IN YOUNG PATIENTS IS DIFFERENT FROM OLDER PATIENTS: RESULTS FROM THE SEER DATABASE**

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(Presented by: Michael Daugherty)

**Introduction and Objectives:** Only 3–5% of all renal cell cancer (RCC) tumors are found in young patients. While tumors in young patients are often bilateral, multifocal, and caused by known hereditary syndromes, some are sporadic and develop without any family history or known genetic mutations. Our recent observations from clinical practice have led us to hypothesize that there is a difference in histologic distribution in the younger patients when compared to the older cohorts.
Methods: SEER 18–registries database was queried for all patients ≥20 years old that were surgically treated for renal cell carcinoma between the years 2001 and 2008. Patients with unknown race, grade, stage, histology were excluded from the study. To minimize inclusion of the hereditary and multifocal RCC we also excluded patients with more than one tumor. Histologies selected were clear cell, granular (included later as clear cell), papillary, chromophobe, sarcomatoid and collecting duct. Histological distribution of RCC was analyzed in young, middle–age, and older patients for ages 20–44, 45–64 and ≥65, which contained 3514, 15368, and 10445 patients, respectively. Chi–square analysis was used to compare the histologic distributions between the cohorts.

Results: There was no difference in the incidence of clear cell RCC between the three cohorts (77.6% vs. 78.4% vs. 78.1%, p=0.50). For middle age and older patients there was no difference for any histology distribution (p=0.44). The young patients had significantly higher incidence of chromophobe RCC than middle age or older patients (9.2% vs. 5.7% vs. 5.4%, p<0.01). Figure 1 demonstrates distribution of non–clear cell histologies, with young patients having significantly higher percentage of chromophobe tumors than the middle age or older patients (41% vs. 27% vs. 24%, p<0.001).

Conclusions: It is possible that young patients with RCC may have undiagnosed genetic mutations that lead to the development of chromophobe tumors earlier in life. Age dependent tumorigenesis may point to identification of specific risk factors or genetic events predisposing to significantly higher proportion of young patients to develop chromophobe RCC.

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Poster #35
HAS THE AUA GUIDELINE FOR MANAGEMENT OF THE CLINICAL STAGE 1 RENAL MASS IMPACTED RATE OF PARTIAL NEPHRECTOMY? CALIFORNIA AND NATIONAL TRENDS
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(Presented by: Michael Liss)

Introduction: Partial Nephrectomy (PN) has been underutilized. In 2009, the AUA promulgated guidelines for management of clinical T1 renal mass, which stressed the role of PN as reference standard for Clinical T1a renal masses. We analyzed trends in utilization of PN versus radical nephrectomy (RN) pre and post–Guideline release utilizing the Office of Statewide Health Planning and Development (OSHPD) database, a 100% sample of California inpatients, and in the National Inpatient Sample (NIS), a 20% sample used to estimate national U.S. trends.

Methods: For OSHPD and NIS, we identified all inpatients with and primary and secondary ICD9 codes for RN or PN from 1998–2010. We excluded patients <18 years old, those status post transplant, polycystic kidney disease, and regional disease. Subanalysis was performed to examine utilization of PN in non–hemodialysis dependent chronic kidney disease (CKD). Documenting the absolute numbers and % change over time, chi–squared analysis was utilized (with p<0.05 significant).
**Results:** In OSHPD, 39,994 patients were identified as having PN (18.6%) or RN (81.4%). Proportion of PN steadily increased from 10.5% to 27.6% from 1998 to 2010 (p<0.001). Proportion increase in PN from 2008–2009 and 2009–2010 was 8.5% and 23.3%, respectively (p=0.124 and p<0.001). Utilizing NIS, 529,784 patients were identified who underwent PN or RN and showed an approximate PN rate of 20.4% in the West region. PN accounted for 21.6% of extirpative therapy which increased from 9.5% to 34.6%. The proportion increase in PN from 2008–2009 and 2009–2010 was 13.1% and 16.1% (p=0.436). Subanalysis of patients with non dialysis dependent CKD who underwent renal surgery utilizing OSHPD demonstrated increasing PN proportion from 3.9% to 16.9% (p<0.001) from 1998–2010 and 26.9% from 2009–2010. In NIS, proportion of PN in non–dialysis dependent CKD also revealed increase in PN from 3.8% to 20% (p<0.001), while change in PN utilization between 2008–2009 (10.1%) to 2009–2010 (33.7%) (p=0.273).

**Conclusion:** Over the past 12 years rate of PN has increased significantly. While a smaller proportion of PN were performed in California than nationally, the rate of change from 2009–2010 was the most significant. While publication of the AUA renal mass guideline may have had an effect, but could not replicate this nationally. Concerning is the low utilization of PN in patients with non dialysis–dependent CKD. Further investigation is requisite.

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**Poster #36**

**ADULT XP11 TRANSLOCATION ASSOCIATED RENAL CELL CARCINOMA: TIME TO RECOGNIZE**

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(Presented by: Zachary Klaassen)

**Introduction and Objectives:** Xp11 translocation renal cell carcinomas (TRCCs) are a subtype of renal malignancy characterized by translocations involving the splice site Xp11.2. Xp11 TRCC was initially thought to be an anomalous malignancy unique to the pediatric population, however since 2007 studies have emerged identifying Xp11 TRCCs in the adult population. The objective of this study was to discuss the epidemiology, pathologic analysis and treatment regimens for Xp11 TRCCs and propose a unique algorithm for surveillance.

**Methods:** A comprehensive literature review was conducted using PubMed. Keywords included ‘translocation renal cell carcinoma’, ‘Xp11 translocation renal cell carcinoma’, ‘adult translocation renal cell carcinoma’ and ‘treatment of adult translocation renal cell carcinoma’.

**Results:** Xp11 mutations most commonly result in gene fusion between the transcription factor TFE3 and the alveolar soft part sarcoma locus (ASPL). Adult Xp11 TRCC is more common than originally perceived making up 1.6% to 5% of adult RCCs. The majority of patients either present with metastasis or subsequently develop metastasis within 12 months of presentation. Gross pathologic features include a circumscribed tumor and the comparable histopathologic presentation with papillary and clear cell carcinoma often confounds diagnosis. The most favorable outcomes have been reported in patients who underwent radical nephrectomy and lymph node dissection before the development of metastasis. Despite Xp11 TRCC’s apparent resistance to chemotherapeutic agents, initial reports of therapy targeted towards the VEGF receptor and mTOR pathway are encouraging for patients presenting or subsequently developing metastatic disease. Based on the potential aggressiveness of Xp11 TRCC in adults we propose classification of these patients as high–risk. We recommend: (i) a history/physical/lab tests and chest CT every 6 months for 3 years, then yearly until 10 years, and (ii) abdominal CT every 6 months for 2 years then yearly until 5 years, then every 2 years until 10 years.

**Conclusions:** As a result of an increasing number of incidental renal masses, knowledge regarding the potentially aggressive and fatal nature of Xp11 TRCC is important for urologists. Although relatively new to the urologic oncology arena, with continually improving histopathologic analysis, Xp11 TRCC incidence will increase requiring long–term follow–up data to develop optimum management of these patients.
Pre-operative Pulmonary Embolism is Not Associated with Worse Outcomes in RCC Patients After Nephrectomy with Thrombectomy: A Contemporary Multicenter Analysis

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Introduction and Objective: Renal cell carcinoma (RCC) patients who present with pulmonary embolism (PE) and venous thrombus may not be offered surgery because of concerns with anti-coagulation and presumed poor post-surgical outcomes. The objective of this study was to evaluate post-surgical recurrence and disease specific survival (DSS) in RCC patients with venous thrombus who had PE diagnosed at initial presentation.

Methods: After IRB approval, we reviewed the records from 2000–2011 at 3 tertiary hospitals (UW, UTMDACC, UTSW) for all consecutive RCC patients who had nephrectomy with thrombectomy. Clinical and pathologic predictive factors for recurrence and survival were collected for each patient. Univariate and multivariate analysis was used to evaluate whether PE at presentation was associated with RCC recurrence or DSS after nephrectomy with thrombectomy.

Results: Preoperative PE was diagnosed in 35/782 (0.5%) RCC patients undergoing nephrectomy with thrombectomy with a median follow-up time of 22 months. Patients with PE at initial diagnosis were more likely to have higher level thrombus (p<0.01) but no difference was found between groups for age, gender, race, tumor diameter, Fuhrman grade, sarcomatoid differentiation, peri-nephric fat invasion or histologic subtype.

In N0M0 patients, there was no difference (p=0.36) in the rate of RCC recurrence for 395/782 (50%) or 7/17 (41%) patients without PE or with PE respectively (figure 1). On multivariate analysis, peri-nephric fat invasion, Fuhrman grade, and thrombus height, but not preoperative PE status, were predictive of recurrence risk. Similarly, there was no difference in the rates of lung metastases for 67/123 (53%) N0M0 patients without PE or 3/7 (43%) patients with PE (p=0.71).

Preoperative PE diagnosis was not predictive of death from RCC (p=0.58). On multivariate analysis, only peri-nephric fat invasion, sarcomatoid differentiation, Fuhrman grade, and thrombus height, were independently predictive of risk of death from RCC.

Conclusions: PE at initial diagnosis is not associated with worse post-surgical recurrence or survival in RCC patients with tumor thrombus.
Poster #38
CLAVIEN CLASSIFICATION SYSTEM FOLLOWING NEPHRECTOMY AND INFERIOR VENA CAVA THROMBECTOMY WITH VASCULAR BYPASS FOR RENAL CELL CARCINOMA
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(Presented by: Timothy Kim)

Introduction: Renal cell carcinoma (RCC) associated with higher levels of inferior vena cava (IVC) tumor thrombus may require a team of surgical sub-specialists. Vascular bypass in these patients may be required for complete excision of the tumor thrombus. This surgical complexity may impact the incidence of post-operative complications.

Methods: In retrospective fashion, we reviewed all patients at our institution who underwent nephrectomy with IVC thrombectomy for renal cell carcinoma and required either cardiopulmonary bypass and hypothermic circulatory arrest (CPB–HCA) or venovenous bypass (VVB). We categorize these complications according to the accepted Clavien classification system.

Results: Twenty-one patients were reviewed for post-operative complications after nephrectomy and IVC thrombectomy (11 male, 10 female), and all patients had either intrahepatic (4) or supradiaphragmatic (17) tumor thrombus. Sixteen patients underwent CPB–HCA, while VVB was utilized in five. Eight patients (38%) had an uneventful post-operative course (7 CPB–HCA, 2 VVB). In the remaining 13 patients, seventeen post-operative complications occurred. Utilizing the Clavien classification system, 2 Grade I (12%), 11 Grade II (65%), 1 Grade IIIa (6%), 1 Grade IIIb (6%), 0 Grade IV, and 2 Grade V (12%). Grade I and II complications consisted of volume overload requiring diuresis (2 patients), new onset atrial fibrillation (4), clostridium difficile infection (1), chylous fistula formation (1), total parenteral nutrition requirement (1), deep vein thrombosis (2), pulmonary embolus (1), and myocardial infarction (1). These patients were all treated with appropriate medical therapy, and without any interventional procedure. The grade IIIa complication was the placement of a chest tube for a post-operative pneumothorax. The patient with grade IIIb required mediastinal re-exploration due to cardiac tamponade secondary to hematoma formation. Two patients died post-operatively, one from sepsis complications and the other patient developed multi-system organ failure.

Conclusion: The need for vascular bypass in the setting of nephrectomy and IVC thrombectomy adds another layer of possible morbidity to a complex surgery. While the majority of complications are low grade, serious complications do occur despite optimal post-operative care.

Poster #39
AN IMMORTALIZED HUMAN TUMOR CELL LINE DERIVED FROM HEREDITARY PAPILLARY RENAL CELL CARCINOMA TYPE I
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(Presented by: Young H. Lee)

Introduction and Objectives: Hereditary Papillary Renal Cell Carcinoma (HPRC) Type I is a malignant hereditary cancer caused by germline mutations in the MET gene. The MET gene encodes the Met tyrosine kinase, the cell surface receptor for hepatocyte growth factor (HGF) which regulates epithelial cell motility, morphogenesis, and proliferation. The HGF/Met signaling is also active in a variety of sporadic cancers and contributes to oncogenesis, disease progression, metastasis and acquired drug resistance. Although many human tumor derived cell lines express HGF and/or Met, there are no immortalized cell lines derived from HPRC Type 1, limiting the study of this genetically defined model of a human Met–driven cancer in vitro. After many unsuccessful attempts to generate a spontaneously immortal HPRC–derived cell line, an immortalized line (UOK273B) was ultimately obtained through lentiviral infection of tumor derived cells to provide constitutive ectopic expression of human telomerase. Here we describe the preliminary biochemical and biological characterization of this cell line as well as the impact and effectiveness of the Met/Alk inhibitor crizotinib on HGF/Met signaling and bioactivities.
Methods: Primary tumor cells with a H1112R Met mutation on exon 16 were grown and immortalized using hTERT. Total and phosphorylated Met levels were determined by electrochemiluminescent 2 site immunoassays. Invasiveness was measured using matrigel-coated Boyden chambers, and matrix metalloproteinases (MMP) production by zymogram gels. Xenograft tumors grown in SCID mice were measured to determine growth rate and tumors were extracted for biochemical analysis.

Results: UOK273B cells are morphologically and biologically similar to the primary tumor in possessing high levels of Met and pMet. The cells also secrete HGF at high levels, resulting in autocrine Met activation. These features result in increased proliferation and motility in the absence of added HGF. UOK273B also express high levels of MMP2 and MMP9, and are highly invasive in vitro. Crizotinib treatment inhibited Met phosphorylation and reduced cell proliferation and invasion. UOK273B xenograft tumor growth as well as tumor Met phosphorylation level was also reduced with crizotinib treatment.

Conclusion: UOK273B is a new immortal HPRC derived cell line that contains HGF, Met and pMet in abundance. The Met/Alk inhibitor crizotinib effectively inhibits UOK273B cell growth and invasiveness in vitro and in vivo.

Poster #40
DEFINING EARLY-ONSET KIDNEY CANCER: IMPLICATIONS FOR GENETIC COUNSELING
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(Presented by: Brian Shuch)

Abstract: Approximately 1−4% of renal cell carcinoma (RCC) is hereditary. No guidelines exist for patient selection for RCC genetic counseling. We evaluate how age of onset could guide referral for genetic testing.

Methods: We analyzed the age distribution of RCC cases in the Surveillance and Epidemiology and End Results (SEER−17) program and from our institutional hereditary kidney cancer population. The age distributions were compared by sex, race, histology, and hereditary syndrome. Models were established to evaluate the specific age thresholds for genetic counseling.

Results: The median age of RCC in SEER−17 was 64 years old with the distribution closely approaching normalcy. Statistical differences were observed by race, sex, and subtype (p<0.05). The bottom decile overall was 46 years of age and slightly differed by sex, race, and histology. The mean and median age of 608 cases of hereditary kidney cancer was 39.3 and 37 years old. While age varied by specific syndrome, 70% of the hereditary cases lied below the bottom age decile. Modeling demonstrated that age alone could limit the number of patients for counseling to acceptable levels and that the 10th percentile maximized sensitivity and specificity.

Conclusions: Besides associated clinical manifestations and personal/family history, early age of onset in RCC could be a sign of a hereditary kidney cancer. In the absence of clinical signs, an age of onset ≤46 should trigger referral for genetic counseling and may serve as a useful cutoff when establishing genetic testing guidelines.
Poster #41

COMPARED TO RADICAL NEPHRECTOMY, NEPHRON-SPARING SURGERY OFFERS A LONG-TERM SURVIVAL ADVANTAGE IN PATIENTS BETWEEN THE AGES OF 20 AND 44 WITH RCC =4CM: AN ANALYSIS OF THE SEER DATABASE

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(Presented by: Michael Daugherty)

Introduction and Objectives: Partial Nephrectomy (PN) decreases the risk of developing chronic kidney disease as opposed to Radical Nephrectomy (RN). While prior studies have demonstrated the survival advantage of PN in older patients (>65 years old), they have been criticized by selection bias in procedure selection due to comorbidities. We hypothesized that the long-standing effects of renal preservation would manifest in a survival advantage of a younger patient population, where selection bias of procedure due to comorbidities is minimized.

Methods: The SEER 18-registries database was queried for all patients between the ages of 20 to 44 that were surgically treated with either PN or RN for renal cell carcinoma between 1993 and 2003. We have excluded patients with metastatic or locally advanced disease, and included patients with localized tumors ≤ 4cm, with known grade and histology. The histologies selected were: clear cell, granular, papillary, chromophobe, sarcomatoid, collecting duct, and renal cell. The final cohort consisted of 222 subjects treated with PN and 494 subjects treated with RN. Chi-square analysis was used to compare tumor variables and patient characteristics. Cancer-specific and overall survival rates were compared between the two groups at 5 and 10 years using Kaplan–Meier analyses.

Results: There were no differences between patients treated by PN or RN in demographics or tumor characteristics. Additionally, there was no difference in cancer-specific survival between the two groups (PN vs. RN) at 5 or 10 years (100% vs. 99.6% (p=0.52), and 100% vs. 98.3% (p=0.26), respectively). While there was no difference in 5-year overall survival (98.2% vs. 95.5%, p=0.12), the patients treated with PN had an advantage in 10-year overall survival compared to patients treated with RN (94% vs. 89.7%, p=0.02).

Conclusions: Present SEER analyses demonstrate that when compared to radical nephrectomy, nephron-sparing surgery results in improved overall survival in patients treated for localized small renal cell carcinoma. As expected, the survival advantage is observed late, and supports the importance of long-term renal functional preservation. The present study of a younger patient population allows for minimizing selection bias in choosing surgical procedure due to comorbidities, and provides further support for maximal renal preservation in patients with a life expectancy of 10 years or more.

Poster #42

EXPRESSION PATTERNS OF SEVEN MOLECULAR MARKERS IN CHROMOPHOBE RENAL CELL CARCINOMA WITH DISTINCT EXPRESSION CHANGES IDENTIFIED IN HIGH-GRADE LESIONS

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(Presented by: Joshua Logan)

Purpose: Chromophobe renal cell carcinomas (CRCC) arise in the distal convoluted tubules and account for only 5% of all renal cell carcinomas (RCC). Because of its rare occurrence, the molecular characterization of CRCC is less well defined compared to clear cell RCC. We sought to address this deficiency by evaluating the expression of a panel of molecular markers in a large cohort of CRCC using a tissue microarray (TMA) platform.

Materials and Methods: From a total of 2,634 patients, we identified 84 cases of sporadic CRCC (3.2%) undergoing nephrectomy between 1989 to 2010. A subset of 11 tumors (13%) were noted to have secondary areas of sarcomatoid transformation ranging from 10–95% of the tumor volume. A dedicated TMA was prepared containing samples from the 84 CRCC primary tumor specimens. The expression (e.g. number of samples staining positive or negative, the mean intensity of positive staining, and the mean percentage of cells staining positive per sample) of seven molecular markers (C-Kit, CAIX, CAXII, VEGF, PTEN & NYESO) was evaluated by immunohistochemistry. The cohort was further stratified into two subsets: those with sarcomatoid pattern present and those in which it was absent. The Mann Whitney U Test and Fisher’s exact tests were applied to evaluate differences in expression between the two groups.
Results: Staining positivity was 98.6%, 94.7%, 92.0%, 49.4%, 28.9% & 5.3% for VEGF, C–Kit, CAXII, PTEN, NYESO and CAIX respectively. The mean percentage of cells staining positive per positive case was 98.7%, 100%, 92.6%, 96.7% 100% and 66.3% respectively. Comparing the expression pattern of the pure CRCC samples to the expression pattern of the epithelial component of cases with sarcomatoid transformation revealed significantly decreased expression of C–Kit (p=0.0019). When comparing the expression pattern of the epithelial component to the expression pattern of the sarcomatoid portion of the CRCC samples, there was a complete absence of C–Kit (p<0.0001) and CAXII expression (p<0.0001), both markers of distal convoluted tubule epithelia, and decreased expression of VEGF in the sarcomatoid component.

Conclusions: CRCC demonstrates high expression of C–Kit, CAXII and VEGF, moderate expression of NYESO and PTEN, and only minimal expression of CAIX. CRCC with sarcomatoid features exhibit aggressive clinical and pathologic features and demonstrate a distinct molecular profile compared to CRCC without sarcomatoid features.

Poster #43
‘TRIFECTA’ IN PARTIAL NEPHRECTOMY
Andrew Hung, Sumeet Syan and Inderbir Gill
USC Institute of Urology, Los Angeles, CA
(Presented by: Sumeet Syan)

Objective: To introduce the concept of ‘trifecta’ outcomes during robotic/laparoscopic partial nephrectomy (RPN/LPN), wherein three key outcomes are simultaneously realized: negative cancer margin, minimal renal functional decline, and no urologic complications. We report serial trifecta outcomes in patients undergoing RPN/LPN for tumor by a single–surgeon over a 12–year period.

Methods: 551 patients had complete data, and were retrospectively divided into 4 chronologic eras: Discovery era (n=139): 09/99–12/03, Conventional hilar–clamping era (n=213): 01/04–12/06, Early–unclamping era (n=104): 01/07–11/08, Zero–ischemia era (n=95): 03/10–7/12. Renal functional decline was defined as >10% reduction in actual versus volume–predicted post–operative estimated glomerular filtration rate (eGFR).

Results: Over the 4 eras, tumors trended towards larger size (2.9, 2.8, 3.1 and 3.4cm; p=0.009), yet estimated percent kidney preserved was similar (89%, 90%, 90% and 88%; (p=0.2)). Recent eras had increasingly complex tumors: more often >4 cm in size (p=0.008), centrally–located (p <0.008) or hilar–abutting vessels (p<0.0001). Nevertheless, with significant technical refinement, warm ischemia times decreased serially: 36, 32, 15 and 0 min, respectively (p<0.0001). Renal functional outcomes were superior in recent eras, with fewer patients experiencing decline (p<0.0001). Uniquely, actual eGFR outcomes exceeded volume–predicted eGFR outcomes only in the zero–ischemia cohort vis–a–vis other eras (−9.5%, −11%, −0.9%, +7.1%; p<0.001). Positive cancer margins were uniformly low (<1%). Urologic complications trended lower in recent eras (p=0.02). Trifecta outcomes occurred more commonly in recent eras: 45%, 44%, 62% and 69%, respectively (p<0.0001).

Conclusions: Trifecta should be a routine goal during partial nephrectomy. Despite increasing tumor complexity, trifecta outcomes of RPN/LPN improved significantly over the past decade.

Table. ‘Trifecta’ outcomes

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<tr>
<td>LPN/RPN cancer</td>
<td>139 (100%)</td>
<td>213 (100%)</td>
<td>104 (100%)</td>
<td>95 (100%)</td>
<td>1.0</td>
<td>0.7</td>
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<tr>
<td>Negative cancer margin</td>
<td>139 (100%)</td>
<td>213 (89.5%)</td>
<td>104 (100%)</td>
<td>95 (100%)</td>
<td>1.0</td>
<td>0.7</td>
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<tr>
<td>Renal function preservation*</td>
<td>67 (45%)</td>
<td>96 (45%)</td>
<td>67 (64%)</td>
<td>70 (37%)</td>
<td>0.2</td>
<td>&lt;0.0001</td>
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<tr>
<td>No urological complications</td>
<td>122 (88%)</td>
<td>202 (89%)</td>
<td>106 (98%)</td>
<td>90 (93%)</td>
<td>0.6</td>
<td>0.02</td>
</tr>
<tr>
<td>‘Trifecta’ outcome*</td>
<td>63 (45%)</td>
<td>94 (44%)</td>
<td>66 (62%)</td>
<td>66 (66%)</td>
<td>0.8</td>
<td>&lt;0.0001</td>
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*Trifecta outcomes based on <10% difference between predicted and actual ultimate eGFR
Poster #44
NEPHROMETRY SCORES AND RENAL MASS IMAGING CHARACTERISTICS CORRELATE WITH THE FINAL PATHOLOGY OF SMALL RENAL MASSES
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(Presented by: Raed Azhar)

Introduction: Patient counseling and management planning for incidental small renal masses are often conducted in the context of pathologic uncertainty.

Objectives: To evaluate whether nephrometry scores and radiographic features correlate with the final tumor pathology of small renal masses.

Methods: Data from 252 patients with a single, sporadic T1 renal tumor who underwent partial or radical nephrectomy were reviewed. We retrospectively analyzed the CT imaging characteristics of each renal mass, including tumor size, renal sinus involvement, proximity to the collecting system, tumor shape irregularity, presence of a clear halo rim at the tumor−kidney interface, and presence of central tumor necrosis. Nephrometry scores using the RENAL, PADUA, and C−index systems were also calculated. The correlation between each of these imaging features and the nephrometry score was determined with the final tumor pathology. If the tumor pathology was malignant, further correlations between the Fuhrman grade, aggressiveness, lymphovascular invasion, local invasiveness, and the presence of sarcomatoid features were determined. The Kruskal−Wallis and chi−squared tests were used to examine the statistical significance of this association.

Results: Pathological malignancies were confirmed in 198 patients. Radiographic tumor size, renal sinus involvement, proximity to the collecting system, tumor shape irregularity and the presence of central necrosis were significantly associated with malignancy (p<0.05). Renal sinus involvement, tumor proximity to the collecting system and absence of a clear rim at the tumor−kidney interface were associated with higher Fuhrman grades (p<0.05). Tumor aggressiveness was associated with larger tumor size, renal sinus involvement, tumor shape irregularity and the presence of central tumor necrosis (p<0.05). The presence of central tumor necrosis as determined by imaging analysis was associated with the presence of sarcomatoid features and lymphovascular invasion in the final tumor pathology. An increased PADUA score was associated with malignancy (p<0.05). Aggressiveness and higher Fuhrman grades were significantly correlated with higher PADUA and RENAL scores and a lower C−Index (p<0.05).

Conclusion: Nephrometry scores and tumor radiographic features correlate with the final tumor pathology of small renal masses.
Poster #45
DOES TIMING OF TARGETED THERAPY FOR METASTATIC RENAL CELL CARCINOMA IMPACT TREATMENT TOXICITY AND SURGICAL COMPLICATIONS? A COMPARATIVE ANALYSIS OF PRIMARY AND ADJUVANT APPROACHES
Nishant Patel¹, Kerrin Palazzi¹, Reza Mehrazin², Michael Liss¹, Hossein Mirheydar⁷, Ryan Kopp¹, Ramzi Jabaji¹, Seth Cohen¹, Samuel Park¹, Anthony Patterson², Christopher Kane¹, Frederick Millard¹ and Ithaar Derweesh¹
¹University of California San Diego School of Medicine, La Jolla, CA; ²University of Tennessee Health Science Center, Memphis, TN
(Presented by: Nishant Patel)

Introduction: The efficacy and safety of tyrosine kinase inhibitors (TKI) has recently been described in a neoadjuvant setting prior to cytoreductive nephrectomy (CN) for metastatic renal cell carcinoma (mRCC). TKI therapy carries a unique toxicity profile that may impact rate of post–operative complications. We compared surgical complications and TKI–toxicities in patients who underwent primary CN followed by adjuvant TKI therapy versus those who underwent neoadjuvant TKI therapy prior to planned CN.

Methods: Multi–center retrospective analysis of 61 mRCC patients who underwent TKI therapy with sunitinib between 5/2005–6/2011. Patients were divided into three groups: Primary TKI alone (no surgery, n=13), neoadjuvant TKI prior to CN (n=21), and primary CN followed by adjuvant TKI (n=27). Surgical complications were graded according to the Clavien System and TKI–related toxicities were graded according to NIH Common Toxicity Criteria. Primary outcomes were incidence of high–grade (≥3a/b) Clavien surgical complications and overall TKI–toxicity rate. Patient demographics/clinical characteristics, surgical complications, and TKI– toxicities were compared using Chi² test, Fisher’s Exact Test, ANOVA, Kruskal-Wallis Test, and t–test (Bonferroni correction).

Results: Between the three treatment groups, no significant difference was seen in age, gender, BMI, and ECOG status. Significant difference was seen in mean clinical tumor size between primary TKI, neoadjuvant TKI, and adjuvant TKI groups at 12.8 cm, 8.9 cm and 9.3 cm, respectively, p=0.014. Overall surgical complication rate was similar between neoadjuvant TKI (47.6%) and adjuvant TKI (33.3%), p=0.380. However, the neoadjuvant TKI group saw more high–grade surgical complications (28.6%) compared to the adjuvant TKI group (0%), p=0.004. High grade complications in the neoadjuvant TKI group included 1 postoperative bowel leak, 1 fluid collection, and 3 urine leaks. Overall TKI–related toxicities were 100%, 90.5%, and 88.9% in TKI alone, neoadjuvant TKI and adjuvant TKI groups, p= 0.469.

Conclusion: Patients receiving neoadjuvant TKI therapy prior to planned CN experienced more high–grade surgical complications. Similar rates of TKI–related toxicities were noted in patients receiving TKI therapy, regardless of surgical status. The potential for increased high grade surgical complications requires further investigation and may impact clinical decision making and pretreatment counseling.
Introduction and Objectives: Compared to radical nephrectomy, partial nephrectomy (PN) has been shown to provide equivalent oncologic outcomes for the treatment of small renal masses while minimizing the risk for subsequent renal impairment. To address the recognized underutilization of PN, in April 2009 the American Urological Association presented guidelines advocating PN for T1 tumors. We assessed the impact of these guidelines on rates of PN.

Methods: We analyzed the Nationwide Inpatient Sample, a dataset containing a 20% sample of all United States inpatient hospitalizations, from 2007 through 2010. Our dependent variable was receipt of radical vs. PN (ICD−9 codes 55.5x vs. 55.4) for a renal mass (ICD−9 code 189.0). Our independent variable of interest was time of surgery (before or after the announcement of AUA guidelines); covariates included a diagnosis of CKD, overall comorbidity, age, race, gender, geographic region, income, and hospital characteristics. Bivariate and multivariable adjusted logistic regression was used to determine the association between receipt of partial nephrectomy and time of guideline establishment.

Results: We identified 26,224 patients with renal tumors who underwent surgery. Prior to the guidelines, 4033 (27%) patients underwent PN compared to 3560 (32%) after. On multivariable analysis, undergoing surgery after the establishment of guidelines (OR 1.28 [95% CI 1.21−1.36], p<0.01) was an independent predictor of PN. Other factors associated with PN were urban location, surgery at a teaching hospital, large hospital status, Northeast location, and Black race. Having chronic kidney disease and sex were not associated with PN.

Conclusions: The adoption of partial nephrectomy after establishment of guidelines for the management of renal masses was significant, however, partial nephrectomy remains an underutilized procedure. Future research must focus on barriers to adoption of partial nephrectomy and how to overcome them. Supported in part by the US Department of Veterans Affairs and The Louis File Charitable Lead Trust.
Poster #47
VARIANCE AND CHARACTERISTICS OF PERITUMORAL PSEUDOCAPSULE OF RENAL CELL CARCINOMA BASED ON HISTOLOGIC TUMOR SUBTYPE
Joshua Leese, Sean R. Williamson, David J. Grignon and Ronald S. Boris
Indiana University School of Medicine, Indianapolis, Indiana
(Presented by: Joshua Leese)

Introduction: A fibrous peritumoral pseudocapsule (PC) surrounds many renal tumors. Currently nephron−sparing surgical resection of small renal tumors with a margin is considered standard of care. Tumor enucleation (TE) (blunt dissection of the PC away from normal renal parenchyma) is classically used for familial Renal Cell Carcinoma (RCC) but has not been widely adopted for sporadic RCC. We investigate whether tumor histology predicts the presence, thickness, and extension of tumor through the PC, potentially identifying tumors best suited for a TE nephron−sparing approach.

Methods: Twenty−five consecutive total or partial nephrectomies for pT1 clear cell, papillary, chromophobe, and oncocytoma were included (N=100 total tumors). Specimens were reviewed for numerous pathological features including stage, grade, lympho−vascular invasion, as well as characteristics of PC such as capsular presence/absence, mean thickness, continuity, and tumor capsule invasion (TCI). PC parameters (thinnest, thickest and mean) were calculated from multiple measurements using an ocular micrometer, rounded to the nearest tenth of a millimeter.

Results: Tumor sizes in each group were similar. PC was complete in: papillary (n=21, 84%), clear cell (n=19, 76%), chromophobe (n=6, 25%), and oncocytoma (n=1, 4%); present but incomplete in oncocytoma (n=14, 56%), chromophobe (n=11, 44%), clear cell (n=6, 24%), and papillary (n=2, 8%); and absent in oncocytoma (n=10, 40%), chromophobe (n=7, 28%), papillary (n=2, 8%), and clear cell (0%). TCI was seen in 30% of papillary and only 8% of clear cell (p−value 0.006) PC. When present, mean thickness of the PC was significantly thicker for clear cell (0.8mm) when compared to the other tumors (papillary and chromophobe 0.6mm and oncocytoma 0.3mm). Multivariate logistic regression demonstrated only tumor type to be significantly associated with TCI (p−value 0.046, OR 10.3 (95%CI)).

Conclusion: In pT1 renal tumors, PC appears predictable based on tumor histology. The PC is likely to be absent or incomplete in renal oncocytoma and chromophobe. Papillary RCC demonstrates the highest % of TCI which could predict higher surgical margin rates during TE surgery. Clear cell RCC possesses the thickest, most complete tumor capsule with minimal TCI and may be best suited for TE partial nephrectomy.

Poster #48
ASSOCIATION OF RISE IN C-REACTIVE PROTEIN WITH DE NOVO CHRONIC KIDNEY DISEASE AFTER PARTIAL NEPHRECTOMY
Seth Cohen¹, Michael Liss¹, Kerrin Palazzi¹, Ryan Kopp¹, Reza Mehrazin², Samuel Park¹, Wassim Bazzi¹, Anthony Patterson² and Ithaar Derweesh¹
¹University of California San Diego School of Medicine, La Jolla, CA; ²University of Tennessee Health Science Center, Memphis, TN
(Presented by: Michael Liss)

Introduction: C−reactive protein (CRP) is a maker of systemic inflammation. We investigated the use of serum CRP as a predictor of renal insufficiency in patients who have undergone partial nephrectomy for renal cortical tumors.

Methods: Multi−institutional retrospective study of patients who underwent partial nephrectomy for renal mass between 2006 and 2011, with a minimum of 6 months follow−up. Data was analyzed between two groups: those with a decrease in CRP value or increase <0.5 mg/L since last follow up visit (termed “CRP stable,” or CRPS), versus those with an increase in CRP ≥ 0.5 mg/L since last follow up visit (termed “CRP rise,” or CRPR). Demographic and clinicopathological characteristics were compared. Regression models generated adjusted odds ratios (ORs) for the development of de novo estimated glomerular filtration rate<60 (eGFR, MDRD equation).
Results: 243 patients, 206 in CRPS and 37 in CRPR cohorts, were identified for inclusion. Age, gender, race, BMI, diabetes, mean R.E.N.A.L. nephrometry scores were similar. Hypertension was more prevalent in the CRPR cohort (45.9% versus 28.2%, p=0.035). The CRPR cohort had increased prevalence of de novo eGFR <60 at last follow up (55.2% versus 3.7%, p<0.001). Regression analysis found nephrometry score (OR 1.89, 1.28−2.78, p=0.001), hypertension (OR 4.75, 1.33–16.89, p=0.016), and CRP increase ≥0.5 (OR 55.76, 14.27–217.84, p<0.001) were associated with de novo eGFR<60. The sensitivity of CRP increase ≥0.5 for predicting de novo eGFR <60 was 69.6%, specificity 93.3%, positive predictive value (PPV) 55.2%, and negative predictive value (NPV) 96.3%.

Conclusion: Rise in CRP postoperatively is independently associated with renal functional degeneration after partial nephrectomy. Further studies are requisite to clarify the etiology of this association.

Poster #49
ASSOCIATIONS BETWEEN BODY MASS INDEX, STAGE AND SURVIVAL AMONG A LARGE CLINICAL COHORT OF CLEAR CELL RENAL CELL CARCINOMA PATIENTS
A. Ari Hakimi, Helena Furberg¹, Emily C. Zabor¹, Brandon Fiegoli², Melanie Bernstein² and Paul Russo²
¹Department of Epidemiology and Biostatistics, Memorial Sloan-Kettering Cancer Center, New York, NY; ²Department of Surgery Urology Service, Memorial Sloan-Kettering Cancer Center, New York, NY
(Presented by: A. Ari Hakimi)

Introduction and Objectives: Obesity is an established risk factor for developing kidney cancer but its impact on prognosis is unclear. Data from a large surgical cohort of clear cell renal cell carcinoma patients (ccRCC) were used to examine body mass index (BMI) at time of surgery in relation to pathologic characteristics and prognostic outcomes while considering relevant co-morbidities.

Methods: From 1995–2012, 2119 ccRCC patients underwent nephrectomy at Memorial Sloan–Kettering Cancer Center and had values for BMI, demographics, stage, grade, presentation (incidental vs. symptomatic), surgery type (partial vs. radical nephrectomy), hypertension, hypercholesterolemia (HCL), diabetes, and chronic kidney disease (CKD) score. Univariable and multivariable regression analyses evaluated the association between BMI and advanced disease (≥AJCC stage 3), cancer-specific and overall survival.

Results: 20%, 38% and 42% of patients were classified as normal weight (<25 kg/m2), overweight (25–30 kg/m2) and obese (>30 kg/m2), respectively. BMI differed by age, sex and race (all p<0.05). Higher proportions of overweight and obese patients had a lifetime history of hypertension, HCL, diabetes and advanced CKD score than normal weight patients (all p<0.05). Obese and overweight patients were less likely than normal weight patients to present with advanced stage disease (odds ratios and 95% confidence intervals (CI): 0.67 (CI: 0.53−0.86) and 0.64 (CI: 0.50–0.82), respectively). The inverse association persisted among 611 patients (29%) with no–morbidities (p=0.005). Higher BMI was associated with improved cancer–specific and overall survival in univariable analyses (both p<0.005), remained significant after adjustment for co–morbidities, but became non–significant after adjusting for stage (p>0.10).

Conclusions: Higher BMI appears to confer a survival advantage independent of co–morbidities. Adjustment for stage attenuates this relationship and suggests BMI is not an independent prognostic factor. Research is needed to determine why patients with higher BMI have a more favorable prognosis than those of lower BMI.
Poster #50
PREEXISTING HYPERTENSION IS ASSOCIATED WITH ADVANCED TUMOR STAGE BUT IMPROVED CANCER SPECIFIC SURVIVAL IN CLEAR CELL RENAL CELL CARCINOMA
A. Ari Hakimi, Helena Furberg¹, Emily C. Zabor¹, Brandon Fiegoli² and Paul Russo²
¹Department of Epidemiology and Biostatistics, Memorial Sloan-Kettering Cancer Center, New York, NY; ²Department of Surgery Urology Service, Memorial Sloan-Kettering Cancer Center, New York, NY
(Presented by: A Ari Hakimi)

Introduction: There are several defined risk factors for the development of renal cell carcinoma including hypertension, obesity and possibly renal insufficiency. There is a limited data however, on their association with tumor features, cancer specific and overall survival.

Materials and Methods: We identified 2,147 patients with clear cell renal cell carcinoma (ccRCC) who underwent surgery at our institution from 1995 to 2012 with clinical, pathologic and follow up data. We performed logistic regression analysis for association of known risk factors with tumor stage, competing risk analysis for association with recurrence and cancer specific survival, and cox regression analysis for association with overall mortality.

Results: Higher body mass index (BMI) was associated with lower AJCC stage (OR 0.67 [CI 0.53−0.86] p<0.001), while hypertension (OR 1.21 [CI 1.01−1.45], p=0.04), and higher chronic kidney disease stage (OR 1.61 [1.37−2.00], p<0.001) were associated with higher AJCC stage. On multivariate regression analysis hypertension was paradoxically associated with improved cancer specific mortality (HR 0.71 [CI 0.53, 0.95] p=0.02) and overall mortality (HR 0.78 [CI 0.64, 0.95] p=0.013). Further analysis of hypertension by AJCC stage revealed an association between hypertension and improved cancer specific survival in AJCC stages 3 (p=0.049) and 4 (p=0.017) but not for stages 1 and 2 (p−value for interaction = 0.035). Higher chronic kidney disease stage was associated with worse overall (HR 1.29 [CI 1.05, 1.58] p=0.016) but not cancer specific survival (HR 1.10 [CI 0.80, 1.51] p=0.57).

Conclusions: Hypertension is associated with advanced AJCC stage in ccRCC, but improved cancer specific survival in locally advanced and metastatic disease. This paradoxical finding suggests the possibility that pre-existing hypertension might predict improved treatment response for advanced disease. Further investigation and validation is necessary.

Poster #51
CLINICAL PREDICTORS FOR THE DEVELOPMENT OF PULMONARY METASTASES AMONG RCC PATIENTS WITH INDETERMINATE PULMONARY NODULES
Patrick Kenney¹, Jose Karam¹, Ryan Levey², Graciela Nogueras-González¹, Surena Matin¹, Pheroze Tamboli¹, Nizar Tannir¹ and Christopher Wood¹
¹MD Anderson Cancer Center, Houston, TX; ²Medical University of South Carolina, Charleston, SC
(Presented by: Patrick Kenney)

Introduction: Indeterminate pulmonary nodules are of uncertain significance in RCC patients. We sought to determine the natural history of indeterminate pulmonary nodules in patients undergoing radical nephrectomy and to identify clinical variables associated with the development of lung metastases.

Methods: We reviewed all radical nephrectomy patients at a single institution from 2005 – 2009 who had ≥1 indeterminate non–calcified lesion on chest CT within 6 months prior to surgery and no evidence of distant metastatic disease (n=273). Patients were excluded for history of metastatic non–kidney primary (n=16) or if the nephrectomy was not for RCC (n=8). Univariate and multivariate analyses were used to model the relationship between developing pulmonary metastasis and potential predictors.
**Results:** Of 249 patients, 62 (21.5%) developed pulmonary metastases. Median follow-up was similar in the groups who did and did not develop pulmonary metastases (35.5 vs 38.7 months, p = 0.168). On univariate analysis, those who developed lung metastases were more often female (74.2 vs. 59.4%, p = 0.036), less often had ECOG 0 (14.5 vs. 37.1%, p = 0.001) and less often had an incidental presentation (12.9 vs. 42.2%, p < 0.001) than those who did not develop lung metastases. Subsequent pulmonary metastases were also associated with larger primary tumors (median 8.6 vs 7.0 cm, p<0.001), higher creatinine (median 1.2 vs. 1.0 mg/dL, p=0.008), and lower hemoglobin (median 12.8 vs. 13.4 g/dL, p = 0.001). There was a trend toward lower LDH among patients who developed pulmonary metastases (median 418 vs 471 IU/L, p = 0.050). Those who developed lung metastases had more indeterminate nodules (median 4 vs 3, p = 0.003) and larger maximum nodule size (median 5.0 vs 4.0 mm, p = 0.007). There was no difference in the rates of co–existing effusion or calcified nodules.

On multivariate analysis, larger primary tumor was associated with developing pulmonary metastases (OR 1.16, p = 0.010), but nodule number and size were not. Male gender was associated with reduced risk (OR 0.45, p = 0.046) and ECOG performance status ≥1 was associated with increased risk (OR 2.76, p = 0.019) of future lung metastases.

**Conclusions:** A minority of RCC patients with indeterminate pulmonary nodules prior to radical nephrectomy develop pulmonary metastases. Independent preoperative predictors of developing pulmonary metastases include size of primary tumor, female gender, and ECOG performance status ≥1.

**Poster #52**

**COMPARISON OF RENAL FUNCTIONAL OUTCOMES AFTER RADICAL NEPHRECTOMY AND PARTIAL NEPHRECTOMY FOR LARGE RENAL MASSES**

Ryan Kopp¹, Reza Mehrazin², Kerrin Palazzi¹, Michael Liss¹, Ramzi Jabaji¹, Hossein Mirheydar¹, Seth Cohen¹, Anthony Patterson² and Ithaar Derweesh¹

¹University of California San Diego School of Medicine, La Jolla, CA; ²University of Tennessee Health Science Center, Memphis, TN

(Presented by: Ryan Kopp)

**Introduction:** Utilization of partial nephrectomy (PN) for large renal masses (LRM) is expanding; however, it is unclear if there is a size threshold at which point PN no longer confers a benefit to renal functional preservation compared to radical nephrectomy (RN). We evaluated renal function outcomes of PN compared to RN for LRM.

**Methods:** Retrospective analysis of 90 patients (44 PN/46 RN), median follow-up 23.9 months, who underwent RN or PN for ≥cT2 renal cortical tumors at two institutions from 1999 to 2012. We excluded metastatic disease or thrombus at presentation. Demographics and comorbidities, RENAL score, and renal functional outcomes were analyzed within subgroups based on treatment. Renal functional outcomes included median creatinine change (ΔCr), median eGFR change (ΔeGFR), de novo creatinine (Cr) >1.2, de novo eGFR<60. Association between procedure and renal functional decline was analyzed using binary logistic regression models. RENAL sum was analyzed as a continuous and categorical variable. Linear regression analyzed association between procedure type and ΔeGFR.

**Results:** Demographics and comorbidities were similar between PN and RN. No significant differences existed between PN and RN for RENAL sum and component scores. Mean tumor size (cm) was larger (p<0.001) in RN (10.5) vs. PN (7.9). PN was more likely to undergo open surgery (p=0.004), and have longer operative time (p=0.044). There were no significant differences in de novo Cr, de novo eGFR<60, ΔCr or ΔeGFR between groups. Logistic regression demonstrated PN was associated with decreased risk of de novo Cr>1.2 (HR 0.17, 95%CI 0.15 – 0.53, p<0.019), but not eGFR<60. Diagnosis of hypertension was associated with de novo eGFR<60 (HR 6.28, 95%CI 1.57–25.05, p=0.009). Multivariate analysis demonstrated no association between RENAL sum both as a continuous and categorical variable and de novo eGFR<60. There was no significant association between procedure type and ΔeGFR on linear regression.

**Conclusion:** While PN was associated with decreased risk of de novo elevated creatinine, other variables associated with renal functional outcome were not affected by type of surgery. Larger cohorts with further follow up are needed to determine potential advantages and optimal candidates for PN for LRM.
Poster #53
THE IMPACT OF NON-CLEAR CELL HISTOLOGY ON OUTCOME FOR PATIENT WITH RENAL CELL CARCINOMA AND VENOUS TUMOR THROMBUS
Dharam Kaushik¹, R. Houston Thompson¹, Manuel S. Eisenberg¹, Christine M. Lohse², John C. Cheville³, Bradley C. Leibovich¹ and Stephen A. Boorjian¹
¹Department of Urology, Mayo Clinic, Rochester, Minnesota; ²Health Services Research Biomedical Statistics and Informatics; ³Department of Anatomic Pathology
(Presented by: Dharam Kaushik)

Introduction: The importance of tumor histology on outcome in renal cell carcinoma (RCC) remains in debate. Indeed, while several series have demonstrated adverse outcomes for patients with clear cell RCC (ccRCC) compared with non−ccRCC in the setting of localized disease, the significance of histology for advanced renal tumors has not been well established. We evaluated the impact of histology on outcome for patients with RCC and venous tumor thrombus (VTT).

Materials and Methods: We identified 807 patients with RCC and VTT who underwent nephrectomy at our institution between 1970−2008. All specimens were re−reviewed by a single genitourinary pathologist. Patients with non−ccRCC VTT (n=56) were matched 1:2 to patients with ccRCC VTT based on grade, presence of sarcomatoid differentiation, VTT level, lymph node status, metastatic status, and symptoms at presentation. Survival was estimated for each cohort using the Kaplan Meier method and compared with the log−rank test.

Results: The 56 non−ccRCC VTT included 26 papillary RCC, 11 chromophobe RCC, 5 collecting duct tumors, and 14 RCC not otherwise specified. 28 patients with non−ccRCC VTT had a renal−vein only thrombus, while 9, 11, 4, and 4 patients had a level I, II, III, and IV VTT, respectively. Interestingly, compared to the overall cohort of patients with ccRCC VTT, patients with non−ccRCC VTT presented with larger mean tumor size (11.5 cm vs 9.9 cm;p=0.02), higher nuclear grade (91% grade 3/4 vs 81%;p=0.04), more frequent sarcomatoid differentiation (25% vs 9%;p<0.001), and more frequent lymph node involvement (38% vs 13%;p<0.001). Median postoperative follow−up was 12 years (range 3−15) for patients with non−ccRCC VTT and 6.6 years (range 0−13) for the matched patients with ccRCC VTT. Among matched patients who initially had cM0 disease, 5−year metastases free survival was not significantly different with ccRCC VTT (34%) and non−ccRCC VTT (41%; p=0.24). Likewise, 5−year CSS for the cohort with non−ccRCC VTT was 25%, versus 27% for the matched group with ccRCC VTT (p=0.97)

Conclusions: Patients with non−ccRCC and VTT present more frequently with adverse pathologic features. However, we found no significant difference in survival for patients with RCC and VTT based on histology. Aggressive surgical resection represents the mainstay of treatment in these cases, while continued efforts to optimize a multi−modal management approach to such patients remain necessary.

Source of Funding: None
Poster #54
INCREASING RENAL NEPHROMETRY SCORE IS ASSOCIATED WITH POSTOPERATIVE RENAL FUNCTIONAL DECLINE AFTER PARTIAL NEPHRECTOMY
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(Presented by: Reza Mehrazin)

Introduction: To examine association of RENAL nephrometry score and renal function after partial nephrectomy (PN). RENAL score has been developed as a way to standardize description of renal masses.

Methods: Multi−institutional retrospective analysis of 322 PN between 2003−2011 was performed. RENAL score for each lesion was determined by pre−operative CT scan. Serum Creatinine (Cr) and estimated glomerular filtration rate (eGFR) were measured preoperatively, 4−12 weeks post−operatively, and at last follow−up. Analysis was conducted by comparison between LOW (<8) and HIGH (>8) RENAL score groups. Main outcome was median change in eGFR between preoperative and last follow−up. Secondary outcome was eGFR<60 at last follow−up. Multivariable analysis (MVA) was conducted to evaluate risk factors for eGFR<60 at last follow−up.

Results: Median follow−up (IQR) was 25.2 months (13.5−39.3). LOW (n=165) and HIGH (n=157) RENAL score groups were well−matched in terms of gender, BMI, comorbidities, and preoperative eGFR/Cr. Median tumor size (4.2 vs. 2.4, p<0.001) was greater in HIGH group. Percentage with decreased eGFR at last follow−up was 64% in LOW and 88.2% for HIGH (p<0.001). Median change in eGFR at last follow−up from baseline was −7 and −13.8 in LOW and HIGH groups (p=0.001). Percent with eGFR<60 at last follow−up was 29.8% for LOW and 40.7% for HIGH (p=0.05). MVA demonstrated increasing RENAL score (continuous, OR 1.24, p=0.046) and decreasing preoperative eGFR (continuous, OR 1.10, p<0.001) were risk factors for eGFR<60 at last follow−up.

Conclusion: Increasing RENAL score is an independent risk factor for eGFR<60 after PN. Further investigation and follow−up are requisite.

Poster #55
INCIDENCE OF POSTEMBOLIZATION SYNDROME AFTER RENAL ANGIOINFARCTION: A SINGLE INSTITUTION EXPERIENCE OVER 4 YEARS
Anup Vora, Keith Horton and Mohan Verghese
(Presented by: Anup Vora)

Introduction: Renal angioinfarction (RAI) has been used for various indications in the management of renal tumors. While historically used for palliation of local symptoms (pain or hematuria) in the setting of advanced renal cell cancer or angiomyolipoma, this technique has theoretical use in facilitating radical nephrectomy by allowing early ligation of the renal vein, decreasing blood loss, and creating edema in resection planes. An common impediment to embolization is the development of postembolization syndrome (intractable pain and nausea, fever, paralytic ileus) which has been reported to have an incidence as high as 89%. We report our experience with renal angioinfarction as a safe palliative and adjunctive procedure over 4 years.

Materials and Methods: From 2008 to 2011, 113 patients underwent RAI at our institution for palliative or adjunctive therapy by an interventional radiologists. Procedures were performed in a radiology suite using mild sedation with vascular access obtained by femoral artery puncture. Embolization of renal artery was performed by subsegmental injection of polyvinyl alcohol particles with support of Gelfoam.
**Poster Session I – Full Abstract**

**Results:** All 113 patients underwent successful renal embolization with confirmation of arterial flow ablation via post procedure arteriogram. Table 1 lists patient characteristics. 48 patients underwent embolization for preoperative adjunctive therapy, 24 patients for palliation of renal mass, 36 patients for trauma/hemorrhage, and 5 patients for renal artery aneurysm. Incidence of postembolization syndrome (PES) only occurred in 13 (11.5%) of patients. No major complications (Clavien Grade III or above) occurred in any of the patients.

**Conclusions:** In our experience, renal angioinfarction is a safe and reliable procedure for palliation of renal masses, adjunctive procedure for radical nephrectomy, and for benign management of renal hemorrhage or aneurysm. Postembolization syndrome occurred in a relatively few amount of patients with no major complications and should not impede clinical consideration of this procedure.

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**Poster #56**

**PD-0332991, AN INHIBITOR OF CYCLIN-DEPENDENT KINASE 4/6, DEMONSTRATES DIFFERENTIAL INHIBITION OF PROLIFERATION IN RCC AT NANOMOLAR CONCENTRATIONS AND MOLECULAR MARKERS PREDICT FOR SENSITIVITY**

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(Presented by: Joshua Logan)

**Introduction:** Persistent progression through the cell cycle is a fundamental trait in cancer biology. This is evidenced by the prevalence of cell cycle dysregulation in multiple malignancies, including renal cell carcinoma (RCC). PD−0332991 is an orally active, potent, and selective inhibitor of cyclin−dependent kinases (CDK) 4 and 6, which block retinoblastoma (Rb) phosphorylation in nanomolar concentrations.

We evaluated PD−0332991 in multiple renal cell lines to determine its effects on proliferation, phosphorylation of Rb, cell cycle and apoptosis. Lastly, we evaluated the differential response to drug for associations with copy number alterations and variances in transcript expression to identify potential molecular markers of response.

**Methods:** A panel of 29 RCC and immortalized cell lines were used to examine the effects of PD−0332991 on proliferation to determine the half maximal inhibitory concentration (IC50) values. The effects of PD−0332991 on cell−cycle, apoptosis, and Rb phosphorylation were also assessed with flow cytometry and western blot analysis. Molecular markers for response prediction, including p16, p15, CCND1, CCNE1, E2F1, Rb, CDK4 and CDK6, were studied using array CGH and gene expression profiling.

**Results:** A concentration−dependent inhibition of proliferation was identified in the cell lines in response to PD−0332991, but varied significantly with IC50 values ranging from 25.0nM up to 700nM, and 5 cell lines were identified as completely resistant at 1000nM. CDK4/6 inhibition with PD−0332991 induced G0/G1 cell cycle arrest, showed no significant induction of apoptosis, and blocked Rb phosphorylation in a time−dependent fashion. Genotype and expression data of CDKN2A and CDKN2B were combined and a consensus was made regarding the status of p16 and p15; a significant association between loss and sensitivity to PD−0332991 was identified, p=0.021 and p=0.047 respectively. For CCND1, CCNE1, E2F1, Rb, CDK4 and CDK6 no amplifications or homozygous deletions were identified by array CGH; cell lines were classified as having “high” or “low” expression for each of these markers. E2F1 was the only gene identified with expression levels significantly associated with response to PD−0332991 (p=0.033).

**Conclusions:** PD−0332991 shows promising anti−proliferative activity in RCC through blockade of cell cycle progression. The decreased expression of select molecular markers p16, p15 and E2F1 predict for sensitivity to PD−0332991 in RCC.
Poster #57
LONG TERM SURVIVAL AFTER RESECTION OF PANCREATIC METASTASIS
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(Presented by: Timothy Brown)

Introduction and Objective: RCC is one of the most common tumors leading to a primary pancreatic metastasis. The purpose of the current study was to review the outcomes of surgical resection of pancreatic metastasis from RCC.

Methods: All patients that had undergone a pancreatic resection for metastatic RCC at the Massachusetts General Hospital between the years 1997–2011 were included in this retrospective case series. All patients had an initial diagnosis of RCC as well as a co–synchronous or metachronous discovery of metastasis to the pancreas. Patients with pancreatic–only metastasis were eligible for pancreatic resection. A Whipple procedure or distal pancreatectomy was primarily utilized for resection of the pancreatic metastasis. Cox proportional hazards model was used to perform univariate analysis of predictors of earlier pancreatic metastasis.

Results: A total of 17 patients with mean follow–up of 10.6 years were reviewed. Of the 12 patients with complete long term follow–up, 10 remain alive at the 10.6 year mean follow–up time point. 59% of the patients were male and mean age of diagnosis of the RCC was 60.1 years old. Four of the metastatic invasions into pancreas were identified co–synchronously and 13 were metachronous. The mean time from initial diagnosis of RCC to pancreatic metastasis was 7.8 years. Twelve cases involved pancreatic–only metastasis and five ultimately developed metastatic disease elsewhere. The mean size of the pancreatic metastasis was 3.4 cm. The original RCC was clear cell in 85% of patients and chromophobe histology in the remaining 15%. Distal pancreatectomy was used to resect the metastasis in 47% of patients and a Whipple procedure in 41%. An alternative procedure such as enucleation was used in 12%. On univariate analysis, age and grade of primary RCC were not predictors of time to pancreatic metastasis, however higher stage of disease was a predictor of earlier pancreatic metastasis (HR 3.0, p=0.01).

Conclusion: In patients with solitary pancreatic metastatic disease from RCC, resection of the pancreatic mass is a viable treatment option with potentially long–term survival.

Poster #58
RADICAL NEPHROURETERECTOMY FOR PATHOLOGIC T4 UPPER TRACT UROTHELIAL CANCER: CAN ONCOLOGIC OUTCOMES BE IMPROVED WITH MULTIMODALITY THERAPY?
Ramy Youssef¹, Yair Lotan¹, Arthur Sagalowsky¹, Oussama Darwish¹, Shahrokh Shariat², Christopher Wood³, Jay Raman⁴, Cord Langner⁵, Richard Zigeuner⁵, Marco Roscigno⁶, Francesco Montorsi⁶, Christian Bolenz⁷, Wassim Kassouf⁸ and Vitaly Margulis¹
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(Presented by: Ramy Youssef)

Objectives: To report the outcomes of patients with pathologic T4 UTUC and investigate the potential impact of peri–operative chemotherapy when combined with radical nephroureterctomy (RNU) and regional lymph node dissection (LND) on oncologic outcomes.

Methods: Patients with pathologic T4 UTUC were identified from the cohort of 1464 patients treated with RNU at 13 academic centers between 1990 and 2007. Oncologic outcomes were stratified according to utilization of perioperative systemic chemotherapy and regional LND as an adjunct to RNU.
Results: The study included 69 patients, 42 males (61%) with median age 73 (range 43–98). Median follow up was 17 months (range: 6–88). Lymphovascular invasion was found in 47 (68%) and regional lymph node metastases were found in 31 out of 37 (84%) in whom LND was performed. Peri-operative chemotherapy was utilized in 29 (42%) patients. Patients treated with peri-operative chemotherapy and RNU with LND demonstrated superior oncologic outcomes compared to those not treated by chemotherapy and/or LND during RNU (3Y-DFS: 35% vs. 10%; P = 0.02 and 3Y-CSS: 28% vs. 14%; P = 0.08). In multivariate Cox regression analysis, administration of peri-operative chemotherapy and utilization of LND during RNU was associated with lower probability of recurrence (HR: 0.4, P = 0.01), and cancer specific mortality (HR: 0.5, P = 0.06).

Conclusions: Pathological T4 UTUC is associated with poor prognosis. Peri-operative chemotherapy combined with aggressive surgery, including lymph node dissection, may improve survival in affected patients. Our findings support the use of aggressive multimodal treatment in patients with advanced UTUC.

Poster #59
URINE NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN (UNGAL) AS A MARKER FOR ACUTE KIDNEY INJURY IN KIDNEY SURGERY PATIENTS
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(Presented by: Preston Sprenkle)

Introduction: Neutrophil Gelatinase−Associated Lipocalin (NGAL) is a known early biomarker for acute kidney injury (AKI) in patients who have had cardiopulmonary bypass surgery, kidney transplantation surgery, or who are critically ill. NGAL has not previously been utilized to detect AKI in patients undergoing kidney surgery.

Objective: We hypothesized that patients undergoing partial nephrectomy, because of direct surgical and global ischemic injury should have increased NGAL levels compared to controls. We further sought to identify the preoperative clinical features as well as surgical factors during partial nephrectomy that are associated with an increased NGAL level as a measure of kidney injury.

Methods: Prospective collection and analysis of specimens was performed for patients undergoing three different types of surgery: partial nephrectomy (Pnx), radical nephrectomy (Rnx), and thoracic surgery (Tx). Urine was collected preoperatively and serially postoperatively for at least 24 hours. NGAL levels were measured at multiple time points and differences between groups were analyzed using a GEE model accounting for preoperative NGAL levels. The Pnx group was also subdivided based on preoperative estimated glomerular filtration rate (eGFR) <60 or >=60 ml/min/1.73m².
**Poster Session I – Full Abstract**

**Results:** 162 patients were included in the final analysis. The majority of patients (>65%) had cardiovascular disease and eGFR was >60 ml/min/1.73m² in all groups (Rnx 61, Pnx 78, Tx 84.5ml/min/1.73m²). NGAL levels in the Pnx group were not elevated above the Tx or Rnx groups. Within the Pnx group, a 10-unit increase in preoperative eGFR was associated with a 4-unit decrease in NGAL. Postoperative NGAL level did not correlate with duration of ischemia, though the use of ischemia (warm or cold) was associated with a 47-unit decrease in NGAL compared to no clamp partial nephrectomy. Pnx patients with preoperative eGFR <60 developed higher NGAL levels postoperatively compared to those with a higher preop eGFR.

**Conclusion:** NGAL is not a useful marker to detect the likely small amount of kidney injury associate with partial nephrectomy in healthy patients compared to surgical controls. Poorer preoperative renal function is associated with a higher baseline NGAL level. Patients with eGFR <60 prior to surgery have an increased rate of AKI as detected by NGAL levels and AKIN criteria compared to those with normal eGFR or non-renal surgery control patients.

**Poster #60**

**PREDICTION OF TRUE NODAL STATUS FOR PATIENTS WITH PATHOLOGIC LYMPH NODE-NEGATIVE UPPER TRACT UROTHELIAL CARCINOMA AT RADICAL NEPHROURETERECTOMY**

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(Presented by: Evanguelos Xylinas)

**Objective:** The role of lymph node dissection (LND) in patients treated with radical nephroureterectomy (RNU) for upper tract urothelial cancer is still controversial. We developed a pathological nodal staging model that allows quantification of the likelihood that a pathologically node-negative patient has, indeed, no lymph node metastasis (LNM).

**Methods:** We analyzed data from 814 patients treated with RNU and LND, and estimated the sensitivity of pathologic nodal staging using a beta-binomial model and developed pathologic nodal staging score, which represents the probability that a patient is correctly staged as node-negative.

**Results:** The median number of LN removed was 5 (range:1–46), 73% of the patients (n=593) were pN0. The probability of missing LNM decreased as the number of nodes examined increased. If only a single node was examined, 44% of patients would be misclassified as pN0 while harboring LNM. Even when 5 nodes were examined, 12% would be misclassified. The proportion of having a positive node increased with advancing pathological T-stage and presence of lymphovascular invasion (LVI). Patients with pT0–Ta–Tis–T1/LVI– will have more than a 95% chance of a correct pathologic nodal staging with two examined nodes. However, if a patient has pT3–T4 and LVI+, even 20 examined LN did not reach 95% accuracy.

**Conclusions:** LND provides more accurate staging and prediction of survival. The number of examined nodes needed for adequate staging depends on pT-stage and LVI. We developed a tool to estimate the likelihood of false-negative LNM, which could help to refine clinical decision-making regarding administration of adjuvant chemotherapy.
Poster Session I - Full Abstract

Poster #61
PRE-DIAGNOSTIC CIRCULATING SEX HORMONES ARE NOT ASSOCIATED WITH MORTALITY FOR MEN WITH PROSTATE CANCER
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(Presented by: Boris Gershman)

Introduction and Objectives: Sex hormones play an important role in the growth and development of the prostate and low androgen levels have been suggested to carry an adverse prognosis for men with prostate cancer. We examined the association between pre−diagnostic circulating sex hormones and lethal prostate cancer in men diagnosed with prostate cancer in two prospective cohort studies, the Physicians’ Health Study (PHS) and the Health Professionals Follow−up Study (HPFS).

Methods: We included 918 prostate cancer cases (700 HPFS; 218 PHS) who provided pre−diagnostic blood samples (in 1982 for PHS and in 1993−1995 for HPFS) in which circulating sex hormone levels were assayed. The primary endpoint was lethal prostate cancer (defined as cancer−specific mortality or development of metastases), and we also assessed total mortality through March 2011. We used Cox proportional hazards models to evaluate the association of pre−diagnostic sex hormone levels with time from diagnosis to development of lethal prostate cancer or total mortality.

Results Obtained: Prostate cancer cases were followed for a mean of 12.1 ± 4.8 years after diagnosis. Mean age at blood draw and diagnosis were 65.0 ± 7.6 years and 68.8 ± 7.2 years, respectively. We confirmed 146 cases of lethal prostate cancer and 404 deaths overall. Using Cox proportional hazard models adjusted for age at diagnosis, body mass index (BMI), physical activity, smoking status, Gleason score, and TNM stage, we found no association between quartile of total testosterone, SHBG, SHBG−adjusted testosterone, free testosterone, dihydrotestosterone, androstanediol glucuronide, or estradiol and lethal prostate cancer or total mortality (Table 1). In subset analyses, lethal prostate cancer was associated with free testosterone (HR 5.74, CI 1.34−24.63) and SHBG (HR 0.67, CI 0.48−0.93) for men diagnosed with T4/N1/M1 disease.

Conclusions: We found no overall association between pre−diagnostic circulating sex hormones and lethal prostate cancer or total mortality. These results suggest that reverse causation may be responsible in prior studies that noted adverse outcomes for patients with low circulating androgens.
Poster #62
ACTIVE SURVEILLANCE: AN UPDATE FROM A LARGE CONTEMPORARY COHORT
Allison Glass, Sanoj Punnen, Janet Cowan, Nannette Perez, Katsuto Shinohara, Maxwell Meng, Kirsten Greene, Matthew Cooperberg and Peter Carroll
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(Presented by: Allison Glass)

Introduction and Objectives: Active surveillance (AS) is increasingly accepted primary management strategy for carefully selected patients with lower risk, localized prostate cancer. We describe disease, demographic and clinical outcomes of patients currently enrolled within the University of California San Francisco (UCSF) AS protocol.

Methods: We retrospectively reviewed clinical data of men enrolled in AS who received no radical treatment for at least 6 months after enrollment. Patients were stratified by those who did and did not meet our institution’s AS eligibility criteria (≤ T2, PSA < 10 ng/mL, Gleason score ≤ 6 without pattern 4 or 5, as defined by ≤ 33% of diagnostic biopsy cores cancer positive, ≤ 50% single core positive for cancer). Clinical risk at diagnosis is defined using the UCSF Cancer of the Prostate Risk Assessment (CAPRA) score for which low (0−2), intermediate (3−5), and high (6−10) groups have been validated. Surveillance consists of quarterly PSA testing, semi-annual TRUS, and annual prostate biopsy. Biopsy progression is defined as upgrade to at least Gleason 7 or increase in volume >33% cores.

Results: Of 1000 men currently enrolled within UCSF’s AS program, 691 have provided consent to date. 64% of cohort met our institution’s strict selection criteria. Median follow-up was 52 (6−222) months. Ninety-three percent were Caucasian with a mean age of 62.2 ± 7.9 years. Two-thirds had clinical T1 disease. Median prostate specific antigen (PSA) was 5.3 ng/mL (IQR 4.0−7.3). Baseline CAPRA risk included 84% with low (0−2) risk and 15% with intermediate (3−5) risk. Of 563 (81%) men who underwent ≥ 1 repeat biopsies, 206 (37%) had an increase in Gleason sum and 123 (22%) were found to have increased volume in >33% positive cores. 36% of the cohort underwent delayed intervention and treatment−free survival at 5 years was 62%. Twenty-two percent underwent radical prostatectomy (RP), 10% radiotherapy, and 4% androgen deprivation therapy. Gleason upgrade was the strongest predictor for delayed RP (HR 3.8, 95% CI 2.8−5.1, p<0.01). Five−year disease−specific survival was 100% and overall survival was 98%.

Conclusion: Our cohort’s rate of delayed treatment is similar to other institutions and is precipitated, most often, by grade migration. At intermediate follow−up of 5 years, prostate cancer specific survival is 100%. Delaying treatment appears safe amongst appropriately selected low and intermediate risk patients.

Financial Funding: None
Poster #63
A NATIONAL SURVEY OF RADIATION ONCOLOGISTS AND UROLOGISTS ON ACTIVE SURVEILLANCE FOR LOW-RISK PROSTATE CANCER
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(Presented by: Simon Kim)

Introduction and Objectives: While active surveillance (AS) is well recognized as an acceptable treatment strategy for low-risk prostate cancer (PC), the extent to which radiation oncologists and urologists perceive AS as effective and routinely recommend it to patients is unknown. Therefore, we sought to assess the attitudes and treatment recommendations for low-risk PC from a national survey of PC specialists.

Methods: A mail survey was sent to a population-based sample of 1,439 physicians in the U.S. from late 2011 and early 2012. Physicians were queried about their attitudes regarding AS and treatment recommendations for patients diagnosed with low-risk PC (PSA<10 ng/dl; T1c; Gleason 6 in one of twelve cores). Pearson Chi-square and multivariate logistic regression were used to test for differences in attitudes and treatment recommendations by physician demographics, compensation structure, primary place of employment, and specialty.

Results Obtained: Overall, 321 radiation oncologists and 322 urologists completed the survey for a 45% response rate. Most physicians reported that AS is effective for low-risk PC (71%) and stated that they were comfortable routinely recommending AS (67%). Urologists were more likely to agree that AS is effective (77% vs. 67%; p=0.005) and were comfortable recommending AS (74% vs. 61%; p=0.001) compared with radiation oncologists. Among all respondents, most physicians recommended radical prostatectomy (47%) or radiation therapy (32%), but fewer endorsed AS (21%) for low-risk disease. After adjusting for physician covariates, radiation oncologists were more likely to recommend radiation therapy (OR: 10.97; p<0.001), while urologists were more likely to recommend surgery (OR: 4.69; p<0.001) and AS (OR: 2.18; p=0.001) for low-risk PC.

Conclusions: Although AS is widely viewed as effective by both radiation oncologists and urologists, most urologists continue to recommend surgery, while most radiation oncologists recommend radiation therapy. Our results may explain in part the relatively low contemporary use of AS in the U.S.

Funding: The Foundation of Informed Medical Decision-Making

Poster #64
AUTOPHAGY IS A SURVIVAL MECHANISM MEDIATING RESISTANCE TO ANDROGEN RECEPTOR SIGNALING INHIBITORS IN CASTRATE RESISTANT PROSTATE CANCER CELLS
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(Presented by: Hao Nguyen)

Introduction: Macro-autophagy is associated with drug resistance in various cancers and can function as an adaptive response to maintain cell survival under metabolic stresses, including androgen deprivation. Our hypothesis was: 1) autophagy is a cellular mechanism that confers resistance to the androgen receptor signaling inhibitor (ARSI), enzalutamide (MDV3100) therapy and 2) blocking autophagy circumvents this survival mechanism to improve therapeutic response.

Methods: To determine if autophagy was activated, we examined expression levels of LC3-I/II using Western Blotting in prostate cancer (CaP) cell lines, LNCaP, C4–2B, and CWR22 stably over-expressing LC3–GFP. Flow cytometry and fluorescence microscopy were used to quantify and visualize autophagy and to analyze cell cycle progression and apoptosis. Clonogenic assays were employed to evaluate cell survival. Enzalutamide (ENZA) and bicalutamide were used as androgen receptor inhibitors. SiRNA to AMPK was transfected with Lipofectamine 2000.
**Results:** Androgen deprivation or treatment with the ARSI ENZA or the anti-androgen biclutamide induced autophagy in androgen-dependent and in castration resistant CaP (CRPC) cell lines. The autophagic cascade triggered by AR blockage, correlated with the increased LC3−II/I ratio and ATG−5 expression. Autophagy was observed in a subpopulation of C4−2B cells that developed insensitivity to ENZA after sustained exposure in culture. Using flow cytometry and clonogenic assays we showed that inhibiting autophagy with clomipramine or hydroxchloroquine increased apoptosis and significantly impaired cell viability. This autophagic process was mediated by AMPK activation and the suppression of mTOR through Raptor phosphorylation (Serine 792). Finally, si−RNA targeting AMPK significantly inhibited autophagy and promoted cell−death in CaP cells acutely or chronically exposed to ENZA or androgen deprived culturing conditions, suggesting that autophagy is an important survival mechanism in CRPC cells.

**Conclusion:** These novel data support autophagy as an important mechanism of resistance to the androgen receptor signaling inhibitors in CRPC. Antiandrogen mediated autophagy is dependent on the activation of AMPK pathway and the suppression of mTOR pathway. Blocking autophagy pharmacologically or genetically significantly impairs prostate cancer cell survival, implying the therapeutic potential of autophagy inhibitors in the antiandrogen resistance setting.

**Poster #65**

**BASELINE PROSTATE INFLAMMATION IS ASSOCIATED WITH DECREASED RISK OF PROSTATE CANCER IN MEN UNDERTAKING REPEAT PROSTATE BIOPSY: RESULTS FROM THE REDUCE STUDY**

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(Presented by: Daniel Moreira)

**Introduction:** Inflammation is associated with several cancers and in some cases is directly linked to carcinogenesis. The clinical significance of prostate inflammation in negative biopsies for prostate cancer (PC) is unknown. We evaluated whether baseline acute and chronic prostate inflammation among men with initial negative biopsy for PC increased the risk of subsequent PC detection in a clinical trial with systematic biopsies.

**Methods:** Retrospective analysis of 6269 men 50−75 years−old with prostate−specific antigen (PSA) between 2.5−10ng/mL and a prior negative biopsy in the Reduction by Dutasteride of PC Events (REDUCE) study who completed a 2−year biopsy. PC, acute and chronic prostate inflammation were assessed by central review and coded as present or absent. The association of inflammation in baseline prostate biopsies with positive 2−year repeat biopsy was evaluated with chi−square and logistic regression controlling for age, race, body−mass index (BMI), digital rectal exam (DRE), prostate volume, pre−repeat biopsy PSA and treatment arm (dutasteride or placebo).

**Results:** Acute, chronic inflammation and both were detected in 3709 (59%), 45 (1%) and 1349 (22%) baseline biopsies, respectively. Presence of acute and chronic inflammation were significantly associated with each other (P<0.001). Patients with acute inflammation at baseline biopsy were significantly younger, had lower PSA and smaller prostates (all P<0.01), whereas men with chronic inflammation were significantly older and had larger glands (all P<0.01). Both types of inflammation were unrelated to race, BMI, DRE and treatment arm. At 2−year biopsy, PC prevalence was 15% (n=910). In univariable analysis, both acute and chronic inflammation demonstrated a significant inverse association with PC risk (all P<0.001). In multivariable analysis, both acute (OR=0.75; P=0.012) and chronic (OR=0.65; P<0.001) inflammation were independently associated with lower PC risk.

**Conclusion:** In a cohort of men undergoing repeat prostate biopsy 2 years after negative biopsy, baseline acute and chronic inflammation were both independently associated with lower PC risk. Whether this association is driven by inflammation falsely elevating the PSA implying higher PC risk than actual or direct biological link between inflammation and PC carcinogenesis is unclear. Regardless, from a clinical standpoint, inflammation in a negative biopsy for PC was associated with lower risk of PC detection on repeat biopsy.
Poster #66
UNDERUTILIZATION OF LOCAL SALVAGE THERAPY AFTER PROSTATE CANCER RADIATION
Jaime Kwok¹, Tom Pickles², Henry Tran¹, Scott Tyldesley² and Peter C. Black¹
¹Department of Urologic Sciences, University of British Columbia, Vancouver, Canada; ²Department of Radiation Oncology, Vancouver Cancer Centre, BC Cancer Agency, Vancouver, Canada
(Presented by: Jaime Kwok)

Introduction and Objectives: Early biochemical detection of radiotherapy failure and the subsequent slow progression of prostate cancer facilitate the delivery of potentially curative salvage therapy. Multiple local salvage therapy (LST) options are now available, including cryotherapy, brachytherapy and radical prostatectomy (RP). In this study we aimed to ascertain the rates at which patients are offered, and receive LST as opposed to observation or androgen deprivation therapy (ADT) alone after failure of radiation therapy.

Methods: All patients with localized prostate cancer who received primary first–line radiation therapy with curative intent between 1999 and 2000 were identified from the British Columbia Tumor Registry and data regarding clinicopathologic features, primary therapy, subsequent PSA kinetics and potential salvage interventions were collected retrospectively. We excluded patients with clinical T4 tumors, PSA >40, and/or age >72 years at the time of primary therapy. Biochemical recurrence (BCR) was defined by the Phoenix criteria (nadir + 2 ng/ml). Patients were also deemed radiation failures if salvage therapy was started without meeting strict criteria for BCR.

Results: Of 1785 patients treated with radiation, 1067 met the inclusion criteria. Of these, 257 experienced BCR. Only 5 patients received LST (3 RP, 2 brachytherapy). LST was considered in 12 additional patients, of whom 2 were not referred for urologic consultation, and 10 decided against intervention. Patients were considered ineligible for LST in 43 cases due to suspected metastatic disease and in 17 cases due to medical comorbidities. LST was unlikely to be offered to 80 patients due to age >75 at the time of BCR. In 60 cases, the patient appeared to be eligible for LST but there was no documentation that it was considered. ADT was started within 12 months of BCR in 118 patients, and after at least one year of observation in another 66. No secondary intervention was given to 62 patients.

Conclusions: Very few patients were considered for LST in the study period, and only 5 received it. This review of practice patterns reveals a lack of uniform monitoring and treatment strategies in this challenging patient population, and points toward a clinical need for more collaboration between all treating physicians, as well as with tertiary care centers.

Funding Source: Vancouver Coastal Health Research Institute

Poster #67
REDUCTION IN HOSPITAL ADMISSION RATES DUE TO POST-PROSTATE BIOPSY INFECTIONS AFTER AUGMENTING STANDARD ANTIBIOTIC PROPHYLAXIS
Mehrad Adibi, Brad Hornberger, Ganesh Raj, Claus Roehrhorn and Yair Lotan
University of Texas Southwestern Medical Center, Dallas, TX
(Presented by: Mehrad Adibi)

Introduction: To evaluate the incidence of infectious complications requiring hospitalization after transrectal ultrasound guided prostate biopsy (TRUSBx) comparing an augmented regimen of antibiotic prophylaxis to the standard regimen and establish cost–effectiveness at our center.

Methods: Our antibiotic regimen consisted of a standard prophylaxis of three days of ciprofloxacin or bactrim DS in the peri–procedural period. Due to an increase in infections during this time, a retrospective analysis of hospital admissions after TRUSBx from January 2010 through December 2010 led us to initiate an augmented regimen of three days of ciprofloxacin or Bactrim DS in addition to one dose of intramuscular gentamicin prior to biopsy from January 2011 to December 2011. Urine and blood cultures along with bacterial susceptibilities were obtained at the time of admission and compared among the two groups. Univariate and multivariate analysis of patient clinical factors was performed to assess for predictive variables influencing hospital admission due to post–biopsy infection. Cost–analysis was done to determine cost–effectiveness of standard and augmented regimens.
Results: The rate of hospitalization due to post–biopsy infections was 11 patients among 290 biopsies (3.8%) in 2010, which decreased to 2 patients among 310 biopsies (0.6%) in 2011 (p<0.001). Among admitted patients who received the standard prophylaxis, 73% had fluoroquinolone–resistant E. coli urinary infection and/or bacteremia, and only 9% had strains resistant to gentamicin. Multivariate analysis showed that the standard regimen was significantly associated with hospital admission due to post–biopsy infection compared to the augmented regimen of prophylaxis (HR=2.078 ±0.84, p=0.013). The augmented regimen resulted in an overall cost–savings of $15,700 per 100 patients compared to the standard regimen.

Conclusion: The addition of gentamicin to current prophylactic regimens significantly reduced the rate of hospitalization of post–biopsy infectious complications and was shown to be cost–effective.

Poster #68
CHARACTERISTICS AND PREDICTORS OF PROSTATE NEEDLE BIOPSY COMPLIANCE IN A SCREENING STUDY
Marc A. Bjurlin¹, Stacy Loeb², Phillip Cooper³, Brian T. Helfand⁴, Qiaoyan Hu³ and William J. Catalona³
¹Division of Urologic Oncology, Department of Urology, New York University, NY, NY; ²Department of Urology, New York University, NY, NY; ³Department of Urology, Northwestern Feinberg School of Medicine, Chicago, IL; ⁴Division of Urology, NorthShore University HealthSystem, Evanston, IL
(Presented by: Marc A. Bjurlin)

INTRODUCTION AND OBJECTIVES: The benefit of prostate specific antigen (PSA) and digital rectal examination (DRE) for prostate cancer depends on compliance with prostate needle biopsy (PNB). If not all men with an abnormal PSA or DRE undergo a recommended biopsy, bias is introduced and this may have affected the results of published studies on screening. Furthermore, compliance of PNB is important in an active surveillance protocol. Overall, relatively few studies have examined the factors associated with PNB compliance. Our objective was to compare patient characteristics between those men who did and did not comply with a recommended PNB and determine predictors of PNB compliance.

METHODS: A total of 3,757 men aged 50–75 years who were enrolled in a prostate cancer screening study between 1991–2001 were reviewed. PNB was recommended for suspicious DRE findings or a PSA level >4 ng/ml (prior to 1995) or >2.5 ng/ml (after 1995). Univariable and multivariable analyses where performed to evaluate differences in patient characteristics and predictors of compliance within 3 months of a PNB recommendation.

RESULTS: In the screening study, 36% of men (n=1364) were compliant with PNB within 3 months, while 67% (n=2393) did not undergo a prompt PNB. The men who complied with PNB were significantly older (mean age 63.6 vs 62.3 years, p<0.0001), with significantly higher median PSA levels (5 ng/ml vs 3.3 ng/ml, p<0.0001), and more suspicious findings on DRE (12.8% vs 2.6%, p<0.0001). Age, PSA and DRE findings were all significant predictors of prompt PNB compliance on multivariable analysis.

CONCLUSION: Overall compliance rate for PNB is low within 3 months of a PNB recommendation. Compliance was significantly associated with age, PSA levels, and DRE findings. Compliance with PNB affects the results of screening, and these factors should be considered when discussing PNB with patients in daily clinical practice. Supported in part by the Urological Research Foundation, Prostate SPORE grant (P50 CA90386–05S2), the Robert H. Lurie Comprehensive Cancer Center grant (P30 CA60553), and the Louis Feil Charitable Lead Trust.
Objective: Systematic 12-core TRUS prostate biopsy is intended to adequately sample the prostate peripheral zone (PZ). In this study, we used an existing MRI/US fusion platform to electromagnetically track the location of individual random TRUS biopsies, providing confirmation of adequate prostate sampling and precise anatomic–pathologic correlation.

Methods: We studied 102 men who underwent multi-parametric prostate MRI prior to systematic 12-core TRUS prostate biopsy between January and August 2012. 3D TRUS images were obtained during biopsy using electromagnetic tracking of the needle guide. Location of individual needle passes was recorded and electronically fused with 3D reconstructions of pre-biopsy MRI images. From this data, the percent of PZ within each core was assessed.

Results: 1,216 individual needle biopsies were reviewed. Needle cores were noted to be in the intended region (base, mid, or apex) in 987 cores (81.2%). Cores directed at the base were significantly less likely to be in the intended region (69.7% vs 86.8%, p<0.0001), as were cores directed at the left prostate (77.7% vs 84.7%, p=0.002). Mean prostate volume was significantly smaller in cases where the target reached its intended region (51.3cc vs 55.3cc, p=0.0478).

Needle cores contained less than 25% PZ in 337 biopsies (27.7%). In these cores with low PZ content (<25% PZ), mean prostate volume was significantly larger (66.1g vs 46.7g, p<0.0001) and diagnostic yield was significantly lower (8.01% vs 15.02%, p=0.0009). Of cores harboring cancer, these low PZ content cores (<25% PZ) had significantly lower grade (29.6% low grade vs 50.8%, 0.0451). In fact, no high grade cancer (GS8 or greater) was found on cores containing less than 25% PZ.

Conclusion: Electromagnetic tracking has allowed precise assessment of location of systematic, non-targeted TRUS biopsies. Biopsy quality, assessed by PZ content, is correlated with diagnostic cancer yield and ability to detect high grade disease. Random biopsy appears to be less accurate in men with larger glands (more incorrect location and containing less PZ). Future refinement of this technology could potentially be used to improve systematic biopsy sampling.
Poster #70
DECREASED HOSPITAL ADMISSIONS AFTER GENTAMICIN AND CEFTRIAXONE PROSTATE BIOPSY PROPHYLAXIS
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(Presented by: Sarah A Mitchell)

Introduction and Objectives: Studies have demonstrated increasing prevalence of fluoroquinolone−resistant infections after transrectal ultrasound-guided prostate biopsy (TRUSPB). We examined whether one institution’s routine change to non−fluoroquinolone prophylaxis was associated in a change in the rate of hospital admission for biopsy−related infections.

Methods: Hospital admissions within 60 days of TRUSPB were identified in the electronic medical record by CPT codes over a six−year period (April 2005−April 2011). Cases were screened by admitting diagnosis ICD−9 codes, and charts reviewed, to determine whether the admission was related to TRUSPB and post biopsy infection (including ICD−9 for prostatitis, sepsis, and urinary tract infection). Routine prostate biopsy prophylaxis at this institution changed from fluoroquinolone to gentamicin/ceftriaxone combination antibiosis at the midpoint of the study. Admission rate, patient characteristics, and microbiology studies were compared between the two regimens using Pearson’s chi−squared analysis.

Results: 60−day infectious admissions decreased from 13/513 (2.5%) to 1/461 (0.2%) on the gentamicin/ceftriaxone regimen (p=0.002); whereas, non−infectious admissions remained stable over time (4/513 vs. 1/461, p=0.220). The single case of infection admitted under the gentamicin/ceftriaxone regimen was notable for recent colonoscopy and receipt of the secondary prophylactic regimen (gentamicin/metronidazole) due to penicillin allergy. The majority (5/9) of admitted subjects with positive cultures demonstrated infection with fluoroquinolone−resistant Escherichia coli.

Conclusions: Hospital admissions at one institution for TRUSPB−related infections decreased after a routine change in prophylaxis from fluoroquinolones to gentamicin/ceftriaxone. The rate of admission for post biopsy infection under the gentamicin/ceftriaxone regimen is lower than other published rates.

<table>
<thead>
<tr>
<th>60−day admit rates</th>
<th>Q</th>
<th>G/CTX</th>
<th>p−value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>31/513 (6.0%)</td>
<td>21/461 (4.6%)</td>
<td>0.302</td>
</tr>
<tr>
<td>Biopsy−related</td>
<td>17/513 (3.3%)</td>
<td>2/461 (0.4%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Infections</td>
<td>13/513 (2.5%)</td>
<td>1/461 (0.2%)</td>
<td>0.002</td>
</tr>
<tr>
<td>Non−infectious</td>
<td>4/513 (0.8%)</td>
<td>1/461 (0.2%)</td>
<td>0.220</td>
</tr>
</tbody>
</table>

Q=quinolone prophylaxis, G/CTX=gentamicin and ceftriaxone prophylaxis
Poster #71

DOES AGGRESSIVE DISEASE IN A FAMILY PREDICT HIGHER-RISK PROSTATE CANCER AMONG SUBSEQUENT RELATIVES?
Marc A. Bjurlin¹, Stacy Loeb², Brian T. Helfand³, Phillip Cooper⁴, Qiaoyan Hu⁴ and William J. Catalona⁴
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(Presented by: Marc A. Bjurlin)

Introduction and Objectives: Genetic factors are strongly associated with prostate cancer risk, but less is known regarding the link between family history and tumor aggressiveness. We assessed concordance of clinico-pathologic features of patients with familial prostate cancer. Our specific clinical question is whether the presence of aggressive features in one family member portends a greater risk of aggressive tumor features in related individuals.

Methods: From a prospective prostate cancer database, we reviewed the tumor features of affected family members diagnosed from 2003–2012. Familial prostate cancer was defined as any male relative with PC, and subset analysis was performed to look specifically at families with at least 2 affected first-degree relatives. Kappa statistics and odds ratios were calculated to compare clinico-pathologic features (including biopsy Gleason score and prostatectomy features) between the index case and subsequent family members.

Results: A total of 64 families (n= 54 first-degree relatives) had pathologic data available for multiple affected family members. Overall concordance was low among familial cases based on biopsy grade (κ=0.377), as well as prostatectomy grade (κ=0.383) and pathologic stage (κ=0.408). Similarly low concordance in clinicopathologic features was observed among members of first-degree affected families. If the index case had high-grade or non-organ confined disease, there was no increased risk for these adverse features in subsequent family members diagnosed with prostate cancer (all p>0.05).

Conclusions: Among men diagnosed with prostate cancer during the PSA era, there was generally poor concordance of prostate cancer features between family members. The presence of aggressive disease in the index case did not confer a greater risk of adverse features among relatives who were later diagnosed with prostate cancer. These findings may provide reassurance and guide clinical counseling for patients with a family history of prostate cancer. Supported in part by the Urological Research Foundation, Prostate SPORE grant (P50 CA90386–05S2), the Robert H. Lurie Comprehensive Cancer Center grant (P30 CA60553), and the Louis Feil Charitable Lead Trust.

Poster #72

PRE-RADIOTHERAPY PSA IS PREDICTIVE OF BIOCHEMICAL PROGRESSION FREE SURVIVAL FOLLOWING POST-PROSTATECTOMY SALVAGE RADIOTHERAPY
Maria Carmen Mir, Monica Shukla, Andrew Stephenson, Chandana Reddy, Kevin Stephans, Eric Klein and Rahul Tendulkar
Cleveland Clinic, Cleveland, OH
(Presented by: Maria Carmen Mir)

Purpose and Objectives: To examine biochemical outcomes in men treated with post-prostatectomy salvage radiotherapy (SRT).

Materials and Methods: We reviewed an IRB–approved prospectively maintained database at the Cleveland Clinic and identified 286 men with non–metastatic, prostate cancer (PCa) treated with radical prostatectomy (RP) followed by SRT from 1986–2011. Men with N1 disease or those receiving androgen deprivation therapy prior to prostatectomy or radiotherapy were excluded from this analysis. Biochemical failure (bF) after SRT was defined as any immediate rise in prostate specific antigen (PSA) above the pre–SRT PSA, a PSA of ≥ 0.2 ng/mL above the nadir, or initiation of ADT. Kaplan–Meier estimates of biochemical progression free survival (bPFS) were conducted. Cox–proportional hazard regression analysis was performed to examine the influence of clinical and pathologic features on bPFS in patients with pre–SRT PSA ≤0.5 ng/ml.
Results: Median initial PSA was 7.0 ng/mL and median pre-SRT PSA was 0.49 ng/mL. Based on surgical pathology, 16% had Gleason score (GS) ≤6, 70% had GS 7, and 13% had GS 8–10. Surgical margins were positive (SM+) in 65%, extracapsular extension (ECE) in 61%, seminal vesicle invasion (SVI) in 15%. Overall 5-yr bPFS following SRT was 51% and median time to bF was 64 months. When stratified by pre-RT PSA, 5-yr bPFS for those with a PSA of ≤0.5 ng/mL was 61% (95% CI 51 – 71%), for 0.51 – 1.00 ng/mL was 49% (95% CI 36 – 63%), for 1.01 – 2.00 ng/mL was 45% (95% CI 24 – 66%), and for >2.00 ng/mL was 12% (95% CI 0 – 26%), P<0.001. Among the 164 men with pre-SRT PSA ≤0.5 ng/mL, 109 had SM+, and 36 had GS 8–10 and/or SVI. On MVA, in this subset, SVI and/or GS 8–10 were predictive of bF following SRT (HR 2.26, p = 0.008) as was pre-RT PSA (HR = 18.6, p = 0.028) and negative surgical margins (HR 2.0, p = 0.01). Log2PSA was calculated and remained a significant predictive factor for bPFS overall (HR 1.5, 95% CI: 1.2–1.5, P < 0.001) as well as in the pre-SRT PSA ≤0.5 ng/mL subset.

Conclusions: Overall, 51% of patients remained without evidence of biochemical progression following SRT at 5 years. Salvage radiotherapy initiated at lower PSA values resulted in improved biochemical progression free survival. Even at low pre-SRT PSA values ≤0.5 ng/ml, the absolute PSA at initiation of SRT significantly predicted for bPFS as did other known factors such as SVI, GS 8–10, and surgical margins.

IMPACT OF ANDROGEN DEPRIVATION THERAPY (ADT) ON MENTAL AND EMOTIONAL WELL-BEING IN MEN WITH PROSTATE CANCER: ANALYSIS FROM THE CAPSURE REGISTRY

Clint Cary¹, Janet Cowan¹, Nirmish Singla², Peter Carroll¹ and Matthew Cooperberg¹
¹University of California San Francisco, San Francisco CA; ²University of Michigan Medical School, Ann Arbor MI
(Presented by: Clint Cary)

Introduction: Androgen deprivation therapy (ADT) is a standard treatment used for both recurrent and metastatic prostate cancer. While ADT can delay cancer progression and reduce tumor burden, its use can be limited by adverse physical and emotional side effects. The purpose of the current study is to evaluate the effect of ADT on mental and emotional well-being in a longitudinal sample of men with prostate cancer.

Methods: Exposure to ADT was defined by 3 groups: active treatment (RP, EBRT, or BT with no ADT), combination therapy (active + adjuvant and/or neoadjuvant ADT), and primary ADT. Patients reported pre- and post-treatment emotional well-being using the RAND 36-Item Short-Form Health Survey (SF-36). Emotional well-being of patients was evaluated by social function, role emotional (limitation due to emotional problems), vitality, and mental health subscales at pretreatment and 6, 12, 18, and 24 months after primary treatment. Associations between ADT and emotional well-being outcomes over time were evaluated by repeated measures analysis using mixed modeling.

Results: Between 1995 and 2011, 5,684 CaPSURE patients were newly diagnosed, treated with active, combination, or primary ADT, and completed pre-treatment comorbidity and mental health symptom checklists and SF-36 questionnaires. The study cohort included 3,050 men who completed both a pre- and at least one post-treatment SF-36 questionnaire. Men in the primary ADT group were older, single, with lower levels of education, and higher national comprehensive cancer network (NCCN) clinical risk, all p < 0.01. A higher proportion of men exposed to ADT had clinically significant declines in mental health and vitality scores from pre to 24 months post-treatment. Multivariable analysis demonstrated that exposure to ADT was associated with significant declines in role emotional, social function, and vitality scores, controlling for months since treatment, baseline mental health symptoms, clinical and demographic factors, number of comorbidities, and type of clinical site.

Conclusions: During the 2-year follow up, men treated with ADT had greater declines in emotional well-being. While men in the active and combination treatment groups demonstrated a gradual recovery after initial decline, men in the primary ADT group either did not recover or experienced a steady decline in emotional scores over 24 months.
**Poster Session I – Full Abstract**

**Poster #74**

**LONG-TERM OUTCOMES OF ACTIVE SURVEILLANCE OF PROSTATE CANCER; 10 YEARS LATER**

David Buethe, Christopher Russell, Binglin Yue, Hui-Yi Lin and Julio Pow-Sang

H. Lee Moffitt Cancer Center and Research Institute

(Presented by: David Buethe)

**Introduction:** In the era of PSA screening, a downward stage migration with respect to adenocarcinoma of the prostate (CaP) has occurred. Nearly 70% of those patients newly diagnosed with CaP, harbor tumors of low-risk. Such tumors have often demonstrated to be of low-volume and of clinical insignificance at time of radical prostatectomy (RP). This suggests over treatment and the excessive exposure to the morbidity as greater than 90% of men with low risk disease elect for treatment. Over the last decade, conservative management of low-risk tumors by means of active surveillance (AS) strategies has become more popular. Currently available outcomes report short-term or intermediate follow-up.

**Objective:** We present the long-term oncologic outcomes of patients placed on AS.

**Methods:** Upon IRB approval, a retrospective chart review identified 114 patients placed on AS for their CaP between November of 1997 and November of 2000. Of those, 96 patients meet study inclusion criteria mandating a Gleason sum of < 7, tumor presence in < 4 sextets, involvement of <50% of any single biopsy core. Patient’s follow-up had to include at least one surveillance prostatic biopsy. Eligible patients were surveyed by serum PSA, digital rectal exam, and surveillance transrectal ultrasound-guided biopsies at physician determined intervals.

**Results:** At diagnosis, the mean age was 70.3 (SD±5.3) years with a mean PSA value of 8.2 (SD±8.2) ng/dL. Surveillance patterns approached acquisition of a PSA at a mean of 9 months and a TRUS-guided biopsy of the prostate every 1.5 years. The median total number of PSA’s and biopsies obtained while on surveillance were 6.0 (SD±5.72) and 3.5(SD±2.02), respectively. At a median follow-up of 134.8 months (95%CI: 114.5, 148.7) when using the Kaplan Meier method, 52 (54%) of patients had been reclassified or demonstrated disease progression. The median progression-free and overall survival for the cohort were 68.7 (95%CI: 53.2, 97.3) months and 156.9 (95%CI: 139.9, 161.5) months, respectively. Only one prostate cancer specific mortality was noted within the cohort.

**Conclusions:** AS presents a reasonable management strategy option for low-risk prostate cancer in appropriately selected patients. However, treatment at time of disease progression did not improve survival. A significant percentage of men on active surveillance are exposed to progression of their disease if alive beyond 10 years from their diagnosis.

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**Poster #75**

**SIGNIFICANT DIFFERENCES OF ERG ONCOPROTEIN EXPRESSION IN HIGH GRADE PROSTATE CANCER IN AFRICAN AMERICAN AND CAUCASIAN AMERICAN PATIENTS**

James Farrell¹,², Denise Young², Yongmei Chen², Jennifer Cullen², Gyorgy Petrovics², Albert Dobi², David McLeod¹,², Shiv Srivastava³ and Isabell Sesterhenn³

¹Urology Service, Walter Reed National Military Medical Center, Bethesda, Maryland; ²Center for Prostate Disease Research, Department of Surgery, Uniformed Services University of the Health Sciences, Bethesda, Maryland; ³Department of Genitourinary Pathology, Joint Pathology Center, Silver Spring, Maryland

(Presented by: James Farrell)

**Introduction and Objectives:** ETS-related gene (ERG) is the most commonly overexpressed oncogene (50–70%) in prostate cancer (CaP) due to TMPRSS2–ERG gene fusion. Research from our and other groups suggests that TMPRSS2–ERG fusion or ERG overexpression is more common in Caucasian American (CA) than in African American (AA) CaP patients. Recent studies from our laboratory showed that in AA patients the higher grade index tumors were predominantly ERG negative. We sought to quantify the association between race and ERG expression in a cohort of high grade CaP patients. We then examined whether detecting ERG has prognostic significance for CaP disease-specific outcomes.
Methods: The Center for Prostate Disease Research database was queried to identify patients with high grade CaP who underwent radical prostatectomy between 1994 and 2011. Patients with a cumulative Gleason score of 8–10 were included, as well as patients with a primary Gleason score of 4 or 5. A total of 63 AA patients were age–matched to 63 CA patients. Immuno–histochemical staining was performed to detect fusion status in representative whole mount prostate specimens using a highly specific ERG monoclonal antibody (9FY). Tumor specimens were classified as ERG positive or negative and compared by race. Multivariable analysis and Kaplan−Meier curves were used to evaluate the clinical significance of ERG oncoprotein positivity.

Results Obtained: A total of 126 patients were included in this study. Median patient follow up after RP was 50 months. In the CA cohort, 31 of 63 (49%) patients had an index tumor positive for the ERG oncoprotein compared to 10 of 63 (16%) patients in the AA cohort. Chi−squared analysis demonstrated that ERG was significantly more common in the CA cohort compared to the AA cohort (p<0.0001). Potential association of ERG status with clinical outcome was analyzed in the ERG stratified AA and CA cohorts.

Conclusions: To our knowledge, this is the first study to examine the prevalence of ERG oncoprotein expression in high grade CaP patients stratified by race. ERG expression (predominantly due to TMPRSS2−ERG gene fusion) is significantly more common in high grade CaP of CA compared with AA patients. Genetic determinants of high grade CaP in the AA population needs to be further determined. This study underscores that typing of prostate tumors for ERG may enhance our understanding of biological differences between ethnic groups.

Poster #76
IMPACT OF MR-US FUSION TARGETED CONFIRMATORY BIOPSY ON PATIENT SELECTION FOR ACTIVE SURVEILLANCE
Geoffrey Sonn¹, Edward Chang¹, Shyam Natarajan², Frederick Dorey¹, Daniel Margolis³, Jiaoti Huang⁴, Patricia Lieu¹, Malu Maçairan¹ and Leonard Marks¹
¹UCLA Urology, Los Angeles, CA; ²UCLA Biomedical Engineering, Los Angeles, CA; ³UCLA Radiology, Los Angeles, CA; ⁴UCLA Pathology, Los Angeles, CA
(Presented by: Geoffrey Sonn)

Introduction and Objectives: Conventional TRUS−guided biopsy is used to select and confirm eligibility for active surveillance (AS). However, it often fails to detect clinically significant prostate cancer (CaP). Inadequate patient selection is largely responsible for the 30% rate of cancer progression on AS. MRI and targeted biopsy may improve detection of clinically significant CaP on confirmatory biopsy. We report the results of MR−US fusion biopsy, used to confirm low−risk, in men enrolled in an AS program.

Methods: 179 men with Gleason 6 CaP on initial biopsy were referred to UCLA for AS. Within 6 months of initial biopsy, each underwent multi−parametric MRI (mpMRI) at 3−Tesla followed by MR−US fusion confirmatory biopsy including both systematic and targeted cores using a commercial biopsy and tracking device (Artemis, Eigen, Grass Valley, CA). The primary outcome was reclassification by the fusion confirmatory biopsy as no longer fulfilling AS criteria (Gleason ≤6 and maximum cancer core length (MCL) <4mm). A uroradiologist assigned a mpMRI cancer suspicion level. The cohort was stratified into 3 groups—(1) normal MRI, (2) moderate suspicion, or (3) high suspicion. We performed univariate analysis to assess differences in AS eligibility among the groups.
Results: Of 179 enrolled men, 65 (36%) were reclassified as a poor AS candidate following fusion biopsy. Reclassification results stratified by suspicion on MRI are displayed in the figure. In men with a normal MRI, just 3 of 16 (19%) no longer met AS criteria after fusion confirmatory biopsy. In contrast, 10 of 11 (91%) men with a highly suspicious MRI were reclassified. All 10 had clinically significant cancer in their targeted cores. The majority of men had a moderately suspicious MRI. Of these, 52 of 152 (34%) were reclassified by confirmatory biopsy.

Conclusions: A highly suspicious MRI in men fulfilling AS criteria on initial biopsy predicts reclassification in >90% of men on MR–US fusion confirmatory biopsy. Therefore, a highly suspicious MRI may be used to encourage treatment, potentially obviating confirmatory biopsy. In contrast, the majority of men with a normal MRI remain AS candidates after confirmatory fusion biopsy.

Poster #77
MODIFIED ORGAN RETRIEVAL FOR EXAMINATION (MORE) DURING ROBOT-ASSISTED RADICAL PROSTATECTOMY: A NOVEL TECHNIQUE FOR REDUCING THE POSITIVE SURGICAL MARGIN RATE
Wooju Jeong, Khurshid R. Ghani, Akshay Sood, Craig R. Rogers, James O. Peabody and Mani Menon
Vattikuti Urology Institute, Henry Ford Health System
(Presented by: Wooju Jeong)

Introduction: A putative drawback of robot–assisted radical prostatectomy (RARP) is the lack of tactile sensation and the ability to determine possible tumor margins. We describe a modified technique of RARP that allows immediate retrieval of the prostate for intraoperative examination and targeted frozen section biopsies (MORE procedure). The aim of this study was to determine feasibility and early outcomes.

Methods: 54 patients with a probability of extracapsular extension (EPE) >25% by Partin’s tables were selected to undergo MORE–RARP. MORE consists of a GelPOINT® access port (Applied Medical, CA, USA) placed in the periumbilical region with a 12mm camera port and 10mm port for retrieval. Following excision of the prostate, it is retrieved through the GelPOINT, and examined on–table by the surgeon. Lesions suspicious for positive margins are sent for frozen section biopsy. Biopsies positive or suspicious for cancer resulted in more tissue being removed. Patients undergoing MORE with EPE at final pathology were compared to a control group of 30 consecutive patients with EPE after conventional RARP.
Results: In the MORE group, 25 out of 54 patients were diagnosed with pT3 disease. There were no significant differences in baseline characteristics between control patients and patients undergoing MORE procedure. 8/25 patients in the MORE group and 6/30 patients in the control group had GS ≥8 at biopsy. Total operating times between MORE vs control groups were not significantly different (197.7 vs 181.5 minutes respectively, p=0.162). The PSM rate in the control group was 46.7% (14/30) compared to 16% (4/25) in MORE (p=0.0336). In 3 out of 4 patients undergoing MORE, the site selected for frozen section biopsy matched the EPE site at final pathology (Table 1).

Conclusions: In this pilot study, adoption of the MORE procedure at RARP led to a significant reduction in the PSM rate in pT3 prostate cancer. MORE is a promising technique that has potential in other minimally invasive urologic oncologic procedures.

| Table 1. Match between EPE sites in final pathology and frozen section biopsy sites. |
|-----------------------------------------------|-----------|
| Matched sites between EPE and frozen biopsy  | 17 (68.0%)|
| Positive surgical margin                     | 3 (12.0%) |
| Negative surgical margin                     | 8 (32.0%) |
| No frozen biopsy during MORE procedure        | 6 (24.0%) |
| Mismatched sites between EPE and frozen biopsy| 8 (32.0%) |
| Positive surgical margin                     | 1 (4.0%)  |
| Negative surgical margin                     | 7 (28.0%) |
| Total                                         | 25 (100.0%)|

Poster #78
CONTEMPORARY PREVALENCE OF PROSTATE CANCER ON AUTOPSY: A PROSPECTIVE STUDY IN AN UNSCREENED POPULATION OF CAUCASIAN AND ASIAN MEN
Alexandre Zlotta¹, Shin Egawa², Dmitry Pushkar³, Alexander Govorov², Takahiro Kimura², Masahito Kido², Cynthia Kuk⁴, Marta Kovylina³, Najla Aldaoud⁵, Neil Fleschner⁴, Antonio Finelli⁴, Laurence Klotz⁶, Gina Lockwood⁴ and Theodorus H. van der Kwast⁵
¹Mount Sinai Hospital & Princess Margaret Hospital, University Health Network, Toronto, ON, Canada; ²Jikei University School of Medicine, Tokyo, Japan; ³University of Moscow, Moscow, Russia; ⁴Princess Margaret Hospital, University Health Network, Toronto, ON, Canada; ⁵Toronto General Hospital, University Health Network, Toronto, ON, Canada; ⁶Sunnybrook Hospital, Toronto, ON, Canada
(Presented by: Alexandre Zlotta)

Introduction and Objectives: Randomized trials on Prostate Cancer (PCa) screening have outlined the risks of over-diagnosis and over-treatment of latent cancers. Significant geographical differences in PCa incidence and mortality exist, being lower among Asian (ASI) men compared to Caucasians (CAU). Our aim was to prospectively compare the prevalence of PCa and precursor lesions in CAU and ASI men. We chose a specific CAU population in Russia with little sun exposure, high fat diet and with low penetrance of PSA screening. Autopsy data in North America and Europe would have been heavily contaminated due to opportunistic PSA screening. Screening in Japan is also uncommon.

Methods: Prostate glands were prospectively obtained during autopsy from men who died from other causes than PCa in Moscow (Russia)–(CAU) and Tokyo (Japan)–(ASI). Prostates were removed en-block and analyzed in toto by an experienced uro-pathologist in Toronto. We analyzed and compared across the ASI and CAU populations the distribution, number and contemporary Gleason score of tumour foci, pathological stage, spatial location and tumour volume and presence of prostatic intraepithelial neoplasia (PIN).
Results: 320 prostates were collected, 220 from CAU and 100 from ASI men. Mean age was 62.5 and 68.5 years in CAU and ASI men, respectively (p<0.001). Average prostate weight was 40.0 and 31.9 g in CAU and ASI men, respectively (p<0.001). A total of 82 PCa (prevalence 37.3%) and 35 PCa (prevalence 35.0%) were observed in CAU and ASI men (p=0.70). In men older than 60, PCa was observed in >40% of prostates, reaching nearly 60% in men > 80 years. PIN was observed in 31.8 and 39.0% of CAU and ASI men, respectively (p=0.21). Gleason score ≥7 cancers accounted for 23.1 and 51.4% of all prostate cancers in CAU and ASI men, respectively, (p=0.003). When controlled for differences in age and prostate weight, ASI men still had a greater probability of having Gleason score ≥7 PCa (p=0.03).

Conclusion: PCa is found on autopsy in a similar significant proportion of Russian CAU and Japanese ASI, starting from their 40's. Over 50% of cancers in ASI and nearly 25% in CAU men are Gleason ≥7. The high prevalence of Gleason 4 pattern in undiagnosed men dying of other causes than PCa suggests that the definition of 'clinically insignificant' PCa could be more inclusive.

Poster #79
HEPATITIS C ANTIBODY TESTING IN AFRICAN AMERICAN AND HISPANIC MEN IN NEW YORK CITY WITH PROSTATE BIOPSY
Annika Krystyna, Divya Kumari, Tarang Safi, William Matthew Briggs and Murray David Schwalb
Lincoln Medical and Mental Health Center, Bronx, NY
(Presented by: Annika Krystyna)

Background: An analysis of the Prostate Cancer Database Project identified an association between hepatitis C antibody testing and prostate cancer (Pca).

Methods: The records of 864 African American (AA) and Hispanic men from January 1, 2000, thru July 31, 2011 with both prostate biopsy and hepatitis C antibody testing were examined. Chi-squared tests, T-tests of difference and logistic regression models were used to interpret data. A skill plot was used to integrate receiver operating curves and optimal cut-off for PSA in accordance with Bayesian theory.

Results: Prostate cancer was detected in 70% of AA men and 52% of Hispanic men with hepatitis C antibody testing and 68% of AA and 70% of Hispanic men with hepatitis C antibody detected. African American men had significantly higher rates of Pca, hepatitis C antibody detected, HIV, and higher cancer stage at diagnosis when compared to Hispanic men. Prostate cancer was more likely to metastasize despite average histological Gleason scores of less than 7 and was not related to number of cancer containing cores at biopsy. PSA did not meet criteria required of standard screening tests to detect Pca in this patient population.

Conclusions: In New York City, African American and Hispanic men referred for prostate biopsy with a history of hepatitis C antibody detection or indication for testing have the highest rates of Pca detected in any group identified to date, with high rates of metastatic disease at presentation independent of PSA, histological Gleason scores and number of cores containing cancer at diagnostic biopsy. The presence of serum hepatitis C antibody significantly increased odds of Pca.
Poster #80
SMOKING IS ASSOCIATED WITH ACUTE PROSTATIC INFLAMMATION IN MEN WITH A NEGATIVE PROSTATE BIOPSY: RESULTS FROM THE REDUCE STUDY
Daniel Moreira¹, J Curtis Nickel², Leah Gerber³, Roberto Muller⁴, Gerald Andriole⁴, Ramiro Castro-Santamaría⁵ and Stephen Freedland³
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(Presented by: Daniel Moreira)

Introduction: Cigarette smoking promotes systemic inflammation by increasing the levels of pro-inflammatory markers; however, its direct inflammatory effect on several organs is unknown. The prevalence of acute inflammation in prostate biopsies is estimated to be nearly 40%. The factors associated with inflammatory changes in the prostate of men undergoing biopsy are largely unknown. Therefore, we sought to evaluate the association of smoking status and acute inflammation in the prostate of men undergoing prostate biopsy.

Methods: Retrospective analysis of 8098 negative baseline biopsy results of 50–75 years–old men with PSA levels between 2.5 and 10ng/mL enrolled in the Reduction by Dutasteride of Prostate Cancer Events (REDUCE) study. Smoking status was self-defined as never, former and current smoker. Acute prostate inflammation was assessed by systematic central review blinded to smoking status as present or absent and graded as mild, moderate or marked, though due to low numbers of moderate and marked, inflammation was examined as a binary variable of present/absent. The association of smoking status with inflammation was evaluated with univariable and multivariable logistic regressions controlling for age, race, body–mass index (BMI), digital rectal exam (DRE), prostate volume and baseline prostate–specific antigen (PSA).

Results: A total of 1220 (15%), 3171 (39%) and 3707 (46%) men were current, former and never smoker, respectively. Current smokers were significantly younger than former and never smokers (P<0.001) but had similar race, DRE, prostate volume, and pre–biopsy PSA (all P>0.01). Former smokers had significantly higher BMI than current and never smokers (P<0.001). Acute prostate inflammation was identified in 1246 (15%) biopsies and graded as mild, moderate and marked in 1220 (98%), 24 (2%) and 2 (<1%), respectively. In univariable analysis, current smokers were more likely to have acute inflammation than former (OR=1.34; P=0.001) and never smokers (OR=1.36; P<0.001). The results were virtually unchanged in multivariable analysis.

Conclusion: In a cohort of men undergoing prostate biopsy all with negative biopsies, current smoking status was independently associated with acute inflammatory changes in the prostate. Further studies remain needed to understand the biological mechanisms linking smoking and prostate inflammation.
Introduction: Prostate cancer and diabetes are common. Metformin is frequently prescribed to treat type 2 diabetes, and recent studies suggest that it also has anti-cancer effects.

Objective: To evaluate the association between cumulative duration of metformin use and all-cause and prostate cancer-specific mortality among diabetic patients.

Design, Setting, and Participants: We used a population-based retrospective cohort design. Data were obtained from Ontario's cancer registry and health care administrative databases. Within a cohort of men over the age of 66 with incident diabetes who subsequently developed prostate cancer, we examined the effect of the length of exposure to anti-diabetic medications on all-cause and prostate cancer-specific mortality.

Main Outcome Measures: Crude and adjusted hazard ratios were calculated using a time-varying Cox proportional hazard model to estimate the effects of cumulative duration of exposure to metformin, sulfonylureas, thiazolidinediones and insulin on the risk of all-cause and prostate cancer-specific mortality.

Results: The cohort consisted of 3837 patients. Median age (interquartile range IQR) at diagnosis of prostate cancer was 75 (72–79) years. During a median (IQR) follow up of 4.64 (2.7–7.1) years, 1343 (35%) died, and 291 patients died of prostate cancer (7.6%). Cumulative duration of metformin treatment was associated with a significant decreased risk of prostate cancer-specific death and all-cause mortality in a dose-dependent fashion, with adjusted hazard ratios, HR of 0.76 (95% confidence interval, CI 0.64–0.89) and 0.92 (95% CI 0.88–0.97) respectively for each additional six months of metformin use. There was no relationship between cumulative use of other anti-diabetic drugs and either outcome.

Conclusion: In this population-based study of older patients with diabetes, increased cumulative duration of use of metformin was associated with decreases in both all-cause mortality and prostate-cancer-specific mortality.

Purpose: Metformin is commonly prescribed to treat type-2 diabetes. Recent evidence suggests that it may possess anti-tumoral properties. The aim of the current study was to test the association between metformin use and risk of prostate cancer among men with diabetes.

Patients and Methods: Data were obtained from population-based health care administrative databases in Ontario, Canada from 1994 to 2009. This retrospective cohort study used a nested case-control approach to examine the relationship between metformin exposure and the risk of prostate cancer within a cohort of incident diabetic men over the age of 66 years. We conducted four case-control analyses defining cases as 1) any prostate cancer, 2) high-grade only, 3) low-grade only and 4) biopsy-diagnosed. In each analysis, cases were matched to five controls on age and cohort entry date. Metformin exposure was determined based on prescriptions before cancer diagnosis, and adjusted odds ratios (OR) were estimated using conditional logistic regression.
Results: Within our cohort of 104,730 men with diabetes, there were 4856 cases of prostate cancer and 24,280 matched controls. Within the cancer cases, 1007 were high-grade, 1574 were low-grade and 3262 were biopsy-diagnosed. There was no association between metformin use and risk of any prostate cancer (adjusted odds ratio, aOR 1.07 95%CI 0.99–1.15), high-grade cancer (aOR 1.16 95%CI 0.96–1.36), low-grade cancer (aOR 0.94 95%CI 0.82–1.08) or biopsy-diagnosed cancer (aOR 1.01 95%CI 0.91–1.1).

Conclusion: This large study did not find an association between metformin use and risk of prostate cancer among older men with diabetes, regardless of cancer grade or method of diagnosis.

Poster #83
NATURAL HISTORY OF THE TIME FROM FIRST DETECTABLE PSA FOLLOWING RADICAL PROSTATECTOMY TO BIOCHEMICAL RECURRENTENCE- A COMPETING RISK ANALYSIS
Leonora de Boo¹, Melania Pintilie², Paul Yip², Neil Fleshner¹ and David Margel¹
¹Division of Urology, Department of Surgical Oncology, Princess Margaret Hospital, University Health Network, Toronto, Ontario, Canada; ²Clinical Study Coordination and Biostatistics, University Health Network, Toronto, Ontario, Canada
(Presented by: David Margel)

Background: Physicians often defer treatment of patients with a detectable PSA following radical prostatectomy till reaching a PSA threshold defined as PSA recurrence. However, this timeframe is not well characterized. The aim of our study was to estimate the median time from 1st detectable PSA following radical prostatectomy to four commonly used definitions of BCR and to identify predictors of time to BCR.

Methods: We utilized our prospectively maintained radical prostatectomy database and identified all subjects who underwent a radical prostatectomy and had an undetectable PSA after surgery followed by at least one detectable PSA between 2000–2011. The primary outcome was time to BCR, using the following definitions: PSA ≥ 0.2 ng/mL; initial PSA ≥ 0.2 ng/mL and successive PSA ≥ 0.2 ng/mL; PSA ≥ 0.4 ng/mL; PSA ≥ 0.4 ng/mL and rising. Median times to reach any of the four BCR definitions were calculated using a competing risk analysis. Associated predictors were identified using univariable and multivariable Fine and Grey models. We also employed a mixed effect model to test for clinical predictors that were associated with rate of PSA rise.

Results: The cohort included 376 patients. Median follow up from surgery was 37.5 months (IQR, 19.8–61.5) and from detectable PSA to end of follow up was 11.0 months (IQR, 4.13–21.77). Only 45.74% (n = 172) had any single PSA value of ≥ 0.2 ng/mL, while 15.16% (n = 57) reached the PSA level of ≥ 0.4 ng/mL and rising. On multivariable analysis two variables were consistently independent predictors of time to BCR: value of 1st detectable PSA and pathologic Gleason grade 8 or higher at RP. In the mixed effect model rate of PSA rise was associated with: time from RP to first detectable PSA, Gleason score at RP and prostate volume.

Conclusion: This is the first study to report estimated median time and predictors for the period from 1st detectable PSA following surgery until BCR. Our analyses of predictors of the rate of PSA rise can help a more personalized approach to patients with a detectable PSA following surgery.
**EFFICACY AND SAFETY OF A 3-MONTHLY DEPOT FORMULATION OF DEGARELIX COMPARED WITH GOSERELIN IN PROSTATE CANCER**

Neal Shore¹, E. David Crawford², Marc Gittelman³, Bertrand Tombal⁴, Teuvo Tammela⁵, Johannes Wolff⁶, Heather Payne⁷, Tine Kold Olesen⁸, Bo-Eric Persson⁹ and Laurence Klotz¹⁰

¹Carolina Urologic Research Center and Atlantic Urology Clinics; ²University of Colorado Cancer Center, Colorado, USA; ³South Florida Medical Research, Florida, USA; ⁴Cliniques Universitaires Saint Luc/Université Catholique de Louvain, Brussels, Belgium; ⁵Tampere University Hospital, Tampere, Finland; ⁶Viersen General Hospital, Viersen, Germany; ⁷University College Hospital, London, UK; ⁸Ferring Pharmaceuticals, Copenhagen, Denmark; ⁹Ferring Pharmaceuticals, Saint-Prex, Switzerland; ¹⁰University of Toronto, Ontario, Canada

(Presented by: Neal Shore)

**Introduction:** Once-monthly degarelix 240/80 mg significantly improved prostate-specific antigen (PSA) progression-free survival vs. leuprolide in prostate cancer (PCa). This 1-year, open-label, randomised study (CS35, NCT00946920) evaluated a 3-monthly degarelix formulation.

**Methods:** Patients received degarelix (240 mg, then 480 mg every 3 months) or goserelin (3.6 mg, then 10.8 mg every 3 months) ± bicalutamide. Co-primary endpoints were cumulative probability of testosterone ≤0.5 ng/mL: from Days 3–364 for degarelix vs. goserelin and from Days 28–364 with degarelix.

**Results:** Overall, 848 patients received treatment (degarelix, n=565; goserelin, n=283). The first endpoint (castrate from Days 3–364 vs. goserelin) was met; indeed, degarelix was statistically superior to goserelin (cumulative probability, 85% [81.6–87.8%] and 5.3% [3.1–8.4%], respectively). The second endpoint (castrate from Days 28–364) was not met as the lower bound of the 95% CI was below the predefined 90% threshold (cumulative probability, 90% [95% CI, 87.0–92.3%]). This reflects testosterone escape in some patients as a result of insufficient trough plasma degarelix levels at the end of the 3-month dosing period. Compared with goserelin, degarelix was not associated with initial testosterone surge and microsurges; it demonstrated a significantly faster PSA suppression and lower urinary tract symptom relief (in locally advanced disease) as well as lower incidence of arthralgia; and a significantly lower risk of disease progression (in those with high baseline PSA; i.e. >50 ng/ml) (Table 1). Overall incidences of adverse events (AEs) were similar for degarelix vs. goserelin (75% vs. 71%). Injection site reactions were more common with degarelix (39% vs 2%), while renal/urinary (9% vs 17%) and musculoskeletal AEs (14% vs 20%) were more common with goserelin.

**Conclusions:** Treatment with 3-monthly degarelix was associated with a number of clinical benefits vs. goserelin in patients with PCa. These benefits are consistent with the results obtained in previous studies with once-monthly degarelix and confirm its role as a first-line androgen-deprivation therapy in PCa.

**Table 1. Degarelix vs. goserelin ± bicalutamide in PCa**

<table>
<thead>
<tr>
<th>Testosterone</th>
<th>Degarelix (n=565)</th>
<th>Goserelin ± bicalutamide (n=283)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median level, Day 3 (ng/mL)</td>
<td>0.27</td>
<td>6.9</td>
</tr>
<tr>
<td>PSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median % reduction, Day 28</td>
<td>84.1</td>
<td>68</td>
</tr>
<tr>
<td>Probability of PSA failure, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall population</td>
<td>13.5</td>
<td>13.5</td>
</tr>
<tr>
<td>Baseline PSA &gt;50 ng/mL</td>
<td>34.9</td>
<td>45.0</td>
</tr>
<tr>
<td>Disease progression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probability of disease progression, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall population</td>
<td>21.0</td>
<td>22.7</td>
</tr>
<tr>
<td>Baseline PSA &gt;50 ng/mL</td>
<td>42.2*</td>
<td>59.2</td>
</tr>
<tr>
<td>Symptom control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in IPSS, Day 28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall population</td>
<td>-0.99</td>
<td>-0.20</td>
</tr>
<tr>
<td>Locally advanced PCa</td>
<td>-1.44*</td>
<td>0.22</td>
</tr>
<tr>
<td>Arthralgia</td>
<td></td>
<td></td>
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<tr>
<td>Change at Day 28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall population</td>
<td>-3.73</td>
<td>-3.16</td>
</tr>
<tr>
<td>Metastatic disease</td>
<td>-11.2*</td>
<td>-5.94</td>
</tr>
</tbody>
</table>

*p<0.01; t>0.0001 vs. goserelin
*PSA failure, death or additional PCs therapy; Visual analogue scale
IPSS, International Prostate Symptom Score
Poster #85
THE ROLE OF PROSTATE BIOPSY AFTER SALVAGE CRYOSURGERY FOR CLINICALLY LOCALIZED PROSTATE CANCER
Einar Sverrisson, Huy Nguyen, Timothy Kim and Julio Pow-Sang
Genitourinary Oncology Program, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL
(Presented by: Einar Sverrisson)

Introduction: Salvage cryosurgery is an option for men who have failed primary treatment for clinically localized prostate cancer. We were interested in correlating preoperative tumor characteristics with postoperative biopsy results in men who underwent salvage cryosurgery.

Methods: A retrospective review was performed of all men treated with salvage cryosurgery at our institution between 2001 and 2011. Pre- and postoperative PSA levels, Gleason score and number of positive cores were obtained and postoperative cryosurgery biopsy results were reviewed. Patients were stratified according to D’Amico’s risk classification system to low, intermediate or high risk groups.

Results: 72 men were treated with salvage cryosurgery and 65% (47/72) underwent postoperative biopsy on average 6 months after their treatment. 15% were found to have persistent tumor. Preoperative PSA level (3.6 vs 4.1, P=0.788) and postoperative nadir PSA level (1.66 vs 0.7, P=0.1), Gleason score (7.1 vs 7.2, P=0.86) and number of positive preoperative biopsy cores (4.4 vs 4.4, P= 0.96) did not predict results of postoperative biopsy. No significant difference was noted when stratified for different risk groups.

Conclusions: Salvage cryosurgery is an acceptable alternative for men with recurrent prostate cancer and has been shown to have satisfactory outcome. Our findings demonstrate that 15% of men have viable tumor after salvage cryosurgery. Preoperative tumor characteristics, risk group category, or postoperative PSA nadir level do not predict tumor persistence on postoperative biopsy. Men treated with salvage cryosurgery for recurrent prostate cancer should consider having postoperative biopsy.

<table>
<thead>
<tr>
<th>Table 1 – Tumor characteristics and biopsy results</th>
</tr>
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<tbody>
<tr>
<td><strong>Biopsy</strong> +</td>
</tr>
<tr>
<td>Mean preoperative PSA level</td>
</tr>
<tr>
<td>Mean Gleason score</td>
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<tr>
<td>Mean Number of cores</td>
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</tbody>
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<table>
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<tr>
<th>Table 2 – Correlation of risk with biopsy results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biopsy</strong> +</td>
</tr>
<tr>
<td>Low risk</td>
</tr>
<tr>
<td>Intermediate risk</td>
</tr>
<tr>
<td>High risk</td>
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</table>
Poster #86
HOW DOES ROBOT-ASSISTED LAPAROSCOPIC RADICAL PROSTATECTOMY COMPARE TO OPEN SURGERY IN MEN WITH HIGH-RISK TUMORS?
Sanoj Punnen, Maxwell Meng, Matthew Cooperberg, Kirsten Greene, Janet Cowan and Peter Carroll
San Francisco, CA
(Presented by: Sanoj Punnen)

Introduction: The objective of this study was to compare oncologic outcomes in high-risk patients who underwent open radical retropubic prostatectomy (RRP) and robotic assisted radical prostatectomy (RARP) at a single institution. Despite equivalent oncologic outcomes between RRP and RARP, the use of RARP in men with high-risk tumors has been debated.

Materials and Methods: A retrospective analysis of high-risk patients treated with open or robotic surgery at UCSF from 2002 to 2011 was conducted. The relationship between surgical approach and positive margin rate was assessed by multivariate logistic regression and Cox proportional hazards regression assessed the effect of surgical approach on time to tumor recurrence.

Results: 177 open radical prostatectomy and 233 RARP patients made up the final cohort for analyses. Mean age was 61.6 years (SD=6.6) and median follow up was 27 months (range 2–112). RARP patients experienced less blood loss (median 200 vs. 400 cc, p<0.01) and underwent complete bilateral nerve sparing more often (54% vs. 34%, p<0.01) than those undergoing open surgery. There were no differences by approach in pathological grade, stage, or positive margin rates. However, there was a trend towards higher positive margin rates with RARP early on. Recurrence-free survival was similar at 2 years (84% and 79%) and 4 years (68% and 66%) after open and robotic surgery, respectively (log-rank p=0.53).

Conclusion: This study is novel in that it assesses outcomes of open versus robotic prostatectomy in a cohort of high-risk men at a single institution. RALP appears to be a feasible option for men with high-risk prostate cancer and displayed equivalent oncologic outcomes compared to open surgery.

Source of Funding: None

Poster #87
MEN WITH LOW PREOPERATIVE SEXUAL FUNCTION MAY BENEFIT FROM NERVE-SPARING RADICAL PROSTATECTOMY
Sanoj Punnen, Catherine Harris and Peter Carroll
San Francisco, CA
(Presented by: Sanoj Punnen)

Introduction and Objective: The benefits of nerve-sparing radical prostatectomy (RP) for post-operative sexual are well known, however, it is unclear whether nerve sparing has clear benefit in men with poor pretreatment sexual function. The objective of this study was to assess the effect of nerve sparing radical prostatectomy on urinary and sexual function in men at various levels of pretreatment sexual function with a specific focus on men with poor function prior to surgery.

Materials and Methods: Men within the Cancer of the Prostate Strategic Urologic Research Endeavor (CaPSURE) database who underwent RP and had baseline and 2 year post-treatment UCLA Prostate Cancer Index (PCI) sexual and urinary function scores were selected for the study cohort. The degree of nerve sparing was categorized as either complete bilateral, unilateral/partial, or no nerve sparing, and the level of pre-treatment sexual function was divided into quartiles. The cohort was divided into subgroups of nerve-sparing technique and pre-treatment sexual function. Adjusted means of sexual function (SF) and urinary function (UF) between subgroups were calculated and the differences between means were tested using analysis of covariance (ANCOVA).

Results: 1,788 patients met the inclusion criteria. Median patient age was 65 (range 39–80). Bilateral, unilateral, and no nerve sparing were performed in 1187, 271 and 330 men, respectively. Nerve sparing techniques had a statistically significant beneficial effect on SF (p-value <0.01) in some men and UF (p-value 0.03) in all men. The effects of nerve sparing on SF differed between the quartiles of pre-RP SF (p-value 0.01). Nerve-sparing did not have an effect on sexual function among men in the lowest quartile of pre-RP SF score (p=0.19), but had a significant benefit on sexual function in the higher three quartiles (p=0.02, p<0.01, p<0.01).

Conclusion: Nerve sparing RP improves sexual function in most men with the exception of those with little/no baseline function. Urinary function was positively impacted in all men. Men who are suitable candidates for nerve preservation based on the risk of extra capsular extension may benefit from nerve-sparing surgery. Poorer baseline sexual function should not exclude them from such surgery.
Poster #88
RESIDENT EXPERIENCE AS A PREDICTIVE FACTOR FOR PERI-OPERATIVE OUTCOMES FOLLOWING RADICAL PROSTATECTOMY
Will Kirby, Jed Ferguson, David Johnson, Jonathan Matthews, Matthew Nielsen, Raj Pruthi, Eric Wallen, Michael Woods and Angela Smith
Chapel Hill, NC
( Presentated by: Will Kirby)

Introduction and Objectives: For many academic centers, robotic prostatectomy (RP) represents a gateway for resident introduction to the robotic technique. Some studies have suggested that this may result in longer operative times as well as increased complications. Our aim was to evaluate whether PGY level affected length of stay (LOS), operative time, or complications following RP utilizing the ACS−NSQIP database.

Methods: We performed a retrospective review of the NSQIP 2010 Participant Use Data File. ACS−NSQIP collects data on 135 variables, including peri−operative data, 30−day post−operative complications and mortality on all major surgical procedures at participating institutions from 2005−2010. During this time period, 5167 patients underwent RP with complete data regarding PGY involvement. LOS, mean OR time, and complication rates for those involving an attending only, junior (PGY−3 or less), or senior resident (PGY−4 or greater) were calculated while controlling for other covariates using multivariate logistic regression models.

Results: As shown in the table below, univariate analysis did not reveal any differences between those with or without complications when comparing PGY level (p=0.5899). After controlling for age, sex, BMI, cardiac comorbidity, functional status, and surgery within 30 days, PGY year remained non−significant, revealing that it does not appear to be an independent predictor of complications. While PGY level was not significant for LOS, it was a significant predictor for mean OR time, with junior residents being a significant predictor for increased time (p<0.0001) when controlling for other variables. Senior residents were not a significant predictor when compared to attendings alone (p=0.8840).

Conclusion: PGY level did not affect mean LOS or complications in a large sample of patients RP. Mean OR time, while affected by junior resident involvement, was not affected by senior resident involvement when compared to attendings alone. This lends credence to the widely held belief that RP is an excellent learning tool for residents seeking to expand their skills with this technique.

<table>
<thead>
<tr>
<th></th>
<th>Attending Only, N= (%)</th>
<th>Junior Resident, N= (%)</th>
<th>Senior Resident, N= (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Complications</td>
<td>2348 (93%)</td>
<td>569 (93%)</td>
<td>1857 (92%)</td>
</tr>
<tr>
<td>Complications</td>
<td>189 (7%)</td>
<td>42 (7)</td>
<td>162 (8%)</td>
</tr>
<tr>
<td>p-value</td>
<td></td>
<td></td>
<td>0.5899</td>
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</table>
Background: Prostate cancer outcomes are highly variable and difficult to predict accurately. Improved tools are needed to match treatment more appropriately to a patient’s risk of progression. Therefore, we developed and validated a multivariate model to predict disease-specific mortality (DSM) by combining clinical parameters (as defined by CAPRA score) with an expression score based on measuring the expression level of cell cycle progression (CCP) genes.

Methods: A multivariate prediction model was trained using patients from four retrospective cohorts with median clinical follow up of 7.6 years. Patients were excluded if there was insufficient data to calculate a CAPRA score. Specifically, we used 200 men from the UK diagnosed with cancer after TURP, 353 from Scott & White and 388 from UCSF treated with radical prostatectomy, and 118 men from Durham VA treated with EBRT. CCP score was derived from fixed tumor tissue (biopsy or surgical resection). Outcome was either time from treatment to biochemical recurrence (US cohorts) or time from diagnosis to disease specific mortality (UK cohort). The model was validated for predicting time from diagnosis to DSM in 180 men from the UK diagnosed by needle biopsy with clinically localized prostate cancer and managed conservatively (mean/median CAPRA score = 6).

Results: A model combining CAPRA with CCP score was fit in the training set by a Cox Proportional Hazards analysis stratified by cohort. CAPRA was treated as an integer (0–10), and CCP score as a continuous numeric variable. The Combined score was defined as 0.39*CAPRA+0.57*CCP score. There were no significant interactions between cohort and CAPRA or CCP score (p > 0.05 after adjustment for multiple testing). This suggests that both CCP score and CAPRA confer similar prognostic information regardless of cohort composition, treatment, or specific outcome. In the validation cohort the Combined score was highly prognostic (HR= 2.27, 95%CI: (1.63, 3.16), p = 1.2 x 10−7). By likelihood ratio testing, the Combined score was a better predictor of DSM than CAPRA alone (p = 0.0028). The c-index of the Combined score was 0.75, which was an improvement over CAPRA (c-index 0.71).

Conclusions: We have developed and validated a multivariate model that predicts DSM in a conservatively treated cohort. The model provides prognostic information beyond clinical variables, and can be used to help differentiate aggressive from indolent cancer at disease diagnosis.
Poster Session I – Full Abstract

Poster #90
PREDICTORS OF RECURRENCE IN PATIENTS WITH HIGH-RISK PATHOLOGY AFTER PROSTATECTOMY
David Moore¹, Matthew Resnick², Daniel Barocas³, Peter Clark³, Michael Cookson³, S. Duke Herrell³, Chirag Kulahalli¹, Joseph Smith³, Chaochen You³ and Sam Chang³
¹Vanderbilt University, School of Medicine, Nashville, TN; ²Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN
(Presented by: David Moore)

Introduction: Adjuvant radiotherapy for pT3 and pT2 margin+ prostate cancer has been reported to improve survival and reduce the risk of metastases. We sought to determine the pattern of recurrence in these patients and to identify disease characteristics associated with clinical and biochemical recurrence (BCR).

Methods: We identified 967 patients that underwent radical retropubic prostatectomy (RRP) or robotic assisted laparoscopic prostatectomy (RALP) between January 2000 and June 2009 with pathologic T3NO disease or positive surgical margins. Patients who received adjuvant therapy (N=16) or had persistent elevation in prostate specific antigen (PSA) levels post−op (N=144) were excluded. The univariate relationships between individual covariates (Gleason score [GS], margin status, extraprostatic extension [EPE], seminal vesicle invasion [SVI], PSA, age and ethnicity) and risk of BCR were evaluated. Kaplan−Meier curves were fit to assess time to BCR. A multivariable Cox regression model was fit to evaluate the independent predictive power of relevant covariates.

Results: Median age was 62.0 (IQR 56.5−67.2), and 92.1% were white. 28.1% sustained BCR during a median follow up of 3.3 years (IQR 1.7−5.6). Patients recurred a median 2.3 years (IQR 1.0−3.6) after prostatectomy, with 11.9% exhibiting clinical recurrence. Of those with BCR, 78.4% received treatment; radiotherapy was used in 65.2% of cases, 27.8% received hormone therapy and 4.4% received chemotherapy. Pre−operative PSA, GS, EPE and SVI were associated with time to recurrence, while surgical margin status was not (Table). Five−year BCR−free survival was 72% for pT2 margin+, 57% for pT3a and 35% for pT3b; 81% for Gleason 5−6, 59% for Gleason 7, and 33% for Gleason 8–10.

Conclusion: BCR after prostatectomy in this population is common, but many patients exhibit long term disease−free survival despite high risk features. In this study, BCR was most strongly associated with EPE, SVI and GS 8–10 tumors, while those with pT2 margin + disease, and patients with GS 5–6 disease had a relatively favorable prognosis. This suggests that it may be possible to risk stratify this group of patients in order to make judicious use of adjuvant radiation therapy.

<table>
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<tr>
<th>Variable</th>
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<th>p-value</th>
<th>Multivariable HR(95% CI)</th>
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<td>Age (continuous)</td>
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<td>PSA (continuous)</td>
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<td>&lt;0.001</td>
<td>1.02 (1.01, 1.04)</td>
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<tr>
<td>Pathological GS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2.76 (1.76, 4.31)</td>
<td>&lt;0.001</td>
<td>2.40 (1.52, 3.77)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>8-10</td>
<td>5.91 (3.86, 9.57)</td>
<td>&lt;0.001</td>
<td>4.16 (2.49, 6.94)</td>
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<td>EPE</td>
<td>1.06 (1.16, 2.62)</td>
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<td>1.09 (1.18, 2.23)</td>
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<td>1.20 (0.88, 1.62)</td>
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Poster #91
CCP SCORE SIGNIFICANTLY PREDICTS PSA FAILURE AFTER EBRT
Stephen Freedland¹, Leah Gerber¹, Julia Reid², William Welbourn², Alexander Gutin², Zaina Sangale², Joseph Salama¹ and Steven Stone²
¹Duke, Durham, NC; ²Myriad, Salt Lake City, UT
(Presented by: Stephen Freedland)

Background: Accurate risk stratification improves decision making in localized prostate cancer. To aid risk stratification, a test based on the collective gene expression of 31 cell cycle progression (CCP) genes was developed. The CCP score predicts biochemical recurrence (BCR) after prostatectomy, and prostate cancer specific mortality in men undergoing observation in the United Kingdom. However, the value of CCP in men undergoing primary electron beam radiation therapy (EBRT) is untested.

Methods: The CCP score was evaluated retrospectively in 152 patients treated with EBRT at the Durham VA medical Center. Inclusion criteria were disease diagnosis from 1991 to 2006 and available biopsy tissue. Approximately half of the cohort was African-American. CCP score was derived from diagnostic biopsy. Outcome was time from EBRT to BCR using Phoenix definition, and median follow-up for patients without BCR was 5 years. Of the 152 initially selected patients, 6 were excluded due to delayed treatment (> 2 years from diagnosis) and 5 generated poor quality CCP scores, leaving 141 patients for analysis. Association with outcome was evaluated by CoxPH survival analysis and likelihood ratio tests.

Results: Patient data was censored at 5-years of follow-up, 19 patients (13%) had BCR. The median CCP score was 0.12 (IQR −0.43 to 0.66). In univariate analysis, CCP score was a significant prognostic variable (p−value = 0.0017). The hazard ratio (HR) for BCR was 2.55 (95% CI (1.43, 4.55)) for a one−unit increase in CCP score. In a predefined multivariate analysis that included Gleason score, PSA, and percent positive cores, the HR for CCP changed only marginally and remained significant (HR per CCP unit 2.09 (95% CI (1.05, 4.18), p−value = 0.035) indicating that CCP provides prognostic information that is not provided by clinical parameters. There was no evidence for interaction between CCP and any clinical variable, including ethnicity.

Conclusions: We evaluated the prognostic utility of CCP score for predicting BCR after EBRT. The CCP score was associated with BCR and provided prognostic information beyond what is available from clinical parameters. If validated in a larger cohort, then CCP score could be used to select high−risk men undergoing EBRT who may need combination therapy for their clinically localized prostate cancer.
PREOPERATIVE STATIN USE ASSOCIATED WITH LOWER PSA BUT SIMILAR HISTOPATHOLOGIC OUTCOMES
Samadi David, Michael Leapman, Dov Sebrow, Adele Hobbs, Kristian Stensland, Adrien Bernstein and Hugh Lavery
Mount Sinai Hospital, Department of Urology, New York, New York
(Presented by: Michael Leapman)

Introduction: The impact of statins in the development and possible chemoprevention of prostate cancer remains controversial. Reports are divided on whether statin use decreases diagnosis and/or biochemical recurrence of prostate cancer following prostatectomy, and their effect on serum PSA is an equally important factor in the understanding of these medications.

Methods: Patients undergoing robotic-assisted laparoscopic prostatectomy (RALP) from May 2004 until September 2010 (n=1642) were dichotomized according to preoperative statin use. Baseline and histopathologic outcomes were compared between those using statins at the time of RALP (n=521) and those who were not (n=1121).

Results: Men using statins at the time of prostatectomy were older (61 vs. 59 years, p<0.001), had higher BMI and had more comorbidities as measured by American Society of Anesthesiology (ASA) scores than statin non-users (p<0.001). Preoperative Gleason scores, clinical staging and D’Amico risk stratification were similar between the two groups, but men on statins had significantly lower mean PSA (5.5 vs 6.4, p<0.001). Pathologic stage, margin status, Gleason scores and prostate weight were similar between the two groups. Biochemical disease-free survival was also similar at 1, 2 and 3 years, and follow-up time was similar between groups (median 13.2 and 12.7 months for statin-users and non-users, respectively).

Conclusion: Men taking statins at the time of prostatectomy had identical histopathologic and short term oncologic outcomes as non-users, despite having significantly lower serum PSA, being older and having similar sized prostates. This supports prior studies suggesting a PSA reduction effect of statins, but not studies purporting histopathologic or oncologic differences.

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<th>p-value</th>
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<th>Mean Age</th>
<th>p-value</th>
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<tbody>
<tr>
<td>Yes</td>
<td>59.0 (6.3)</td>
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</tr>
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<td>60.0 (6.1)</td>
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</table>

<table>
<thead>
<tr>
<th>Statin Usage</th>
<th>Mean Pathologic Prostate Weight, g (SD)</th>
<th>p-value</th>
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<td>Yes</td>
<td>7.29 (3.03)</td>
<td>0.02</td>
</tr>
<tr>
<td>No</td>
<td>7.89 (2.97)</td>
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<table>
<thead>
<tr>
<th>Statin Usage</th>
<th>Mean Pathologic Tumor Volume % (SD)</th>
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<tr>
<td>Yes</td>
<td>5.62 (2.85)</td>
<td>0.23</td>
</tr>
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</table>
**Poster #93**

**EMPLOYING THE EPIGENETIC FIELD EFFECT TO DETECT PROSTATE CANCER IN BIOPSY-NEGATIVE PATIENTS**

David Jarrard¹, Daniel Lin², Joel Nelson³, Rajiv Dhir³, Wei Huang¹, Andrew Livermore¹, Bing Yang¹ and Matthew Truong¹

¹University of Wisconsin School of Medicine and Public Health, Madison, WI; ²University of Washington Medical Center, Seattle, WA; ³University of Pittsburgh School of Medicine, Pittsburgh, PA

(Presented by: David Jarrard)

**Purpose:** Prostate cancer (PCa) is typically multifocal supporting the principle that molecular alterations can occur in histologically normal tissues in patients that have cancer. We have recently demonstrated using DNA methylation microarrays that epigenetic differences define a widespread field defect in the normal prostate tissue from men with cancer (in press). The purpose of this study is to determine whether a novel panel of DNA methylation markers can predict the presence of PCa using histologically normal transrectal ultrasound–guided biopsy cores.

**Materials and Methods:** Methylation was assessed using quantitative pyrosequencing in a training set consisting of 65 non–tumor associated (NTA) and tumor associated (TA) prostate tissues from the University of Wisconsin. A multiplex methylation panel was generated using multivariate logistic regression. In a blinded fashion, a set of 47 NTA and TA biopsy specimens from the University of Washington were used for independent validation of the multiplex model. Multivariate logistic regression generated multiplex marker panels and receiver operating characteristic (ROC) curves were generated for internal and external validation.

**Results:** Robust methylation differences were observed for all genes at all CpGs assayed (p<0.0001). Regression models incorporating individual genes (EVX1, CAV1, and FGF1) and a gene panel (EVX1 and FGF1) discriminated between NTA and TA tissues in the original training set (AUC 0.796–0.898, p<0.001). Upon external validation, uniplex models incorporating EVX1, CAV1, or FGF1 discriminated between TA and NTA biopsy–negative specimens with an AUC of 0.702, 0.696, and 0.658, respectively (p<0.05). Furthermore, a multiplex panel (EVX1 and FGF1) identified PCa patients with an AUC of 0.774 (p=0.001) and had a negative predictive value of 0.909.

**Conclusions:** A widespread epigenetic field defect can be utilized to detect the existence of PCa in patients with histologically negative biopsies. This assay is unique in that it detects alterations in non–tumor cells. With further validation, this marker panel (EVX1 and FGF1) has the potential to decrease the need for repeated prostate biopsies, a procedure associated with cost and complications.

**Poster #94**

**GLEASON 6 PROSTATE CANCERS DIAGNOSED IN THE PSA ERA DO NOT METASTASIZE SUGGESTING A MORE APPROPRIATE DESIGNATION OF GLEASON 6 DISEASE INSTEAD OF CANCER**

Nicholas Donin¹, Juliana Laze¹, Ming Zhou², Qinghu Ren² and Herbert Lepor¹

¹Department of Urology, New York University School of Medicine, New York, NY; ²Department of Pathology, New York University School of Medicine, New York, NY

(Presented by: Nicholas Donin)

**Introduction and Objectives:** To elucidate the probability that Gleason 6 cancers diagnosed in the PSA era treated with radical prostatectomy (RP) develop metastasis.

**Materials and Methods:** Between October 2000 and June 2012, 1781 men underwent open RP by a single surgeon and consented to participate in an IRB–approved longitudinal clinical outcomes study. Baseline clinicopathologic information was collected prospectively. Postoperative evaluations were performed at 3, 6, 12, and 24 months and annually thereafter. Biochemical recurrence (BCR) was defined as a serum PSA value ≥0.2 ng/ml, or at least two progressively rising PSA values in patients undergoing salvage radiation therapy (SRT).
Results: 857 (48.1%) of men undergoing open RP had a final pathologic diagnosis of Gleason 6 disease based on their surgical specimens. Of these cases, 23 (2.7%) developed BCR. Seven of these cases were designated as insignificant BCR (iBCR) based on PSA doubling times (PSADT) of mean 81 months (range 35.5 to 100); whereas, 16 men were deemed to have a significant BCR (sBCR) with a mean PSADT of 8 months (range 1.5−20) and all underwent SRT. The 10−fold difference between the PSADT of men with sBCR vs. iBCR justifies our sub−grouping (p<.001). The PSA declined to a level ≤0.1 in all cases following SRT suggesting that all men had a local recurrence. In two men who subsequently developed a second BCR event following SRT, pathologic re−review demonstrated upgrading to Gleason 7. The 5 and 10 year risk of developing any BCR was 1.6% and 4.7%, respectively. Thus, among 857 men initially graded as Gleason 6 prostate cancer, only two (0.23%) developed a BCR recurrence after SRT, and both were found to have Gleason 7 disease after pathologic re−review.

Conclusions: The risk of any BCR following open RP for pathologic Gleason 6 prostate cancer is exceedingly low. Virtually all men with a sBCR who underwent SRT had a complete and durable response without subsequent metastasis, suggesting that recurrences are most often attributed to the presence of local disease only. The fact that the only two cases developing disease refractory to local control were found on re−review to have Gleason 7 provides compelling evidence Gleason 6 disease is never metastatic at the time of diagnosis. The lack of metastatic potential of Gleason 6 disease has significant implications for future strategies aimed at the detection and treatment of prostate cancer.

Poster #95
GTX-758, BUT NOT LHRH BASED ADT, REDUCES BOTH SERUM PERCENT FREE TESTOSTERONE AND SERUM PSA IN MEN WITH ADVANCED PROSTATE CANCER
Robert Getzenberg, Christopher Coss, James Dalton, Michael Hancock and Mitchell Steiner
GTx, Inc., Memphis, TN
(Presented by: Robert Getzenberg)

Introduction: Androgen deprivation therapy (ADT) improves disease−free survival in men with advanced prostate cancer. Gonadal testosterone (T) production can be reduced by estrogenic agents and LHRH analogs.

Objectives: Herein we compare the effects GTx−758 an oral, selective estrogen receptor alpha (ERα) agonist versus Lupron Depot® (4 month) on serum hormone parameters in men with advanced prostate cancer.

Methods: In Phase II studies, men with advanced prostate cancer (n=164) received 1000 mg or 2000 mg GTx−758 daily or Lupron Depot® (4 month), while men with castration resistant prostate cancer (CRPC) (n=9) received 2000 mg GTx−758 daily. Serum concentrations of total T, free T, SHBG and PSA were determined at baseline and during treatment.

Results Obtained: In ADT naïve advanced prostate cancer patients, 28 days of 1000 mg or 2000 mg daily GTx−758 or Lupron therapy reduced serum total T 62, 77 and 96% from baseline, respectively. However, treatment with 1000 mg or 2000 mg GTx−758 daily reduced % free T (free T/total T) by 68 and 70% from baseline, respectively, whereas Lupron treatment reduced % free T by only 19% from baseline. At 28 days, PSA levels were reduced 65, 71 and 56% for 1000 mg, 2000 mg doses of GTx−758 and Lupron, respectively. A strong relationship existed between serum SHBG and % free T in GTx−758 treated patients (P<0.001) with the majority of % free T reduction apparent after only 7 days of treatment. In CRPC patients, 2000 mg GTx−758 daily did not affect serum total T levels, but resulted in % free T reductions of 71% and clinically relevant PSA reductions from baseline following 15 days of therapy.

Conclusions: Although GTx−758 and LHRH based ADT both reduce total serum T and PSA levels in ADT naïve advanced prostate cancer patients, % free T was measurably and rapidly reduced only in the GTx−758 treated patients. In a castrate patient population with CRPC, GTx−758 therapy resulted in similar reductions in % free T and PSA. The ability of GTx−758 to reduce % free T provides a unique and effective mechanism to treat men with advanced prostate cancer and CRPC.
Poster #96

MESSENGER RNA-MIRCO RNA GENE NETWORK ASSOCIATED WITH THE PROSTATE CANCER DISPARITIES IN AFRICAN AMERICAN AND CAUCASIAN AMERICAN POPULATIONS

Bi-Dar Wang¹, Ramez Andrawis², Dana Rice³, Faisal Ahmed², Fernando Blanco², Thomas Jarrett², Harold Frazier², Steven Patierno⁴ and Norman Lee¹

¹Department of Pharmacology and Physiology, George Washington University, Washington, DC; ²Department of Urology, George Washington University, Washington, DC; ³George Washington University, Washington, DC; ⁴GW Cancer Institute, The George Washington University Medical Center, Washington, DC

(Presented by: Dana Rice)

Introduction and Objectives: Prostate cancer (PCa) is a disease conferred by multiple gene mutations, numerous alterations in gene expression and aberrant changes in genome composition/architecture. An area of research that continues to garner attention is PCa health disparities, wherein the African American (AA) population exhibits higher incidence and mortality rates compared to Caucasian Americans (CA). Although accumulating evidences have suggested that the widespread microRNA (miRNA) deregulation may play crucial role in cancer development, the relationship between population−specific microRNAs and PCa disparities remains largely unknown.

Methods: To identify the genetic predispositions and oncogenic networks associated with the observed PCa disparities, we applied a systems biology approach by combining messenger RNA (mRNA) expression profiling, microRNA profiling and microRNA target searches to characterize the genetic portraits of PCa in AA and CA populations. Affymetrix human exon ST1.0 arrays and Agilent human miRNA V2 arrays were used to analyze the global mRNA and microRNA expression profiles in AA and CA prostate tissue samples.

Results: A 4−way statistical analysis (AA cancer vs. CA cancer; AA cancer vs. AA normal, CA cancer vs. CA normal, AA normal vs. CA normal) of mRNA and microRNA gene profiles have revealed hundred of mRNAs and dozens of microRNAs were differentially expressed (FDR< 0.1, fold change> 1.5). mRNA−microRNA pairing, resulted from computational integration of mRNA and microRNA data, and the canonical pathway analysis suggested that up−regulation of several cancer−associated pathways were involved in AA cancers.

Conclusion: Our study has demonstrated that the differential mRNA−microRNA regulatory networks and downstream gene expressions may account for part of the PCa health disparities in AA and CA. This work was supported by NCI grant 5U01−CA−116937 and ACS−IRG−08−091−01.

Poster #97

ERECTILE FUNCTION AND URINARY SYMPTOMS AFTER TRANSRECTAL ULTRASOUND AND PROSTATE BIOPSY IN MEN: A PROSPECTIVE ANALYSIS

Katie Murray, Ernesto Lopez-Corona¹ and J Brantley Thrasher²

¹Kansas City Veterans Affairs, Kansas City, MO; ²University of Kansas Department of Urology, Kansas City, KS

(Presented by: Katie Murray)

Introduction and Objectives: Transrectal ultrasound and prostate biopsy has been the standard for detecting adenocarcinoma of the prostate since its first introduction in the 1980′s. There are few studies evaluating the short term and long term erectile effects of prostate biopsy. This effect is necessary to discuss with patient’s about to undergo the procedure for prostate cancer screening.

Methods: All men who underwent transrectal ultrasound and prostate biopsy completed an International Index of Erectile Function (IIEF−5) and International Prostate Symptom Score (IPSS) before the procedure. Each were given the same survey in a stamped addressed anonymous envelope to complete at 1 week, 4 weeks and 3 months after the biopsy. Statistical analyses used were a general descriptive analysis, continuous variables using a T−test, and categorical data using chi−square analysis.
Results: 98 patients enrolled with a mean age of 64.14 (45 to 86 years) and a mean PSA of 5.83 (0.30 to 47.8). Prostate cancer was discovered in 33% of the patients. At initial presentation 46% reported no erectile dysfunction, 18.4% mild, 13.3% mild to moderate, 11.2% moderate, and 11.2% with severe erectile dysfunction. Initial mean IIEF−5 score was 18.17. On paired sample T−test there was a reduction of IIEF−5 score post biopsy to a mean of 15.81 (p=0.0001), 16.89 (p=0.013), and 16.87 (p=0.016) at 1 week, 4 weeks, and 3 months respectively. Of those patients without ED initially, 33% experienced any level of ED at week 1 and 15% of those were moderate to severe. At week 4, 20% had any level of ED but only 6.5% were classified as moderate or severe. At the 3 month point, 18.5% still had any level of ED and 7% was moderate to severe. These were significant (p<0.0001) for all comparisons by chi square analysis.

Mean IPSS score for patients was 9.9 pre−biopsy. The mean score at 1 week, 4 weeks, and 3 months were 9.3, 9.37, and 9.04, showing no significant difference in lower urinary tract symptoms after prostate biopsy on paired sample T−test.

Conclusions: It may be necessary to discuss with men undergoing prostate biopsy that there may be an unrecognized effect on erectile function at 1 week and even up to 3 months post prostate biopsy, although the severity of any erectile dysfunction post biopsy may improve over time. Lower urinary tract symptoms were not affected by prostate biopsy according to patient reported IPSS scores.

Poster #98
SELECTION OF ACTIVE SURVEILLANCE CANDIDATES AMONG MEN WITH LOW-RISK PROSTATE CANCER: VALUE OF MULTIPARAMETRIC PROSTATE MAGNETIC RESONANCE IMAGING
Lambros Stamatakis¹, Jennifer Logan¹, M. Minhaj Siddiqui¹, Annerleim Walton-Diaz¹, Anthony Hoang¹, Jeffrey Nix¹, Sorosh Rais-Bahrami¹, Srinivas Vourganti¹, Michael Weintraub¹, Todd Sterling¹, Baris Turkbey², Peter Choyke², Bradford Wood³ and Peter Pinto¹
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, MD; ²Molecular Imaging Program, National Institutes of Health, Bethesda, MD; ³Center for Interventional Oncology, National Institutes of Health, Bethesda, MD
(Presented by: Lambros Stamatakis)

Introduction and Objectives: In the era of PSA screening, the detection of low−risk prostate cancer is prevalent. Active surveillance (AS) helps to avoid overtreatment of clinically indolent disease by delaying therapeutic intervention in select patients who demonstrate progression. Common selection criteria for AS is currently based on clinical, pathologic, and PSA−based parameters. It was the goal of our study to evaluate the role of multiparametric prostate MRI (mp−MRI) in the selection and candidacy of patients for AS.

Methods: We retrospectively reviewed all men who underwent 3.0T mp−MRI with subsequent MRI/US fusion guided prostate biopsy between 2007 – 2012 at the National Institutes of Health. We then identified a subset of patients who met the Johns Hopkins AS criteria (Gleason 6 or less, PSA density ≤ 0.15, tumor involvement in 2 cores or less, and less than 50% of any single core) at entry based on their traditional 12−core extended sextant TRUS biopsy. AS criteria was then reapplied based on the confirmatory image−guided biopsy results to determine the impact of mp−MRI findings on identifying those patients who no longer met candidacy for AS. Ordinal logistic regressions were used for univariate and multivariate analysis.

Results: Eighty−seven patients comprised the initial cohort of patients who qualified for AS. The mean age of the patients was 60.4 years and mean PSA was 4.94. Of these, 30 patients (34%) were re−classified as no longer fulfilling AS criteria based on their MRI/US fusion guided biopsy results. Multiple characteristics seen on mp−MRI were assessed for correlation with AS candidacy including number of prostate lesions, diameter and volume of the dominant lesion, composite lesional volume (sum of the individual lesion volumes), and radiologic suspicion based on MRI sequences. Only composite lesional volume was a significant predictor of exclusion from AS with an odds ratio of 2.1 per cm³ of lesion volume (p=0.02). This relationship persisted when controlling for age, PSA, and prostate volume on multivariate analysis.

Conclusion: The use of mp−MRI in patients otherwise considered AS candidates by traditional TRUS biopsy aided in confirming those men with truly low volume, low grade cancer. In particular, composite lesional volume helped to identify those men who harbor larger tumor burdens. As urologists counsel patients with newly diagnosed prostate cancer, mp−MRI may contribute to the decision−making process when considering AS.
Poster #99
THE ASSOCIATION BETWEEN FINASTERIDE USE AND HIGH-GRADE OR LETHAL PROSTATE CANCER

Mark Preston¹, Kathryn Wilson², Sarah Coseo Markt³, Rongbin Ge¹, Chris Morash³, Massimo Loda⁴, Edward Giovannucci², Meir Stampher², Lorelei Mucci² and Aria Olumi¹
¹Massachusetts General Hospital, Boston, MA; ²Harvard School of Public Health, Boston, MA; ³University of Ottawa, Ottawa, Ontario; ⁴Dana Farber Cancer Center, Boston, MA
(Presented by: Mark Preston)

Introduction and Objective: Despite the widespread use of 5-alpha reductase inhibitors (5-ARIs) for benign prostatic hyperplasia (BPH) and chemopreventive indications, there is much controversy regarding the potential risk of high-grade prostate cancer. Our objective was to determine the association between finasteride use, including duration of use, and the development of total, high-grade or lethal prostate cancer.

Methods: The Health Professionals Follow-up Study is a prospective cohort of United States male health professionals who were 40 to 75 years old at baseline in 1986. Finasteride use was assessed on questionnaires every two years from 1996, and 38,430 men who were cancer-free in 1996 were followed for prostate cancer diagnosis until 2008. Cox proportional-hazard models were used to estimate risk associated with finasteride use, adjusting for possible confounders including age, time period, recent smoking history, race, family history of prostate cancer, vigorous physical activity, BMI, height, history of diabetes mellitus, history and intensity of PSA testing, history of physical examinations, history of prostate biopsy or rectal ultrasound, statins, digoxin, aspirin, alpha-blockers, saw palmetto use, and vasectomy.

Results: During 452,576 person-years of follow-up, we ascertained 3710 prostate cancer cases, 578 of which were advanced and 463 of which were high-grade. Of 38,419 men at baseline in 1996, 2920 (7.6%) reported use of Finasteride between 1986–2010. The age-adjusted relative risk for ever-use of Finasteride compared with never-use was 1.04 (95% CI=0.89–1.22) for total disease. After adjusting for confounders, ever use of Finasteride was associated with significantly lower risk of total disease, Gleason 7 and low-grade disease. The multivariable-adjusted relative risk was 0.77 (95% CI=0.65–0.90) for total disease, 0.66 (95% CI=0.49–0.89) for Gleason 7 disease, and 0.73 (95% CI=0.57–0.94) for low-grade disease. Finasteride use was not associated with risk of high-grade (RR=1.00, 95% CI=0.67–1.49) or lethal disease (RR=0.95, 95% CI=0.56–1.63).

Conclusions: Finasteride use was associated with a decreased risk of overall, low-grade, and Gleason 7 prostate cancer. Finasteride use, however, was not associated with either lowering or increasing the risk of high grade, or lethal prostate cancer as may have been suggested by previously published studies.
Introduction and Objectives: The purpose of the current study was to evaluate long term regret with treatment among a group of men treated with radical prostatectomy (RP) or external beam radiation therapy (EBRT) for localized prostate cancer.

Methods: The Prostate Cancer Outcomes Study (PCOS) enrolled 3533 men diagnosed with PCa between 1994 and 1995. The current cohort comprised 672 men aged 55 to 74 years with localized disease who underwent RP (n=538) or EBRT (n=134) and responded to 15 year post−treatment survey. Treatment regret was measured using a validated five−item instrument that was transformed into a summary score with a score of 0 representing considerable regret and 100 indicating no regret. The relationships between demographic and clinical factors and treatment regret were evaluated using Pearson’s Chi−squared analysis.

Results: Of the 672 men included in the study cohort, 384(57.1%) were age 55−64 and 288(42.9%) were age 65−74. The majority (75.9%) of men had preoperative PSA below 10ng/mL and the majority of men (61.9%) the preponderance had clinical Gleason Score ≤7. At 15 years, the mean summary score for the entire cohort was 84, and there was no statistical difference in mean treatment regret summary score between RP (83.6) and EBRT (86.06) patients. Nonetheless, patients that underwent RP were more likely to report treatment regret below the median compared to those that underwent EBRT (p=0.032). While demographic and clinical parameters were not associated with regret, patient perceptions of cancer control and adequacy of information when choosing a treatment were strongly associated with treatment regret (p<0.001 for both). Evaluation of time−dependent changes in treatment regret revealed small persistent increases in the percentage of men reporting regret at each time point (Figure 1).

Conclusions: While men undergoing RP or EBRT for localized prostate cancer are largely satisfied with their treatment choice, there are durable increases in the proportion of men who experience regret through 15 years of follow−up. Preoperative identification of patients at risk for regret may allow for more effective alignment of patient goals and expectations of treatment.
POSTER SESSION II
Friday, November 30, 2012
4:10 p.m. – 6:00 p.m.
Poster Walk
See page 147 for full abstracts

Poster #101
WHICH IS THE MOST SUITABLE TREATMENT APPROACH FOR UPPER TRACT UROTHELIAL CARCINOMA (UTUC): NEOADJUVANT VS. ADJUVANT CHEMOTHERAPY?
Fernando Abarzua-Cabezas, Patrick Espiritu, Wade J. Sexton, Julio Pow-Sang and Philippe E. Spiess
Genitourinary Oncology Program, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL
(Presented by: Fernando Abarzua-Cabezas)

Poster #102
MORBIDITY AND MORTALITY FOLLOWING RADICAL CYSTECTOMY: AN ANALYSIS OF THE AMERICAN COLLEGE OF SURGEONS NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM (NSQIP)
David Johnson, Will Kirby, Jed Ferguson, Jonathan Matthews, Matthew Nielsen, Raj Pruthi, Angela Smith, Eric Wallen and Michael Woods
Chapel Hill, NC
(Presented by: David Johnson)

Poster #103
NEOADJUVANT ACCELERATED MVAC IN PATIENTS WITH MUSCLE INVASIVE BLADDER CANCER: A MULTI-INSTITUTIONAL PROSPECTIVELY ACCRUED COHORT.
Reza Mehrzad¹, Elizabeth Plimack¹, Alexander Kutikov¹, Jean Hoffman-Censits², Rosalia Viterbo¹, Richard Greenberg¹, Costas Lallas³, Edouard Trabuls³, Yu-Ning Wong¹, Stephen Boorjian³, Robert Uzzo¹ and David Chen¹
¹Department of Urologic Oncology, Fox Chase Cancer Center, Philadelphia, PA; ²Thomas Jefferson University; ³Mayo Clinic, MN
(Presented by: Reza Mehrzad)

Poster #104
OUTCOME OF PATIENTS WITH MICROPAPILLARY BLADDER CANCER TREATED WITH NEOADJUVANT THERAPY AND RADICAL CYSTECTOMY
Mario I. Fernandez², Daniel L. Willis³, Randall E. Millikan², Rian J. Dickstein¹, Sahil Parikh¹, Arlene O. Siefker-Radtke², Charles C. Guo³, Bogdan A. Czerwisk³, Jay B. Shah¹, Louis L. Pistores², H. Barton Grossman¹, Colin P.N. Dinney¹ and Ashish M. Kamat¹
¹Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, Texas; ²Department of Genitourinary Medical Oncology, The University of Texas MD Anderson Cancer Center, Houston, Texas; ³Department of Pathology, The University of Texas MD Anderson Cancer Center, Houston, Texas
(Presented by: Mario I. Fernandez)

Poster #105
COMPLICATIONS OF ROBOTIC ASSISTED RADICAL CYSTECTOMY BY DIVERSION TYPE
Michael Nazmy, Bertram Yuh, Timothy Wilson, Clayton Lau, Jonathan Yamzon, Robert Torrey, Jennifer Linehan, Nora Ruel and Kevin Chan
City of Hope, Duarte, CA
(Presented by: Michael Nazmy)
Poster #106
PUBLIC PERCEPTION AND AWARENESS ABOUT BLADDER CANCER
Bradley Wilson, Kacey Provenzano, Jeffrey Holzbeierlein and Moben Mirza
University of Kansas, Kansas City, Kansas
(Presented by: Bradley Wilson)

Poster #107
EVALUATION OF GENDER SPECIFIC FACTORS ASSOCIATED WITH BLADDER CANCER IN A GENOME-WIDE ASSOCIATION STUDY
Kelly Stratton, Vijai Joseph and Kenneth Offit
MSKCC, New York, NY
(Presented by: Kelly Stratton)

Poster #108
URETEROENTERIC ANASTOMOTIC STRICTURES AFTER RADICAL CYSTECTOMY: DOES OPERATIVE APPROACH MATTER?
Christopher Anderson¹, Todd Morgan¹, Stephen Kappa¹, David Moore², Peter Clark¹, Rodney Davis¹, David Penson¹, Daniel Barocas¹, Joseph Smith, Jr.¹, Michael Cookson¹ and Sam Chang¹
¹Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN; ²Vanderbilt University Medical School, Nashville, TN
(Presented by: Christopher Anderson)

Poster #109
OVERALL SURVIVAL IS DECREASED IN PATIENTS WITH ELEVATED NEUTROPHIL LYMPHOCYTE RATIOS UNDERGOING RADICAL CYSTECTOMY
Louis Spencer Krane¹, Kyle A. Richards¹, A. Karim Kader², Ronald Davis¹, K.C. Balaji¹ and Ashok K. Hemal¹
¹Department of Urology, Wake Forest Baptist Health, Winston Salem, NC; ²University of California, San Diego, CA
(Presented by: Louis Spencer Krane)

Poster #110
OBESITY (BMI>30) AND NON-UROTHELIAL SUBTYPE PREDICT HIGHEST RISK OF DEVELOPING DVT/PE AFTER CYSTECTOMY
Aaron Potretzke, Kelvin Wong, Tracy Downs, Fangfang Shi, Martins Sado, David Jarrard and E. Jason Abel
University of Wisconsin, Madison, WI
(Presented by: Aaron Potretzke)

Poster #111
CONTEMPORARY RATES OF PATHOLOGIC DOWNSTAGING WITH NEOADJUVANT SYSTEMIC CHEMOTHERAPY FOR MUSCLE INVASIVE UROTHELIAL CANCER OF THE BLADDER
Joshua Griffin and Jeff Holzbeierlein
Kansas City, KS
(Presented by: Joshua Griffin)

Poster #112
EVALUATION OF CHARLSON COMORBIDITY INDEX AND RADICAL CYSTECTOMY OUTCOMES
Ismail Saad, Tamer Ewida, Amr Fayad and Amr Lotfi
Urology Department, Faculty of Medicine, Cairo University, Cairo Egypt
(Presented by: Ismail Saad)
Poster #113
THE MERITS OF CYTOLOGY IN THE WORKUP FOR UPPER TRACT UROTHELIAL CARCINOMA - A RETROSPECTIVE REVIEW
Einar Sverrisson, Timothy Kim, Patrick Espiritu, Wade Sexton, Julio Pow-Sang, Jasreman Dhillon and Philippe Spiess
Genitourinary Oncology Program, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL
(Presented by: Einar Sverrisson)

Poster #114
PREDICTORS OF 30-DAY MORTALITY IN PATIENTS UNDERGOING RADICAL CYSTECTOMY USING A LARGE ADMINISTRATIVE DATABASE
Lindsey A. Herrel, Paymon Nourparvar, Ryan W. Dobbs, Sungjin Kim, Yuan Liu, Viraj A. Master and Daniel Canter
Emory University, Atlanta, GA
(Presented by: Daniel Canter)

Poster #115
EXAMINATION OF THE NATURAL HISTORY OF T1 BLADDER CANCER IN A VETERANS’ POPULATION
Daniel Canter, Ryan W Dobbs, Usama Al-Qassab, Chad W Ritenour and Muta Issa
Emory University, Atlanta, GA
(Presented by: Daniel Canter)

Poster #116
IMPACT OF COMPLICATION GRADE ON LENGTH OF PRIMARY ADMISSION AND POST DISCHARGE READMISSION IN PATIENTS UNDERGOING CYSTECTOMY AFTER PELVIC RADIATION
Manuel Eisenberg¹, Raveen Syan², Katherine Cotter², Ryan Dorin², Georg Bartsch³, Adrian Fairey², Siamak Daneshmand² and Eila Skinner³
¹Dept of Urology, Mayo Clinic, Rochester, MN; ²USC Institute of Urology, Los Angeles, CA; ³Stanford University, Stanford, CA
(Presented by: Manuel Eisenberg)

Poster #117
TRAVEL DISTANCE TO RADICAL CYSTECTOMY PROVIDER IS NOT A BARRIER TO PROVIDING CARE FOR MUSCLE INVASIVE BLADDER CANCER PATIENTS
Tracy Downs, Kelvin Wong, E. Jason Abel and David Jarrard
University of Wisconsin, Madison, WI
(Presented by: Tracy Downs)

Poster #118
IMPACT OF HISTOLOGICAL VARIANTS ON ONCOLOGICAL OUTCOMES OF PATIENTS WITH UROTHELIAL CARCINOMA OF THE BLADDER TREATED WITH RADICAL CYSTECTOMY
Evanguelos Xylinas¹, Michael Rink², Brian Robinson², Yair Lotan³, Marek Babjuk⁴, David Green², Armin Pycha⁵, Yves Fradet⁶, Talia Faison², Richard Lee², Douglas Scherr³, Pierre Karakiewicz⁷, Marc Zeribib⁸ and Shahrokh Shariat⁹
¹Department of Urology, Weill Cornell Medical College, New York Presbyterian Hospital, New York, NY, USA; ²Department of Urology, Weill Cornell Medical College; ³Department of Urology, University of Texas Southwestern Medical Center, Dallas, TX, USA; ⁴Department of Urology, Hospital Motol, 2nd Faculty of Medicine, Charles University, Prague, Czech Republic; ⁵Department of Urology, General Hospital of Bolzano, Bolzano, Italy; ⁶Department of Urology, Laval University, Quebec City, Canada; ⁷Department of Urology, University of Montreal Health Center, Montreal, Canada; ⁸Department of Urology, Cochin Hospital, APHP, Paris Descartes University, Paris, France
(Presented by: Evanguelos Xylinas)
Poster #119
THE IMPACT OF RUNNING VERSUS INTERRUPTED URETEROENTERIC ANASTOMOSIS ON RATE OF URETERAL STRicture IN RADICAL CYSTECTOMY
Michael Large, Joshua Cohn, Kyle Kiriluk, Pankaj Dangle, Kyle Richards, Norm Smith and Gary Steinberg
University of Chicago Hospitals, Chicago, IL
(Presented by: Michael Large)

Poster #120
OVERALL SURVIVAL AND TIME TO PROGRESSION IN PATIENTS TREATED WITH NEOADJUVANT CHEMOTHERAPY WITH PATHOLOGIC T3/T4 OR NODE POSITIVE DISEASE AFTER RADICAL CYSTECTOMY
Joshua Griffin and Jeff Holzbeierlein
Kansas City, KS
(Presented by: Joshua Griffin)

Poster #121
LOW GRADE MICROPAPILLARY UROTHELIAL CARCINOMA, DOES IT EXIST? – A SURVEILLANCE EPIDEMIOLOGY AND END RESULTS (SEER) ANALYSIS OF MANAGEMENT AND OUTCOMES
Srinivas Vourganti¹, Andrew Harbin², Eric A. Singer³, Brian Shuch¹, Adam R. Metwalli¹ and Piyush K. Agarwal¹
¹NIH/NCI/UOB, Bethesda, MD; ²Georgetown University, Washington, DC; ³Cancer Institute of NJ, New Brunswick, NJ
(Presented by: Srinivas Vourganti)

Poster #122
INVASIVE BLADDER CANCER CELLS ARE DEFICIENT IN DNA REPAIR AND HAVE MUTATOR PHENOTYPES THAT ARE DUE TO SUPPRESSION OF P63 GENE EXPRESSION
Hsiang-Tsui Wang¹, Hyun-Wook Lee¹, Mao-wen Weng Weng¹, Josephine Kuo¹, William Huang², Nicholas Donin², Herbert Lepor², Xue-Ru Wu¹ and Moon-Shong Tang¹
¹Department of Environmental Medicine, New York University School of Medicine, New York, NY; ²Department of Urology, New York University School of Medicine, New York, NY
(Presented by: Hsiang-Tsui Wang)

Poster #123
PATTERNS OF CARE FOR ELDERLY PATIENTS WITH INVASIVE BLADDER CANCER: TREATMENT CHOICES FROM THE NATIONAL CANCER DATABASE (NCDB)
Sanjay Patel, C.J. Stimson, Harras B. Zaid, Daniel A. Barocas, Matthew J. Resnick and Sam S. Chang
Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN
(Presented by: Sanjay Patel)

Poster #124
SMALL CELL CARCINOMA OF THE BLADDER: CLINICAL CHARACTERISTICS AND TREATMENT PATTERNS
Sanjay Patel, C.J. Stimson, Harras B. Zaid, Daniel A. Barocas, Matthew J. Resnick and Sam S. Chang
Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN
(Presented by: Sanjay Patel)

Poster #125
INFLUENCE OF NOTCH PATHWAY ON INVASIVE PROPERTIES OF UROTHELIAL CANCER CELL LINES AND TUMOR GROWTH IN VIVO
Kilian M. Gust, Tetsutaro Hayashi and Peter C. Black
Vancouver Prostate Centre, Vancouver, BC
(Presented by: Kilian M Gust)
Poster #126
SOURCES OF VARIATION IN EXPENDITURE AFTER CYSTECTOMY
Goutham Vemana, Ling Chen and Seth Strope
¹Washington University in St. Louis, St. Louis, MO
(Presented by: Goutham Vemana)

Poster #127
RADICAL CYSTECTOMY IN OCTOGENARIANS AND RISK OF ADVERSE EVENTS OR INPATIENT MORTALITY: ANALYSIS FROM A NATIONAL COHORT
Michael Liss, Hossein Mirheydar, Seth Cohen, Kerrin Palazzi, Kellogg Parsons, David Chang and Karim Kader
UCSD, San Diego, CA
(Presented by: Michael Liss)

Poster #128
IMPACT OF SURGICAL VOLUME ON ADVERSE OUTCOMES OF RADICAL CYSTECTOMY: AN ANALYSIS OF THE MARYLAND HEALTH SERVICES COST REVIEW COMMISSION DATABASE
Michael A. Gorin, Jeffrey K. Mullins, Philip M. Pierorazio, Brian R. Matlaga, Mark P. Shoenberg and Trinity J. Bivalacqua
James Buchanan Brady Urological Institute, Johns Hopkins Medical Institutions, Baltimore, MD
(Presented by: Michael A. Gorin)

Poster #129
HIGHER BODY MASS INDEX AND ADVANCED AGE PREDICT WORSE OUTCOMES IN PATIENTS WITH T1 HIGH GRADE BLADDER CARCINOMA
Luis Kluth, Evanguelos Xylinas and Shahrokh Shariat
Department of Urology, Weill Medical College of Cornell University, New York, NY
(Presented by: Luis Kluth)

Poster #130
OPTICAL COHERENCE TOMOGRAPHY AS AN ADJUNCT TO WHITE LIGHT CYSTOSCOPY FOR INTRAVESICAL REAL-TIME IMAGING AND STAGING OF BLADDER CANCER
Philip J. Cheng¹, Edward J. Sanchez¹, Guilherme Godoy¹, Alvin C. Goh² and Seth P. Lerner¹
¹Baylor College of Medicine, Houston, TX; ²Keck School of Medicine of USC, Los Angeles, CA
(Presented by: Guilherme Godoy)

Poster #131
MICRORNA 200 FAMILY MEMBERS PREDICT PROGNOSIS IN MUSCLE INVASIVE UROTHELIAL CARCINOMA OF THE BLADDER
Matthew Wszolek, Neema Navai, Michael Williams, Woonyoung Choi, David McConkey and Colin Dinney
MD Anderson Cancer Center, Houston, TX
(Presented by: Matthew Wszolek)

Poster #132
ESTIMATING THE BURDEN OF PREOPERATIVELY MISCLASSIFIED, SURGICALLY REMOVED BENIGN RENAL MASSES IN THE UNITED STATES: IMPLICATIONS FOR THE CURRENT STANDARD OF CARE
David Johnson, Jed Ferguson, Will Kirby, Angela Smith, Michael Woods, Kim Rathmell, Mathew Raynor, Eric Wallen, Raj Pruthi and Matthew Nielsen
UNC Chapel Hill, NC
(Presented by: David Johnson)
Poster #133
COMPARISON OF PRESERVED FUNCTIONAL VOLUME IN PATIENTS UNDERGOING CLAMPED VERSUS UNCLAMPED MINIMALLY INVASIVE PARTIAL NEPHRECTOMY FOR A SOLITARY RENAL MASS
Mehrdad Alemozaffar, Scott Leslie, Raed Azhar, Sumeet Syan, Monish Aron, Mihir Desai and Inderbir Gill
University of Southern California, Los Angeles, CA
(Presented by: Mehrdad Alemozaffar)

Poster #134
IMAGE-GUIDED BIOPSY OF SMALL RENAL MASSES IN THE ERA OF ABLATIVE THERAPIES
Sepehr Salem, Lee Ponsky, Edward Cherullo and Robert Abouassaly
Center for Urologic Oncology & Minimally Invasive Therapies, Urology Institute, University Hospitals Case Medical Center, Case Western Reserve University School of Medicine, Cleveland, OH
(Presented by: Sepehr Salem)

Poster #135
MANAGEMENT OF SMALL RENAL MASSES: IS PERCUTANEOUS BIOPSY NECESSARY?
Stephen Blakely¹, Osama Zaytoun¹, Oleg Shapiro¹, Steve Landas², Gustavo de la Roza² and Gennady Bratslavsky¹
¹SUNY Upstate Medical University, Department of Urology, Syracuse, NY; ²SUNY Upstate Medical University, Department of Pathology, Syracuse, NY
(Presented by: Stephen Blakely)

Poster #136
INCREASED EXPRESSION OF KI-67 IS A SIGNIFICANT PREDICTOR OF DISEASE RECURRENCE AND DECREASED SURVIVAL IN PATIENTS WITH NON METASTATIC CLEAR CELL RENAL CANCER
Bishoy Gayed, Ramy Youssef, Oussama Darwish, Aditya Bagrodia, Payal Kapur, Arthur Sagalowsky, Yair Lotan and Vitaly Margulis
UT-Southwestern Medical Center Dallas, TX
(Presented by: Bishoy Gayed)

Poster #137
IMPACT OF SMOKING STATUS AT DIAGNOSIS ON DISEASE RECURRENCE AND DEATH IN CLEAR CELL RENAL CELL CARCINOMA
Behfar Ehdaie, Helena Furberg, Emily Zabor, A. Ari Hakimi and Paul Russo
Memorial Sloan Kettering Cancer Center, NY, NY
(Presented by: Behfar Ehdaie)

Poster #138
NEPHROSCLEROSIS IS COMMON IN YOUNG PATIENTS WITH RCC: POTENTIAL IMPLICATIONS FOR INCREASING ROLE OF RENAL PRESERVATION
Stephen Blakely¹, Ivy John², Sarrina Shraga¹, Osama Zaytoun¹, Oleg Shapiro¹, Steve Landas² and Gennady Bratslavsky¹
¹SUNY Upstate Medical University, Department of Urology, Syracuse, NY; ²SUNY Upstate Medical University, Department of Pathology, Syracuse, NY
(Presented by: Stephen Blakely)
Poster #139
IMPACT OF RENAL PARENCHYMAL VOLUME LOSS AND COMPENSATION ON RENAL FUNCTION AFTER PARTIAL NEPHRECTOMY FOR RCC
Henry Ajzenberg¹, Raj Satkunasivam², Ashraf Almatar², Antonio Finelli², Laura Legere¹, John Kachura¹, Martin O’Malley⁴, Paul Tuchscherer⁵, Paul Quinn⁵, Jung Choi⁵ and Michael Jewett²
¹Uro-Oncology Clinical Research Unit, Princess Margaret Hospital (PMH) and University Health Network (UHN), Toronto, Canada; ²Department of Surgery (Urology), Department of Surgical Oncology, PMH and UHN, University of Toronto, Toronto, Canada; ³Department of Medical Imaging, Mount Sinai Hospital (MSH) and UHN, University of Toronto, Toronto, Canada; ⁴Division of Vascular and Interventional Radiology, Department of Medical Imaging, MSH and UHN, University of Toronto, Toronto, Canada; ⁵3D Reconstruction Lab, UHN, Toronto, Canada
(Presented by: Ashraf Almatar)

Poster #140
NEPHRON SPARING SURGERY IN THE SETTING OF ANTIPLATELET THERAPY: A COMPARATIVE ANALYSIS
Hossein Mirheydar, Michael Liss, Ryan Kopp, Kerrin Palazzi, Ramzi Jabaji, David Sisul and Ithaar Derweesh
University of California San Diego School of Medicine, La Jolla, CA
(Presented by: Michael Liss)

Poster #141
R.E.N.A.L. NEPHROMETRY SCORE ACCURATELY PREDICTS COMPLICATIONS FOLLOWING LAPAROSCOPIC RENAL CRYOABLATION
Zhamshid Okhunov¹, Edan Shapiro², Daniel Moreira¹, Michael Lipsky², Joel Hillelsohn¹, Ketan Badani², Jaime Landman³ and Louis Kavoussi¹
¹The Smith Institute for Urology, Hofstra North Shore-LIJ School of Medicine; ²Columbia University Medical Center; ³University of California, Irvine
(Presented by: Zhamshid Okhunov)

Poster #142
DECREASED P16, P21, P27, AND P57 EXPRESSION IS ASSOCIATED WITH INFERIOR ONCOLOGIC OUTCOMES IN PATIENTS WITH CLEAR CELL RENAL CELL CANCER
Bishoy Gayed, Ramy Youssef, Oussama Darwish, Aditya Bagrodia, Payal Kapur, Arthur Sagalowsky, Yair Lotan and Vitaly Margulis
UT-Southwestern Medical Center Dallas, TX
(Presented by: Bishoy Gayed)

Poster #143
INDOCYANINE GREEN IN PARTIAL NEPHRECTOMY: IMPACT ON SURGICAL MARGIN DISTANCE
Louis Spencer Krane¹, Ted B Manny¹, Julia Manny² and Ashok K Hemal¹
¹Department of Urology, Wake Forest Baptist Health, Winston Salem NC; ²Department of Pathology, Wake Forest Baptist Health, Winston Salem NC
(Presented by: Louis Spencer Krane)
Poster #144
DETERMINANTS OF OUTCOMES AFTER RESECTION OF RENAL CELL CANCER WITH VENOUS INVOLVEMENT
Abhinav Sidana¹, Jatinder Goyal², Piyush Aggarwal², Payal Verma² and Ronald Rodriguez²
¹Division of Urology, University of Cincinnati College of Medicine, Cincinnati, OH; ²Department of Urology, Johns Hopkins University School of Medicine, Baltimore, MD
(Presented by: Abhinav Sidana)

Poster #145
INTRACELLULAR SUPEROXIDE GENERATION BY NOX4 IS REQUIRED FOR BRANCHING AND INVASIVE PHENOTYPES OF HUMAN KIDNEY CANCER CELLS
Robert Turner, Guimin Chang and Jodi Maranchie
University of Pittsburgh, Pittsburgh, PA
(Presented by: Robert Turner)

Poster #146
RENAL NEPHROMETRY SCORE IS ASSOCIATED WITH COMPLICATIONS AFTER RENAL CRYOABLATION: A MULTI-CENTER ANALYSIS
Michael Liss¹, Kerrin Palazzi¹, Reza Mehrzadi², David Sisul¹, Kaitlan Briles¹, James Masterson³, Hossein Mirheydar¹, Sean Stroup³, James L'Esperance³, Robert Wake³, Robert Gold³, Gerant Rivera-Sanfeliz¹ and Ithaar Derweesh¹
¹University of California San Diego School of Medicine, La Jolla, CA; ²University of Tennessee Health Science Center, Memphis, TN; ³Naval Medical Center San Diego, San Diego, CA
(Presented by: Michael Liss)

Poster #147
ASSOCIATION OF MICROVASCULAR AND CAPILLARY-LYMPHATIC INVASION WITH OUTCOME FOR PATIENTS WITH RENAL CELL CARCINOMA
Manuel Eisenberg¹, John Cheville², R. Houston Thompson¹, Dharam Kaushik¹, Christine Lohse³, Stephen Boorjian¹, Brian Costello and Bradley Leibovich¹
¹Dept of Urology, Mayo Clinic, Rochester MN; ²Dept of Pathology, Mayo Clinic, Rochester MN; ³Dept of Health Science Research, Mayo Clinic, Rochester MN; ⁴Division of Medical Oncology, Mayo Clinic, Rochester MN
(Presented by: Manuel Eisenberg)

Poster #148
VASCULAR BYPASS IN PATIENTS UNDERGOING NEPHRECTOMY AND INFERIOR VENA CAVA THROMBECTOMY FOR RENAL CELL CARCINOMA
Timothy Kim¹, Ross Simon², Tony Kurian³, Einar Sverrisson¹, Paul Armstrong², Wade J. Sexton¹ and Philippe E. Spiess¹
¹Moffitt Cancer Center, Tampa, FL; ²University of South Florida, Tampa, FL
(Presented by: Timothy Kim)

Poster #149
MODIFIED GLASGOW PROGNOSTIC SCORE OF 2 INDEPENDENTLY PREDICTS SURVIVAL IN PATIENTS WITH RENAL CELL CARCINOMA
Lindsey Herrel, Caroline Tai, Ruth Westby, Kenneth Ogan, Daniel Canter, John Pattaras, Peter Nieh and Viraj Master
Emory University, Atlanta, GA
(Presented by: Lindsey Herrel)
Poster #150
PRE-OPERATIVE C-REACTIVE PROTEIN AS A BINARY VARIABLE PREDICTS RECURRENCE-FREE SURVIVAL IN PATIENTS WITH RENAL CELL CARCINOMA
Lindsey Herrel, Caroline Tai, Ruth Westby, Kenneth Ogan, Daniel Canter, John Pattaras, Peter Nieh and Viraj Master
Emory University, Atlanta, GA
(Presented by: Lindsey Herrel)

Poster #151
PRESENCE OF COEXISTING HYBRID MALIGNANCY IN SOLITARY SPORADIC ONCOCYTOMA
Serge Ginzburg¹, Robert Uzzo¹, Tahseen Al-Saleem¹, Essel Dulaimi¹, Elizabeth Plimack¹, David Kurz², Christopher Miller², Anthony Corcoran¹, Marc Smaldone¹, Rosalia Viterbo¹, David Chen¹, Richard Greenberg¹ and Alexander Kutikov¹
¹Fox Chase Cancer Center, Philadelphia, PA; ²Temple University School of Medicine, Philadelphia, PA
(Presented by: Serge Ginzburg)

Poster #152
ANATOMIC COMPLEXITY QUANTITATED BY NEPHROMETRY SCORE IS ASSOCIATED WITH PROLONGED WARM ISCHEMIA TIME DURING ROBOTIC PARTIAL NEPHRECTOMY
Jeffrey Tomaszewski, Anthony Corcoran, Marc Smaldone, Alexander Kutikov, Rosalia Viterbo, David Chen, Richard Greenberg and Robert Uzzo
Fox Chase Cancer Center, Philadelphia, PA
(Presented by: Jeffrey Tomaszewski)

Poster #153
UTILITY OF RENAL NEPHROMETRY SCORE FOR PREDICTING DISEASE RECURRENCE OR METASTASES AFTER SURGERY FOR LOCALIZED RENAL CELL CARCINOMA
Ryan Kopp¹, Reza Mehrazin², Kerrin Palazzi¹, Michael Liss¹, Ramzi Jabaji¹, James Masterson³, Sean Stroup³, Hossein Mirheydar¹, Anthony Patterson², James L’Esperance³ and Ithaar Derweesh¹
¹University of California San Diego School of Medicine, La Jolla, CA; ²University of Tennessee Health Science Center, Memphis, TN; ³Naval Medical Center San Diego, San Diego, CA
(Presented by: Ryan Kopp)

Poster #154
ROBOTIC PARTIAL NEPHRECTOMY WITH COLD ISCHEMIA AND ON-CLAMP TUMOR EXTRACTION: RECAPITULATING THE OPEN APPROACH
Khurshid Ghani, Ramesh Kumar, Wooju Jeong, Mani Menon and Craig Rogers
Vattikuti Urology Institute, Henry Ford Hospital, Detroit, MI
(Presented by: Khurshid Ghani)

Poster #155
PRECISION OF EXCISION/RECONSTRUCTION AND RECOVERY FROM ISCHEMIA: QUALITY PARAMETERS FOR FUNCTIONAL RECOVERY AFTER PARTIAL NEPHRECTOMY
Maria Carmen Mir, Matthew Simmons, Nidhi Sharma, Erick Remer, Sevag Demirjian and Steven Campbell
Cleveland Clinic, Cleveland, OH
(Presented by: Maria Carmen Mir)
Poster #156
ASSESSMENT OF KIDNEY CANCER PATIENTS EVALUATED IN A HEREDITARY CANCER CLINIC
Kelly Stratton, Shaheen Alanee, Rohini Rau-Murthy, Kasmitan Schrader, Sohela Shah, Emily Glogowski, Paul Russo, Robert Motzer, Liying Zhang, Zsofia Stadler, Mark Robson, Jonathan Coleman and Kenneth Offit
MSKCC, New York, NY
(Presented by: Kelly Stratton)

Poster #157
INCREASED INTRA-ABDOMINAL FAT PREDICTS PERIOPERATIVE COMPLICATIONS FOLLOWING MINIMALLY INVASIVE PARTIAL NEPHRECTOMY
Michael A. Gorin, Jeffrey K. Mullins, Philip M. Pierorazio, Gautam Jayram and Mohamad E. Allaf
James Buchanan Brady Urological Institute, Johns Hopkins Medical Institutions, Baltimore, MD
(Presented by: Michael A. Gorin)

Poster #158
NEPHRON SPARING WITH PARTIAL URETERECTOMY PROVIDES ONCOLOGIC OUTCOMES EQUIVALENT TO RADICAL NEPHROURETERECTOMY
Aditya Bagrodia¹, Franklin Kuehhas², Bishoy Gayed¹, Jay Raman¹, Ithamar Derweesh³, Karim Bensalah⁴, Arthur Sagalowsky¹, Shahrokh Shariat⁴, Yair Lotan¹ and Vitaly Margulis¹
¹UT Southwestern, Dallas TX; ²University of Vienna, Vienna, AT; ³Penn State University, Hershey, PA; ⁴UC San Diego, San Diego, CA; ⁵University of Rennes, Rennes, France; ⁶Cornell University, New York, New York
(Presented by: Aditya Bagrodia)

Poster #159
CANCER SPECIFIC SURVIVAL IN LOW GRADE, LOW STAGE UPPER TRACT UROTHELIAL CARCINOMA PATIENTS UNDERGOING RADICAL NEPHROURETERECTOMY VERSUS NEPHRON SPARING MEASURES
Jay Simhan¹, Marc Smaldone¹, Daniel Canter², Brian Egleston¹, Steven Sterious¹, Anthony Corcoran¹, Serge Ginzburg¹, Robert Uzzo¹ and Alexander Kutikov¹
¹Fox Chase Cancer Center, Philadelphia, PA; ²Department of Urology, Emory University, Atlanta, GA
(Presented by: Jay Simhan)

Poster #160
SURVIVORSHIP CARE IN CANADIAN GENITOURINARY ONCOLOGY: TOWARDS A MULTIDISCIPLINARY PERSPECTIVE
Ashraf Almatar¹, Suzanne Richter², Nafisha Lalani³, Jackie Bender³, David Wiljer¹, Nour Alkazaz³, Laura Legere³, Srika Sridhar³, Pamela Catton³ and Michael Jewett¹
¹Department of Surgery (Urology), Department of Surgical Oncology, PMH and UHN, University of Toronto, Toronto, Canada; ²Medical Oncology, University of Toronto; ³Department of Radiation Oncology, University of Toronto; ⁴ELICSR: Health, Wellness & Cancer Survivorship Centre Toronto General Hospital; ⁵Division of Urology, Departments of Surgery and of Surgical Oncology, Princess Margaret Hospital and the University Health Network, University of Toronto
(Presented by: Ashraf Almatar)

Poster #161
A COMPARISON OF PEDIATRIC, ADOLESCENT AND ADULT TESTICULAR GERM CELL MALIGNANCY
Nicholas Cost¹, Jessica Lubahn², Mehrad Adibi², Adam Romman², Jonathan Wickiser², Ganesh Raj², Arthur Sagalowsky² and Vitaly Margulis²
¹Cincinnati Children’s Hospital Medical Center; ²University of Texas Southwestern Medical Center
(Presented by: Nicholas Cost)
Poster #162
LONG-TERM MORTALITY IN PATIENTS WITH GERM CELL TUMORS: EFFECT OF PRIMARY CANCER SITE ON CAUSE OF DEATH
Shaheen Alanee¹, Darren Feldman², Paul Russo¹ and Badrinath Konety³
¹Urology Service – Memorial Sloan-Kettering Cancer Center, New York, NY; ²Genitourinary Oncology Service – Memorial Sloan-Kettering Cancer Center, New York, NY; ³Department of Urologic Surgery – University of Minnesota, Minneapolis, MN
(Presented by: Shaheen Alanee)

Poster #163
RECURRENCE RATE FOR PATIENTS WITH TERATOMA ONLY AT PRIMARY RETROPERITONEAL LYMPH NODE DISSECTION
Nick Liu¹, Stephen Beck², Richard Bihrlle² and Richard Foster²
¹Indiana University School of Medicine; ²Indiana University Hospital, Indianapolis, IN
(Presented by: Nick Liu)

Poster #164
OVERALL-SURVIVAL INVERSELY RELATED TO THE FREQUENCY OF PERFORMING TRANSRECTAL ULTRASOUND-GUIDED BIOPSY OF THE PROSTATE IN THOSE PATIENTS WITH LOW-RISK TUMORS ELECTING FOR ACTIVE SURVEILLANCE.
David Buethe, Christopher Russell, Binglin Yue, Hui-Yi Lin and Julio Pow-Sang
H. Lee Moffitt Cancer Center and Research Institute
(Presented by: David Buethe)

Poster #165
DOES INCREASING THE NODAL YIELD IMPROVE OUTCOMES IN PATIENTS WITHOUT NODAL METASTASIS AT RADICAL PROSTATECTOMY?
Luis Kluth¹, Evanguelos Xylinas¹, Harun Fajkovic², Morgan Roupret³, Yair Lotan⁴, Pierre Karakiewicz⁵, Douglas Scherr¹, Brian Robinson⁶, Niccolò Passoni¹, Ash Tewari⁷, Christian Seitz⁸, Paul Schramek⁹, Felix Chun¹⁰, Markus Graefen¹¹ and Shahrokh Shariat¹²
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(Presented by: Luis Kluth)

Poster #166
WITHDRAWN

Poster #167
POST TRANSRECTAL ULTRASOUND GUIDED PROSTATE (TRUS) BIOPSY COMPLICATION
Neeti Bagadiya¹, Denisse Andrade², Sofia Gondal², Louis Kavoussi², Carl Olsson³ and Manish Vira²
¹Albert Einstein College of Medicine, Bronx NY; ²The Arthur Smith Institute for Urology, Hofstra North Shore-LIJ School of Medicine, New Hyde Park NY; ³Integrated Medical Professionals, New Hyde Park NY
(Presented by: Neeti Bagadiya)
Poster #168
PROSPECTIVE PATIENT-REPORTED URINARY CONTINENCE (UC) AND SEXUAL FUNCTION (SF) AFTER ROBOTIC-ASSISTED LAPAROSCOPIC (RALRP) AND OPEN RADICAL PROSTATECTOMY (ORP)
Joseph Klink, Jianbo Li, Eric Klein, Jihad Kaouk, Michael Gong, J. Stephen Jones and Andrew Stephenson
Cleveland Clinic, Cleveland, OH
(Presented by: Joseph Klink)

Poster #169
POPULATION-BASED ANALYSIS OF GENITOURINARY COMPLICATIONS FOLLOWING PROSTATE NEEDLE BIOPSY
Amit Patel¹, Beatrix Choi², Christopher Lyttle³ and Sandip Prasad³
¹Dupage Medical Group, Downers Grove, IL; ²University of Chicago, Chicago, IL; ³Medical University of South Carolina
(Presented by: Amit Patel)

Poster #170
READABILITY ASSESSMENT OF INTERNET-BASED PATIENT EDUCATION MATERIALS RELATED TO ACTIVE SURVEILLANCE FOR PROSTATE CANCER
Richard Johnston, Elysia Spencer, Claudio Jeldres and Chris Porter
VMMC
(Presented by: Richard Johnston)

Poster #171
T2 PROSTATE CANCER SUBSTAGING: 2B OR NOT 2B?
Michael Zavaski¹, Kristen Scarpato², Ilene Staff³, Anoop Meraney¹, Stuart Kesler¹ and Joseph Wagner¹
¹Hartford Hospital, Hartford CT; ²University of Connecticut School of Medicine, Division of Urology, Farmington CT
(Presented by: Kristen Scarpato)

Poster #172
IS ACTIVE SURVEILLANCE ASSOCIATED WITH ADVERSE PATHOLOGIC OR SURGICAL OUTCOMES IN MEN EVENTUALLY CHOOSING DEFINITIVE TREATMENT WITH ROBOTIC RADICAL PROSTATECTOMY?
Rachael Sussman¹, Kristen Scarpato², Ilene Staff³, Alison Champagne³, Jamie Fish-Furhman³, Joseph Tortora³, Stuart Kesler³ and Joseph Wagner³
¹University of Connecticut School of Medicine, Farmington CT; ²University of Connecticut School of Medicine, Division of Urology, Farmington CT; ³Hartford Hospital, Hartford CT
(Presented by: Kristen Scarpato)

Poster #173
MICRORNA-124 SUPPRESSES PROSTATE TUMOR GROWTH BY DOWN-REGULATING THE EXPRESSION OF ANDROGEN RECEPTORS AND THEIR SPLICE VARIANTS IN CW22-RV1 IN-VIVO MODEL
Hao Nguyen¹, Xu-Bao Shi¹, Lingru Xue¹, Joy Yang¹, Allen Gao², Christopher Evans³ and Ralph DeVere White³
¹UC Davis Medical Center, Department of Urology, Sacramento CA; ²UC Davis Medical Center, Department of Urology, Department of Biochemistry, Sacramento CA; ³UC Davis Medical Center, Department of Urology, UC Davis Comprehensive Cancer Center, Sacramento CA
(Presented by: Hao Nguyen)
Poster #174
MEASURING THE CLINICAL IMPACT OF THE USPSTF GRADE D RECOMMENDATION OF PSA SCREENING: EVALUATION OF PSA UTILIZATION, PSA REFERRAL PATTERNS, AND PROSTATE BIOPSY IN A LARGE MULTISPECIALTY HOSPITAL SYSTEM
Timothy Tausch¹, Deo Perez² and Douglas Sutherland³
¹Madigan Hospital; ²MultiCare Health System; ³MultiCare, Tacoma WA
(Presented by: Douglas Sutherland)

Poster #175
A PHASE 1 PILOT STUDY OF 99MTC-MIP-1404 SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY (SPECT)/CT IMAGING IN MEN WITH PROSTATE CANCER UNDERGOING RADICAL PROSTATECTOMY
David Green¹, Joseph Osborne¹, Anastasia Nikolopoulou¹, Shankar Vallabhajosula¹, Stanley Goldsmith¹, Brian Robinson¹, Sagit Goldenberg¹, John Babich² and Douglas Scherr¹
¹Weill Cornell Medical College; ²Molecular Insight Pharmaceuticals
(Presented by: David Green)

Poster #176
SALVAGE RADIATION THERAPY AFTER RECURRENT PROSTATE CANCER: HOW EARLY DO WE NEED TO BE?
Roberto Muller¹, William Aronson², Martha Terris³, Christopher Kane⁴, Christopher Amling⁵, Joseph Presti, Jr.⁶ and Stephen Freedland⁷
¹Division of Urologic Surgery, Department of Surgery, Durham, NC, USA; ²Department of Surgery, Veterans Affairs Medical Center, West Los Angeles, CA, USA and Department of Urology, University of California Los Angeles Medical Center, Los Angeles, CA, USA; ³Urology Section, Division of Surgery, Veterans Affairs Medical Centers and Division of Urologic Surgery, Department of Urology, Medical College of Georgia, Augusta, GA, USA; ⁴Division of Urology, Department of Surgery, University of California San Diego Medical Center, San Diego, CA, USA; ⁵Division of Urology, Department of Surgery, Oregon Health and Sciences University, Portland, OR, USA; ⁶Urology Section, Kaiser Permanente, Oakland, CA, USA; ⁷Division of Urologic Surgery, Department of Surgery and Department of Pathology, Duke University School of Medicine and Urology Section, Veterans Affairs Medical Center, Durham, NC, USA
(Presented by: Roberto Muller)

Poster #177
CONTEMPORARY ANALYSIS OF NATIONAL TRENDS OF LYMPH NODE DISSECTION DURING RADICAL PROSTATECTOMY
Michael Liss, Kerrin Palazzi, Ramzi Jabaji, Kellogg Parsons, David Chang and Christopher Kane
¹UCSD, San Diego, CA
(Presented by: Michael Liss)

Poster #178
ACTIVE SURVEILLANCE: PREDICTORS OF PATHOLOGICAL RE-CLASSIFICATION ON THE SECOND PROSTATIC BIOPSY.
Lih-Ming Wong¹, Greg Trottier¹, Neil Flesner¹, Nathan Lawrentschuk¹, Girish Kulkarni¹, Alexandre Zlotta¹, John Trachtenberg¹, Ants Toï₂, Narhari Timilshina³ and Antonio Finelli¹
¹Division of Urology Oncology, Department of Surgical Oncology, Princess Margaret Hospital, Toronto; ²Department of Radiology, Princess Margaret Hospital, Toronto; ³Division of General Internal Medicine & Clinical Epidemiology, University Health Network
(Presented by: Lih-Ming Wong)
Poster #179
MULTIPLE SCLEROSIS AND THE INCIDENCE OF PROSTATE CANCER: A POPULATION BASED ANALYSIS
Zachary Klaassen¹, Alexander Tatem¹, Sachin Patil², Rabii Madi¹, Martha K. Terris¹ and Kelvin A. Moses¹
¹Georgia Health Sciences University, Augusta, GA; ²Saint Barnabas Medical Center, Livingston, NJ
(Presented by: Zachary Klaassen)

Poster #180
PROSTATE CANCER INCIDENCE IN PATIENTS WITH DISCOID AND SYSTEMIC LUPUS ERYTHEMATOSUS: A POPULATION BASED ANALYSIS
Zachary Klaassen¹, Alexander Tatem¹, Sachin Patil², Rabii Madi¹, Martha K. Terris¹ and Kelvin A. Moses¹
¹Georgia Health Sciences University, Augusta, GA; ²Saint Barnabas Medical Center, Livingston, NJ
(Presented by: Zachary Klaassen)

Poster #181
PROSTATE CANCER DISEASE CHARACTERISTICS FOR FOREIGN BORN SOUTH ASIAN MEN LIVING IN THE UNITED STATES
Trushar Patel¹, Edan Shapiro¹, Christopher Wambi¹, William Berg¹, Mireya Diaz-Inusa², Mani Menon² and Ketan Badani¹
¹Columbia University Medical Center, NY, NY; ²Vattikuti Urology Institute, Henry Ford Health System, Detroit, MI
(Presented by: Edan Shapiro)

Poster #182
DIFFERENCES IN COMPLICATIONS BETWEEN OPEN VERSUS LAPAROSCOPIC PROSTATECTOMY
Jed Ferguson, Will Kirby, David Johnson, Jonathan Matthews, Matthew Nielsen, Raj Pruthi, Eric Wallen, Michael Woods and Angela Smith
Chapel Hill, NC
(Presented by: Jed Ferguson)

Poster #183
EXAMINATION OF RACIAL DISPARITIES FOR PROSTATE CANCER SCREENING AND DETECTION IN VETERANS
M’Liss Hudson¹, Robert Grubb² and Jeffrey Scherrer²
¹John Cochran VAMC; ²Washington University, St. Louis, MO
(Presented by: M’Liss Hudson)

Poster #184
PROSTATE CANCER MICROPARTICLES A NOVEL BLOOD BASED PROGNOSTICATOR OF METASTASIS
Ali Al-zahrani¹, Honsing leong², Vladimir Yutkin², Nickolas Power², Jonathan Izawa², John Lewis³ and Joseph Chin²
¹Urology Department, University of Dammam, Saudi Arabia; ²Urology Division, Department of Surgery, UWO, London Ontario, Canada; ³Department of Oncology, University of Alberta
(Presented by: Ali Al-zahrani)
Poster #185
DEVELOPMENT AND VALIDATION OF A NOVEL GENOMIC CLASSIFIER FOR PREDICTING METASTATIC PROSTATE CANCER IN PATIENTS UNDERGOING RADICAL PROSTATECTOMY
Anirban Mitra¹, Mercedeh Ghadessi², Eric J. Bergstrahl³, Christine Buerki², Nicholas Erho², Anamaria Crisan², Thomas Sierociński², Zaid Haddad², Ismail A. Vergara³, Darby J.S. Thompson⁴, Rachel Carlson⁴, George G. Klee⁵, Karla V. Ballman³, Thomas M. Kollmeyer³, Timothy J. Triche³, Elai Davicioni², Peter C. Black⁵, R. Houston Thompson⁷ and Robert B. Jenkins⁶
¹University of Southern California, Los Angeles, CA; ²GenomeDx Biosciences Inc., Vancouver, BC, Canada; ³Department of Health Sciences Research, Mayo Clinic, Rochester, MN; ⁴EMMES Canada, Burnaby, BC, Canada; ⁵Department of Laboratory Medicine and Pathology, Mayo Clinic, Rochester, MN; ⁶Department of Urologic Sciences, University of British Columbia, Vancouver, Canada; ⁷Department of Urology, Mayo Clinic, Rochester, MN
(Presented by: Anirban Mitra)

Poster #186
STATIN USE AND THE RISK OF BIOCHEMICAL RECURRENCE OF PROSTATE CANCER AFTER DEFINITIVE LOCAL THERAPY: A META-ANALYSIS OF EIGHT COHORT STUDIES
Emil Scosyrev, Scott Tobis, Heather Donsky, Guan Wu, Jean Joseph, Hani Rashid and Edward Messing
University of Rochester, Rochester, NY
(Presented by: Edward Messing)

Poster #187
CLINICOPATHOLOGIC CORRELATION FOR INTERMEDIATE RISK PROSTATE CANCER: IMPLICATIONS FOR ACTIVE SURVEILLANCE
Boris Gershman, Douglas Dahl, Francis McGovern, Chin-Lee Wu and Michael Blute
Department of Urology, Massachusetts General Hospital, Boston, MA
(Presented by: Boris Gershman)

Poster #188
PREOPERATIVE ASPIRIN INTAKE AND RECURRENT PROSTATE CANCER RISK REDUCTION: DOES EXCESS BODY WEIGHT MATTER?
Monique B. Araujo¹, Judd W. Moul², Roberto L. Muller³, Suzanne B. Stewart³, Cagri Senocak², Thomas J. Polascik², Cary N. Robertson², Philip J. Walther¹ and Lionel L. Bañez¹
¹Veterans Affairs Medical Center, Durham, NC; ²Duke Prostate Center, Duke University Medical Center, Durham, NC
(Presented by: Monique B. Araujo)

Poster #189
SPARC EXPRESSION IS ASSOCIATED WITH METASTATIC PROGRESSION AND PROSTATE CANCER-SPECIFIC MORTALITY AFTER RADICAL PROSTATECTOMY
Claudio Jeldres, Richard Johnston and Christopher Porter
Virginia Mason Medical Center, Seattle, WA
(Presented by: Claudio Jeldres)

Poster #190
OBESE MEN UNDERGOING RADICAL PROSTATECTOMY HAVE LONGER LENGTH OF STAY AND CHARGES COMPARED TO NONOBESE MEN, BUT SIMILAR IMMEDIATE COMPLICATION RATES
Chad Ellimoottil¹, Adam Kadlec¹, Kristin Greco¹, John Jesse¹ and Gopal Gupta²
¹Loyola University Medical Center, Stritch School of Medicine, Maywood, IL; ²Departments of Urology and Surgery, Oncology Institute, Loyola University Chicago, Chicago, IL
(Presented by: Chad Ellimoottil)
Poster #191
PROSTATIC CALCIFICATIONS DURING TRANSRECTAL ULTRASOUND-GUIDED BIOPSY ARE NOT ASSOCIATED WITH PROSTATE CANCER
Claudio Jeldres, Richard Johnston and Christopher Porter
Virginia Mason Medical Center, Seattle, WA
(Presented by: Claudio Jeldres)

Poster #192
PATHOLOGIC FINDINGS IN ADDITIONAL PROSTATIC AND PERIPROSTATIC TISSUE REMOVED DURING RADICAL PROSTATECTOMY
Henry Chen¹,², Bradley Boelkins², Richard Kahnosi¹,² and Brian Lane¹,²
¹Spectrum Health Hospital System, Grand Rapids, MI; ²Michigan State University College of Human Medicine, Grand Rapids, MI
(Presented by: Henry Chen)

Poster #193
OMEGA-3 FATTY ACIDS AND PROSTATE CANCER RISK DURING ACTIVE SURVEILLANCE
Xavier Moreel, Janie Allaire, André Caron, Pierre Julien and Vincent Fradet
Laval University-Quebec-QC
(Presented by: Vincent Fradet)

Poster #194
SIPULEUCEL-T (S) DELAYS TIME TO FIRST USE OF OPIOID ANALGESICS (TFOA) IN PATIENTS WITH ASYMPTOMATIC OR MINIMALLY SYMPTOMATIC METASTATIC CASTRATION-RESISTANT PROSTATE CANCER (MCRPC)
Celestia Higano¹, Philip Kantoff², Daniel Petrylak³, James Whitmore⁴, Mark Frohlich⁵ and Eric Small⁶
¹Seattle Cancer Care Alliance, Seattle, WA; ²Harvard Medical School, Boston, MA; ³Columbia-Presbyterian Medical Center, New York, NY; ⁴Dendreon Corporation, Seattle, WA; ⁵UCSF Medical Center, San Francisco, CA
(Presented by: Celestia Higano)

Poster #195
COMPLICATIONS OF PELVIC LYMPH NODE DISSECTION (PLND) DURING ROBOTIC ASSISTED LAPAROSCOPIC PROSTATECTOMY (RALP): A SINGLE INSTITUTION EXPERIENCE
Kristen Scarpato¹, Tyler Cotrell², Ilene Staff², Alison Champagne², Joseph Tortora², Joseph Wagner² and Stuart Kesler²
¹University of Connecticut School of Medicine, Division of Urology, Farmington CT; ²Hartford Hospital, Hartford CT
(Presented by: Kristen Scarpato)

Poster #196
REPEAT PROSTATE BIOPSIES DO NOT CAUSE AN INCREASED RISK OF ERECTILE DYSFUNCTION
Richard Johnston, Claudio Jeldres and Christopher Porter
(Presented by: Richard Johnston)

Poster #197
SARCOMA OF THE PROSTATE: CLINICOPATHOLOGIC CHARACTERISTICS AND OUTCOMES AT A TERTIARY CARE CENTER
Mark Ball¹, Nita Ahuja², Christian Meyer³, Jonathan Epstein⁴ and Trinity Bivalacqua¹
¹Department of Urology; ²Department of Surgery; ³Department of Oncology; ⁴Department of Pathology
(Presented by: Mark Ball)
Poster #198
DISTANCE TO BIOPSY SITE INCREASES NON-COMPLIANCE TO PROSTATE BIOPSY IN A LARGE SCREENING PROGRAM IN BRAZIL
Roberto Muller¹, Eliney Faria², Gustavo Carvalhal³, Rodolfo Reis⁴, Edmundo Mauad⁵, Andre Carvalho⁶ and Stephen Freedland⁷
¹Division of Urologic Surgery, Department of Surgery, Durham, NC, USA; ²Division of Urologic Oncology and Laparoscopy, Barretos Cancer Hospital, Barretos, SP, Brazil; ³Research Support Center, Barretos Cancer Hospital, Barretos, SP, Brazil; ⁴Division of Urology, Ribeirão Preto Medical School of São Paulo University, Ribeirão Preto, SP, Brazil; ⁵Department of Preventive Medicine, Barretos Cancer Hospital and Pio XII Foundation, Barretos, SP, Brazil; ⁶Division of Urologic Surgery, Department of Surgery, and Department of Pathology, Durham, NC, USA
(Presented by: Roberto Muller)

Poster #199
RETURN TO WORK AFTER PRIMARY EARLY PROSTATE CANCER SURGERY
Andrew Salner¹, Ilene Staff¹, Tara MLaughlin¹, Rene Jahiel¹, Keith Bellizzi² and Joseph Wagner¹
¹Hartford Hospital, Hartford, CT; ²UConn, Storrs, CT
(Presented by: Andrew Salner)

Poster #200
PSA DENSITY OF THE TRANSITION ZONE AND PSA VELOCITY AS PREDICTORS FOR PROGRESSION IN PATIENTS ON ACTIVE SURVEILLANCE FOR PROSTATE CANCER
David Margel¹, Oleksandr Stakhovskyi², Sean C. Skeldon², Paul Athanasopoulos³, Tristan Juvel³, Narhari Timilshina³, Cynthia Kuk³, Greg Trottier³, Andrew Evans³, Theodorus H. van der Kwast³, Ants Toi³, Neil E. Fleshner³, Michael A.S. Jewett³, John Trachtenberg³, Antonio Finelli³ and Alexandre R. Zlotta⁴
¹University Health Network, Toronto, ON; ²Princess Margaret Hospital, University Health Network, Toronto, ON, Canada; ³Toronto General Hospital, Toronto, ON, Canada; ⁴Mount Sinai Hospital & Princess Margaret Hospital, University Health Network, Toronto, ON, Canada
(Presented by: David Margel)
Poster #101
WHICH IS THE MOST SUITABLE TREATMENT APPROACH FOR UPPER TRACT UROTHELIAL CARCINOMA (UTUC): NEO-ADJUVANT VS. ADJUVANT CHEMOTHERAPY?
Fernando Abarzua-Cabezas, Patrick Espiritu, Wade J. Sexton, Julio Pow-Sang and Philippe E. Spiess
Genitourinary Oncology Program, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL
(Presented by: Fernando Abarzua-Cabezas)

Introduction and Objectives: Radical nephroureterectomy is the standard of care for UTUC. Due to the rarity of these malignancies the number of randomized clinical trials comparing the role of neoadjuvant and adjuvant chemotherapy is scarce. The neoadjuvant approach has been considered to reduce systemic recurrences. However, the exact role of each approach needs to be clarified.

Materials and Methods: 119 patients were treated from 2005 to 2012 at a single institution and were retrospectively evaluated. Patient demographics, pre- and postoperative creatinine values, clinical and pathological staging were reviewed.

Results: 37 patients received either neoadjuvant (16) or adjuvant (21) therapy. There was no significant difference in pre operative renal function (1.2 neoadjuvant vs. 1.3 adjuvant, p=0.145). However postoperative renal function was significantly reduced in the neoadjuvant group (1.7 neoadjuvant vs. 1.4 adjuvant, p=0.029). The neoadjuvant treatment resulted in a decreased and delayed presentation of bladder recurrences. Only 1 neoadjuvant patient (9%) was found to have a recurrence in the bladder after 351 days, compared to the adjuvant group where the time to bladder recurrence in 11 patients (64%) was shorter (mean 183 days, p=0.172). Patients treated with adjuvant chemotherapy were less likely to develop distant metastases (28.75% vs. 37.50%). The mean time of distant metastatic progression was comparable (251 vs. 254 days).

Conclusion: Our data reveals that the exact role of each chemotherapy approach requires further evaluation. A randomized trial comparing neoadjuvant and adjuvant chemotherapy would greatly contribute to defining treatment paradigms for UTUC.
Poster #102
MORBIDITY AND MORTALITY FOLLOWING RADICAL CYSTECTOMY: AN ANALYSIS OF THE AMERICAN COLLEGE OF SURGEONS NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM (NSQIP)
David Johnson, Will Kirby, Jed Ferguson, Jonathan Matthews, Matthew Nielsen, Raj Pruthi, Angela Smith, Eric Wallen and Michael Woods
Chapel Hill, NC
(Presented by: David Johnson)

Introduction and Objectives: Radical cystectomy remains the gold standard for treatment of muscle invasive bladder cancer. Although effective from an oncologic perspective, radical cystectomy is a morbid procedure with an associated high complication rate. The aim of this study was to evaluate mortality, complication rates, and predictors of complications following radical cystectomy using the ACS−NSQIP.

Methods: We performed a retrospective review of the NSQIP 2010 Participant Use Data File. NSQIP collects data on 135 variables, including peri−operative, 30−day post−operative complications and mortality from all major surgical procedures at participating institutions from 2005−2010. 626 patients were identified to have undergone radical cystectomy. Overall complication and mortality rates were calculated and predictors of complications were identified using multivariate logistical regression models.

Results: Median patient age was 68. There was a 30 day overall complication, re−operation, and mortality rate of 46%, 6%, and 3.2%, respectively. The most common complications were infectious (27%) and respiratory (15%). 56% of patients required a blood transfusion, the mean requirement being 1.6 units. Median length of stay was 8 days. Pre−existing cardiac comorbidity, diabetes, and prior surgery within 30 before radical cystectomy were significant predictors of complications following radical cystectomy when controlling for other covariates such as age, BMI, and race (see table).

Conclusions: These findings add to the growing body of evidence demonstrating the substantial morbidity of radical cystectomy and appear consistent with large single−center series. We also identified pre−operative factors associated with the occurrence of post−operative complications, allowing for better informed consent and potential consideration for alternative treatment of higher risk patients.

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Poster #103
NEOADJUVANT ACCELERATED MVAC IN PATIENTS WITH MUSCLE INVASIVE BLADDER CANCER: A MULTI-INSTITUTIONAL PROSPECTIVELY ACCRUED COHORT.
Reza Mehrazin¹, Elizabeth Plimack¹, Alexander Kutikov¹, Jean Hoffman-Censits², Rosalia Viterbo¹, Richard Greenberg¹, Costas Lallas³, Edouard Trabulsi², Yu-Ning Wong¹, Stephen Boorjian³, Robert Uzzo¹ and David Chen¹
¹Department of Urologic Oncology, Fox Chase Cancer Center, Philadelphia, PA; ²Thomas Jefferson University; ³Mayo Clinic, MN
(Presented by: Reza Mehrazin)

Background: Standard Methotrexate, vinblastine, doxorubicin and cisplatin (MVAC) has shown survival benefit as a neoadjuvant treatment for muscle invasive bladder cancer (MIBC). We sought to show the efficacy of neoadjuvant AMVAC, post surgery adverse events related to the chemotherapy, and its effect on surgical outcomes.

Methods: Pts with T2−T4aN0−N1 urothelial carcinoma with a CrCl >=50 and adequate hepatic and marrow function were eligible. Pts received 3 cycles of AMVAC (methotrexate 3mg/m2, vinblastine 30 mg/m2, doxorubicin 30 mg/m2, cisplatin 70mg/m2) on day 1, with GCSF day 2 or 3, every 2 weeks. Pts with CrCl < 60 received cisplatin split over 2 days at physician discretion. Radical cystectomy (open or robotic assisted ) was performed within 4−8 weeks of completion of chemotherapy. Primary endpoint was pathologic complete response (pCR) rate. Surgical outcomes were measured.

Results: Accrual completed in 2/2012, with a total of 44 MIBC pts accrued at 2 institutions (FCCC, TJU) over a 26 month period. Median age was 64 (range 45−83). Four withdrew from study early and are therefore not evaluable for response (2 physician discretion, 2 withdrawal of consent). Of the 44 pts for whom final data is available, 37 (84%) received all 3 cycles of AMVAC at full dose. In the intent to treat cohort, 43% of patients were down staged to pT1 or less [95% CI 2−58%].1 patient developed early metastasis therefore did not proceed to cystectomy. The remaining 43 patients all proceeded to cystectomy within 8 weeks of last chemo. Median time from start of chemotherapy to surgery was 68 days (range 24−91 days). 45.5% underwent robotic assisted laparoscopic technique, 78.1% received ileal conduit and 21.2% underwent continent continent urinary diversion. Median of 29.7 lymph nodes were obtained at the time of cystectomy (range: 9−62), median EBL was 448.4 ml, and median LOS was 9.7 days (range 5−30 days). Two patients had > Grade 2 perioperative complications as classified by Clavien–Dindo.

Conclusions: Neoadjuvant AMVAC is well tolerated and preliminary results show similar efficacy compared to historical data with standard 12−week MVAC, suggesting that AMVAC for three cycles (6 weeks) is a safe and efficient alternative without increasing surgery related complications. All patients underwent cystectomy within 3 months of initiating chemotherapy.

Poster #104
OUTCOME OF PATIENTS WITH MICROPAPILLARY BLADDER CANCER TREATED WITH NEOADJUVANT THERAPY AND RADICAL CYSTECTOMY
Mario I. Fernandez¹, Daniel L. Willis¹, Randall E. Millikan², Rian J. Dickstein¹, Sahil Parikh¹, Arlene O. Siefker-Radtke², Charles C. Guo³, Bogdan A. Czerniak³, Jay B. Shah¹, Louis L. Pisters¹, H. Barton Grossman¹, Colin P.N. Dinney¹ and Ashish M. Kamat¹
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(Presented by: Mario I. Fernandez)

Introduction and Objectives: Micropapillary Bladder Cancer (MPBC) is an uncommon and aggressive variant of urothelial carcinoma for which the role of neoadjuvant chemotherapy (NAC) is not well defined. Here we report a retrospective analysis of patients with MPBC undergoing radical cystectomy (RC) with and without NAC.

Methods: An IRB approved review of our radical cystectomy database revealed the presence of 159 patients with preoperative diagnosis of MPBC; of these 131 patients presented with surgically resectable (≤cT4aN0M0) disease and form the basis of this report. Disease−specific (DSS) and overall survival (OS) were estimated using the Kaplan–Meier method and compared by log−rank test.
Results: The clinical stage of patients was cT1: 50; cT2: 66; cT3: 15 and cT4a: 0. NAC was administered to 61 patients (47%), with 78% receiving cisplatin–based regimens. According to our usual criteria, patients were more likely to receive NAC if they presented with cT3 disease, with hydronephrosis or lymphovascular invasion (LVI) in the transurethral resection (TUR) specimen. After a median follow–up of 44 months, 50% patients recurred and 41% died of disease; resulting in a 5–year estimated DSS of 58.4% for all 131 patients. Survival analysis was performed for comparable groups according to our established risk factors. For the low risk patients (i.e. cT1−T2, no hydronephrosis and no LVI) RC upfront (n=47) resulted in a 73% 5–yr DSS compared to 83% with NAC (n=19) (p=0.47). In the high–risk group (cT3 or cT2 with presence of LVI and/or hydronephrosis), 41 patients were treated initially with NAC and 5–yr DSS was 40%, which was similar (p=0.74) to the 31% 5–yr DSS for those treated with RC upfront (n=20). The most important overall prognostic factor was pathologic downstaging to pT0, pTa or pTis at cystectomy (seen in 52% after NAC and 19% after TUR alone) which conferred a significant survival advantage (5–yr DSS 93% vs. 40% in those not downstaged; p<0.001).

Conclusions: Despite incorporation of a multimodal treatment strategy, patients with MPBC and high risk features (LVI, hydronephrosis and/or cT3 stage) have poor outcomes. Further studies are necessary to define the optimal treatment strategy in this challenging subset of patients with urothelial cancer.

This research was supported by the M. D. Anderson Cancer Center Bladder SPORE (5P50CA091846–03)

Poster #105
COMPLICATIONS OF ROBOTIC ASSISTED RADICAL CYSTECTOMY BY DIVERSION TYPE
Michael Nazmy, Bertram Yuh, Timothy Wilson, Clayton Lau, Jonathan Yamzon, Robert Torrey, Jennifer Linehan, Nora Ruel and Kevin Chan
City of Hope, Duarte, CA
(Presented by: Michael Nazmy)

Introduction and Objectives: Recently the use of laparoscopic and robotic–assisted radical cystectomy with extended pelvic lymph node dissection (RARC/ePLND) has increased. Using a standardized reporting system, we examined the incidence of complications within 90 days of RARC according to diversion types to elucidate factors predictive of complications.

Methods: 196 patients underwent RARC from 2003 – 2012 with extracorporeal ileal conduit (IC), Indiana pouch (IP), or Studer neobladder (SN). Using an IRB approved database, all complications within 90 days of surgery were defined and categorized by a 5–grade and 10–domain modification of the Clavien system. Uni– and multi–variable logistic regression analyses were used to identify predictors of complications. Grade 1–2 complications were categorized as minor and 3–5 major. Blood transfusions were recorded as at least grade 2. Complications were then examined by diversion type with all events recorded by urologic oncologists.

Results: Continent diversion patients had lower mean ages (70.7 years for IP and 64.8 years for SN vs. 75.9 years for IC), Charlson Comorbidity Indices (4 and 5 for IP and SN vs. 6 for IC), ASA scores, and longer surgical times (8.0 and 7.4 hours for IP and SN vs. 6.0 for IC).

72.5% of IC patients, 91.7% of IP patients, and 77.9% of SN patients had at least one complication of any grade during the first 90 days. 27.4% of IC patients, 31.2% of IP patients and 41.9% of SN patients had at least 1 complication of Grade 3 or above in the first 90 days.

Gastrointestinal complications were noted in 25.8% of IC patients, 52.1% of IP patients, and 30.2% of SN patients. Infectious complications were noted in 24.2% of IC patients, 70.8% of IP patients, and 32.6% of SN patients. 16.1% of IC patients, 25% of IP patients, and 11.6% of SN patients had urinary complications including acute kidney injury and ureteral anastomotic strictures. On multivariable analysis, an IC was associated with a decreased likelihood of complications within the first 90 days after surgery (OR 6.03, 95% CI 1.834 – 19.824, p=0.0031).

Conclusions: RARC with ePLND is a morbid procedure, with complications similar to those reported in previous open and minimally invasive series. Continent diversions result in a significantly higher occurrence of complications within 90 days of surgery as compared to an IC, despite any patient selection for patients with less severe comorbidities to receive a continent diversion.
Poster #106
PUBLIC PERCEPTION AND AWARENESS ABOUT BLADDER CANCER
Bradley Wilson, Kacey Provenzano, Jeffrey Holzbeierlein and Moben Mirza
University of Kansas, Kansas City, Kansas
(Presented by: Bradley Wilson)

Introduction: Bladder cancer (BCa) is the fourth and eighth most common cancer in men and women, respectively. However, patients with bladder cancer are often unaware of risk factors for the development of BCa. The purpose of this study was to elucidate public perceptions of BCa.

Methods: We developed a survey that examined awareness of BCa and presented it to an unscreened population. Information obtained includes age, educational level, and a known family member with BCa. Participants were presented questions regarding risk factors and presentation of BCa. In an open ended question, participants listed what they thought could cause bladder cancer and the same question was repeated for lung cancer. They were then asked to choose suspected symptoms and causes of BCa from a list.

Results: A total of 161 people were surveyed. Of those, 14 were <18 yrs of age, 71 were 18−30 yrs, 33 were 31−50 yrs, and 43 were >50 yrs. Forty−six had high school education or less, 70 had a college degree, and 45 had a graduate degree. Only 9 participants knew someone with BCa. The majority identified women as more often affected by BCa (57%) and believed that most patients affected were less than 50 yrs of age (58%). Overwhelmingly, participants identified BCa as moderately or highly aggressive (65%). Only 24% identified smoking as a risk factor, while 95% identified smoking as a risk factor for lung cancer. In a multiple−choice question, 93% selected blood in urine as a symptom, and 56% identified Urologists as the physicians who treat BCa. Participants with a graduate degree more reliably identified smoking as a cause of BCa; however, the response in this group was still modest at 37%. Additionally, those with graduate degrees were more likely to identify age > 50 as most affected by BCa (48%). Only those with a friend/family member diagnosed with BCa consistently associated smoking, age >50, and male gender with the disease.

Conclusion: This study demonstrates a lack of public awareness regarding bladder cancer. In particular, the public is unaware of the relationship of smoking with BCa, which is in stark contrast to lung cancer. We found a misconception regarding alcohol and artificial sweeteners causing BCa. As expected, persons with advanced degrees appeared to be somewhat more aware of risk factors and demographics of BCa. In order to improve outcomes in bladder cancer and affect changes in trends of bladder cancer, public awareness and education are critical.

Poster #107
EVALUATION OF GENDER SPECIFIC FACTORS ASSOCIATED WITH BLADDER CANCER IN A GENOME-WIDE ASSOCIATION STUDY
Kelly Stratton, Vijai Joseph and Kenneth Offit
MSKCC, New York, NY
(Presented by: Kelly Stratton)

Background: Bladder cancer occurs more frequently in men than women. However, studies showing women have worse outcomes have raised concern for gender biased survival. It is possible that genetic factors could contribute to gender specific differences in bladder cancer survival. We set out to examine gender specific differences that could predict bladder cancer susceptibility in the Cancer Genetic Markers of Susceptibility (CGEMS) genome−wide association study (GWAS).

Methods: Using public data obtained from the CGEMS Bladder GWAS study (phs000346v1) we performed a genotype association test corrected using principal components analysis. We then evaluated for the top 1000 SNPs associated with bladder cancer susceptibility. The dataset was subset by gender and separate analyses were performed to identify the top 1000 SNPs for men and women. Using comparison analysis we evaluated for gender specific SNPs.
Results: Rigorous QC and QA were performed for the available dataset from dbGAP. In total, we analyzed 467,277 SNPs in 10144 individuals of either gender. Analysis included 8746 men with 3731 affected and 1463 women with 563 affected. We identified 19 SNPs specific to men and 23 SNPs specific to women with a p value 10x−5 or less. Additionally, 3 SNPs were identified in women that although in the top 1000 of the combined cohort, were not in top 1000 in men.

Conclusions: Understanding causes that lead to gender differences in bladder cancer incidence and survival is important for improving treatment decisions. We found SNPs unique to men and women that could be related to bladder cancer susceptibility. In the future, susceptibility SNPs could be investigated for changes that predict cancer survival and response to treatment.

Poster #108
URETEROENTERIC ANASTOMOTIC STRICTURES AFTER RADICAL CYSTECTOMY: DOES OPERATIVE APPROACH MATTER?
Christopher Anderson¹, Todd Morgan¹, Stephen Kappa¹, David Moore², Peter Clark¹, Rodney Davis¹, David Penson¹, Daniel Barocas¹, Joseph Smith, Jr.¹, Michael Cookson¹ and Sam Chang¹
¹Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN; ²Vanderbilt University Medical School, Nashville, TN
(Presented by: Christopher Anderson)

Purpose: Robotic assisted laparoscopic radical cystectomy (RARC) has been increasingly utilized in an effort to reduce the morbidity of radical cystectomy. However, whether RARC truly lowers complication rates compared to open radical cystectomy (ORC) has not been well established. We sought to examine the rates of benign ureteroenteric anastomotic strictures between ORC and RARC.

Materials and Methods: In the 478 consecutive patients who underwent radical cystectomy at our institution from 12/2007−12/2011, we examined the proportion of patients diagnosed with a benign ureteroenteric anastomotic stricture. Clinicopathologic variables were compared by treatment group, and a Cox multivariable analysis was performed to determine which patient or disease−specific factors were independently associated with stricture diagnosis.

Results: 375 (78.5%) patients underwent ORC and 103 (21.5%) underwent RARC. Forty−five (9.4%) patients were diagnosed an ureteroenteric anastomotic stricture at a median of 5.3 months postoperatively. There was no difference in stricture rate between groups (8.5% ORC vs. 12.6% RARC, p=0.21) and there was no difference in number of strictures in our first 50 RARCs versus our second 53 (6 vs. 7, p=0.85). The Kaplan−Meier estimation of patients free from stricture diagnosis at postoperative years 1 and 2 was not significantly different between ORC (89.4% and 86.7%) and RARC (86.1% and 78.6%; p=0.34 by log−rank, figure). On adjusted Cox proportional hazards analysis, no patient variable was independently associated with stricture diagnosis, including operative approach.

Conclusions: 9.4% of patients were diagnosed with a benign ureteroenteric anastomotic stricture after radical cystectomy, with no significant difference in risk of diagnosis by surgical approach. There was no patient or disease−specific factor that was independently associated with increased risk of stricture diagnosis. Development of an ureteroenteric anastomotic stricture is likely related to surgical technique and continued efforts to refine technique, both for ORC and RARC, are needed in order to minimize the occurrence of this critical complication.
Poster #109
OVERALL SURVIVAL IS DECREASED IN PATIENTS WITH ELEVATED NEUTROPHIL LYMPHOCYTE RATIOS UNDERGOING RADICAL CYSTECTOMY
Louis Spencer Krane¹, Kyle A. Richards¹, A. Karim Kader², Ronald Davis¹, K.C. Balaji¹ and Ashok K. Hemal¹
¹Department of Urology, Wake Forest Baptist Health, Winston Salem, NC; ²University of California, San Diego, CA
(Presented by: Louis Spencer Krane)

Objectives: The objective of this study is to evaluate if we could identify hematologic parameters and inflammatory markers which would predict extravesical tumor and overall survival following radical cystectomy for patients with recurrent high grade T1 or muscle invasive bladder cancer.

Patients and Methods: Included in this analysis is 68 consecutive patients who had preoperative complete blood cell counts including absolute lymphocyte and neutrophil counts. We evaluated preoperative characteristics with uni and multivariate cox proportion hazard ratios to assist in risk stratification for overall survival. We also identified factors associated with extravesical tumor extension with logistic regression analysis.

Results: Median overall survival was 34 months. (95% CI 25−50) The 68 patients included in this analysis do not differ other patients undergoing radical cystectomy at our institution when evaluating age (p=0.54), body mass index (p=0.32), usage of neoadjuvant chemotherapy (p=0.10), albumin (p=0.34), creatinine (p=0.06), hemoglobin concentration (p=0.32), leukocyte count (p=0.44), platelet count (p=0.40) or any other preoperative demographic. In univariate analysis, preoperative parameters including anemia, leukocytosis, neutrophil−lymphocyte ratio (NLR) < 2.5, serum creatinine >1.4, and hypoalbuminemia predicted overall survival. In subset multivariate analysis, only NLR < 2.5 (RR 2.69; 95% CI 1.28 – 6.39) and hypoalbuminemia (RR 3.61; 95% CI 1.79 – 7.26) predicted overall survival. Both elevated NLR (RR 3.18, 95% CI 1.09 – 9.79) and hypoalbuminemia (RR 3.72, 95% CI 1.12 – 15.00) were associated with risk for extravesical disease.

Conclusions: Serum NLR and albumin predict long−term survival in patients undergoing radical cystectomy for muscle invasive bladder cancer. These also predict risk for extravesical disease and may provide risk stratification or potential therapeutic options for patients with bladder cancer.

| Table 1 – Uni and Multivariate Predictors of Overall Survival |
|-------------------------|-------------------------|-------------------------|-------------------------|
|                        | Univariable RR | 95% CI      | Multivariate RR | 95% CI        |
| Age > 65               | 1.30           | 0.68 – 2.63 | 1.79           | 0.99 – 3.27   |
| Sex (Male)             | 1.02           | 0.49 – 2.40 | 1.19           | 0.51 – 2.74   |
| Robotic Procedure      | 1.47           | 0.76 – 2.86 | 1.51           | 0.78 – 2.99   |
| Leukocytosis           | 1.04           | 0.48 – 2.09 | 1.11           | 0.52 – 2.38   |
| Thrombocytopenia       | 1.14           | 0.45 – 3.82 | 1.33           | 0.61 – 2.90   |
| Thrombocytosis         | 1.19           | 0.59 – 2.43 | 1.33           | 0.61 – 2.54   |
| Anemia                 | 1.31           | 0.69 – 2.54 | 1.67           | 0.83 – 3.38   |
| Hypoalbuminemia        | 3.41           | 1.74 – 6.65 | 3.31           | 1.44 – 7.52   |
| Serum Cr > 1.4         | 2.31           | 1.26 – 4.41 | 1.93           | 0.97 – 3.78   |
| NLR > 2.5              | 2.25           | 1.08 – 5.29 | 2.69           | 1.28 – 5.69   |
Poster #110

OBESITY (BMI>30) AND NON-UROTHELIAL SUBTYPE PREDICT HIGHEST RISK OF DEVELOPING DVT/PE AFTER CYSTECTOMY

Aaron Potretzke, Kelvin Wong, Tracy Downs, Fangfang Shi, Martins Sado, David Jarrard and E. Jason Abel
University of Wisconsin, Madison, WI
(Presented by: Aaron Potretzke)

Introduction and Objectives: Deep Venous Thrombosis (DVT) and Pulmonary Embolism (PE), or venous thromboembolic events (VTE) are important causes of morbidity and mortality after cystectomy for cancer, but it is unclear which patients are at highest risk. The purpose of this study was to identify variables associated with risk of developing VTE within 90 days after cystectomy.

Methods: Clinical and pathological variables were recorded for patients undergoing cystectomy from 2004–2010. All patients received mechanical prophylaxis, and routine heparin prophylaxis began in 2010. Univariate and multivariate analysis was used to evaluate VTE association with known risk factors.

Results: A total of 240 patients were identified with median follow-up 412 days, age of 67 yo, and BMI 28.05 [IQR 25.1–31.5]. Median EBL was 950mL [IQR 600–1500] and 157/240 (65.42%) patients received blood transfusion. Preoperative heparin prophylaxis was given in 28 (11.67%) patients, but was not associated with decreased VTE rate (p=0.2518) or increased blood loss (p=0.1397).

Within 90 days postoperatively, overall VTE rate was 19/240 (7.9%). Of these 12 (5 DVT, 7 PE) and 7 (4 DVT, 4PE) were diagnosed on days 0–30 and days 31–90, respectively. Univariate and multivariate predictors of VTE risk are shown in table 1.

Conclusions: Patients with BMI>30 or non–urothelial cancer are at highest risk for postoperative VTE and should be considered for extended prophylaxis.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Univariate OR (CI)</th>
<th>Multivariate OR (CI)</th>
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<td>Age</td>
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<tr>
<td>Gender</td>
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<td>Smoking history</td>
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<tr>
<td>Smoking current</td>
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<tr>
<td>Race</td>
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<td>Prior VTE</td>
<td>3.66 (0.69–18.08)</td>
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<tr>
<td>Estimated blood loss (per 100 ml)</td>
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<tr>
<td>Transfused blood</td>
<td>1.11 (0.21–6.17)</td>
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<tr>
<td>Neoadjuvant chemotherapy</td>
<td>1.06 (0.23–4.91)</td>
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<tr>
<td>Taking stat closely</td>
<td>1.11 (0.30–4.23)</td>
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<td>Histological subtype</td>
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<tr>
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<td>5.0 (1.64–15.68)</td>
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<td>Ta, T1, or CIS</td>
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<td>BMI &gt;30</td>
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<td>4.74 (1.67–13.45)</td>
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<tr>
<td>Total anesthesia time (per 10 min)</td>
<td>1.22 (1.02–1.49)</td>
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Poster #111

CONTEMPORARY RATES OF PATHOLOGIC DOWNSTAGING WITH NEOADJUVANT SYSTEMIC CHEMOTHERAPY FOR MUSCLE INVASIVE UROTHELIAL CANCER OF THE BLADDER
Joshua Griffin and Jeff Holzbeierlein
Kansas City, KS
(Presented by: Joshua Griffin)

Introduction: Combination of gemcitabine and cisplatin (GC) is presently the most common chemotherapeutic regimen used in patients treated with neoadjuvant chemotherapy (NC) prior to cystectomy. Although NC has demonstrated a 5% absolute survival benefit at 5 years, there to date has been no prospective trials comparing GC to the traditional regimen of methotrexate, vinblastine, doxorubicin, and cisplatin (MVAC). The SWOG 8710 trial demonstrated that 38% of patients treated with MVAC followed by cystectomy obtained T0 status, and thus had no residual tumor. This was most common in patients with clinical T2 disease. We report our experience with NC in regards to pathologic downstaging in the current era where primarily GC based regimens are used.

Methods: After IRB approval, a retrospective review of our cystectomy database and tumor registry was utilized to identify patients who had NC followed by cystectomy. Demographic variables, treatment regimen, and clinical and pathologic staging information were recorded. SAS version 9.2 was used for descriptive statistics and to determine rates of pathologic downstaging. Logistic regression models were also constructed to evaluate for predictors of pathologic downstaging and complete response (CR).

Results: After exclusion for patients with non-urothelial cancers, 63 patients were evaluated. Mean age was 64 years. The majority of this cohort were white (98%) and male (78%). 46(74%) received GC while the remaining either had carboplatin and/or taxol with gemcitabine (22%) or MVAC (3%). Clinical tumor staging distribution was T1−3%, T2−52%, T3−25%, and T4−19%. N1 clinical stage was present in 14(22%) subjects and 4 patients (6%) had prior radiation for unresectable disease. Downstaging occurred in 28 patients (44%) and CR was present in 15 (24%). Rates of non-invasive disease on final specimen were 11%. 30% of patients had positive lymph nodes with half of these N2 stage or greater. On logistic regression analysis, preoperative radiation and advanced clinical T stage were the only predictors for CR (p .0486) and pathologic downgrading (p 0.0245).

Conclusions: Despite a high rate of pathologic downstaging in our cohort, only 24% of patients achieved T0 status after NC and cystectomy and was also likely affected by preoperative radiation. Only advanced tumor stage predicted for pathologic downstaging after treatment. Larger prospective trials are needed to further validate the efficacy of neoadjuvant GC.

Poster #112

EVALUATION OF CHARLSON COMORBIDITY INDEX AND RADICAL CYSTECTOMY OUTCOMES
Ismail Saad, Tamer Ewida, Amr Fayad and Amr Lotfi
Urology Department, Faculty of Medicine, Cairo University, Cairo Egypt
(Presented by: Ismail Saad)

Introduction: Radical cystectomy remains the standard surgical approach for muscle-invasive bladder cancer (BC) with overall complication rate as high as 35%. BC patients are likely to have comorbidities due advanced age (70% ≥65 years) and association with comorbid conditions. The significance of objectively quantifying comorbidity is recognized. We aim to identify the impact of age and comorbidity on early outcome of RC using the Charlson Comorbidity Index (CCI) to quantify preoperative comorbidity.

Materials and Methods: This study included 60 BC patients who were candidates for RC. CCI and age-adjusted CCI (ACCI) were preoperatively calculated for all patients. Endpoints were postoperative complications till discharge, or postoperative mortality. Complications were grouped according to Common Terminology Criteria for Adverse Events v3.0 (5 grades). Analysis aimed at identifying an association between ACCI and postoperative outcomes.
Poster Session II – Full Abstract

Results: Sixty patients underwent RC for muscle invasive BC at our institute. Mean patient age was 59 (±9.6) years. Seventy percent (42/60) had ≥ 1 comorbid conditions. Mean CCI was 1.9 (±1.9) and mean ACCI was 3.4 (±2.3). Orthotopic neobladder was performed in 48.8% (N=29) and ileal conduit in 51.2% (N=31). Mean length of hospital stay was 15.4 days (±7.9). Forty five patients (75%) had post RC complications, namely urinary leak in 23.3% (N=14), cardiac in 1.7% (N=1), sepsis in 10% (N=6), wound in 28.3% (N=17), urologic in 21.7% (N=13), GI in 18.3% (N=11), hematological in 40% (N=24), pulmonary in 11.7% (N=7), and cerebrovascular in 5% (N=3). Complications were grade 2 in 11.7% (N=7), grade 3 in 40% (N=24), grade 4 in 18.3% (N=11), and grade 5 (death) in 5% (N=3). Age and age subgroups did not correlate with postoperative complications, complication grade, and postoperative mortality. There was no correlation between number of comorbidities (none, 1, or ≥2) and postoperative complications (p=0.620). Number of comorbidities correlated with complication grade (p<0.05). There was a correlation between CCI and ACCI and occurrence of postoperative complications (p=0.039 and p=0.010, respectively) but not with complication grade (p>0.05).

Conclusion: We demonstrated a significant association between comorbidity and postoperative complications following RC. This underscores the probable value of CCI and ACCI in assessing overall health before proceeding with RC, rather than age alone.

Poster #113
THE MERITS OF CYTOLOGY IN THE WORKUP FOR UPPER TRACT UROTHELIAL CARCINOMA - A RETROSPECTIVE REVIEW
Einar Sverrisson, Timothy Kim, Patrick Espiritu, Wade Sexton, Julio Pow-Sang, Jasreman Dhillon and Philippe Spiess
Genitourinary Oncology Program, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL
(Presented by: Einar Sverrisson)

Objectives: The importance of upper tract cytology for evaluating tumors is unclear. We correlated upper tract cytology with histologic findings in patients who underwent nephroureterectomy for upper tract urothelial malignancies at a single institution.

Methods: 127 patients underwent nephroureterectomy between 2004 and 2012. 18 patients were excluded (benign tumors, atrophic kidneys etc). Upper tract cytology from the renal pelvis and/or ureter were reviewed and analyzed with final pathology data.

Results: 57% (68/119) had preoperative upper tract cytology collected. 73% (50/68) patients had abnormal cytology (positive, suspicious) with a sensitivity of 74% (which increased to 90% if atypical included), specificity of 50% and positive predictive value of 98%. High grade tumors were more common as expected (77% high grade vs. 20% low grade). Abnormal cytology did not predict T stage or tumor grade. Interestingly muscle invasive urothelial carcinoma was more prominent in the group that did not have preoperative cytology (51% (26/51) vs. 37% (25/68), P=0.06) compared to the group who had cytology.

Conclusions: Upper tract cytology has been utilized to support the diagnosis of upper tract urothelial carcinoma. Our data demonstrate that abnormal cytology correlates well with presence of disease but does not predict staging or grading.
Poster #114
PREDICTORS OF 30-DAY MORTALITY IN PATIENTS UNDERGOING RADICAL CYSTECTOMY USING A LARGE ADMINISTRATIVE DATABASE
Lindsey A. Herrel, Paymon Nourparvar, Ryan W. Dobbs, Sungjin Kim, Yuan Liu, Viraj A. Master and Daniel Canter
Emory University, Atlanta, GA
(Presented by: Daniel Canter)

Introduction: Despite its proven therapeutic efficacy, RC is associated with significant morbidity and potential mortality (as high as 20% in some populations). To date, pre-operative predictive tools to identify patients likely to experience post-operative morbidity or mortality are lacking. In this study, we utilize a large administrative database with robust preoperative and perioperative patient data to attempt to identify variables predictive of patient 30-day mortality and morbidity.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) is a robust database that collects data on preoperative risk factors, intraoperative variables, and 30-day postoperative mortality and morbidity outcomes. Using this database, we identified patients undergoing radical cystectomy from 2006–2010 by using CPT codes 51595 and 51596. Multivariable models were constructed to determine patient pre/perioperative variables that were predictive of death and/or complications.

Results: 407 patients undergoing RC were identified. Mean patient age was 68.2 (SD=+/−10.8). 81.6% of patients were male, and 84.3% were white. Mean patient smoking pack-years was 29.66 (SD=+/−31.2). Patient preoperative co-morbid conditions are listed in Table 1.

3.8% of patients in this cohort died within 30 days of surgery, and 43.5% experienced at least one complication. On multivariable analysis, age (OR=1.09, p-value=0.026), unplanned intubation (OR=27.82, p-value<0.001), pulmonary embolism (OR=5.54, p-value=0.047), cardiac arrest requiring CPR (OR=66.57, p-value<0.001), and > 2 post-operative complications (OR=14.9, p-value<0.001) were all statistically significant predictors of death within 30 days of cystectomy. Duration of anesthesia, return to the operating room within 30 days, unknown race, history of CHF and a history of previous percutaneous coronary intervention were all statistically significant predictors of variables that led to patient mortality after cystectomy.

Conclusion: An increasing number of postoperative complications was the most clinically important predictor of death after radical cystectomy. Although some many patient variables were unalterable (age and race), these data demonstrate the importance of cardiac optimization/risk stratification and anesthesia time on mortality and morbidity outcomes.


Poster #115
EXAMINATION OF THE NATURAL HISTORY OF T1 BLADDER CANCER IN A VETERANS’ POPULATION
Daniel Canter, Ryan W Dobbs, Usama Al-Qassab, Chad W Ritenour and Muta Issa
Emory University, Atlanta, GA
(Presented by: Daniel Canter)

Introduction: High-grade T1 bladder cancer represents a clinical challenge in that the urologist must balance the risk of disease progression against the morbidity and potential mortality of radical cystectomy and urinary diversion. In this study, we examined the natural history of high-grade T1 bladder cancer in large series of bladder cancer patients over a 12-year period (2000–2012) at a single Veteran’s Hospital.

Methods: We queried our bladder cancer database at the Atlanta VAMC to identify patients with T1 bladder cancer. Demographic, clinical, and pathologic variables were examined. The results of surveillance cystoscopy, bladder wash cytology, progression and subsequent outcomes were captured.

Results: 71 patients with T1 bladder cancer were identified. All patients were males. Mean age was 68.7 years (range=47–93). Fifteen (21.1%) patients were African-American (AA) and 56 (78.9%) were non-AA. Mean Charlson Co-morbidity Index was 2.52 (range=0–14). Tobacco use averaged 38.6 (range=0–125) packs–per–year. 91.5% (n=65) of the patients presented with isolated high grade T1 disease and 6 (8.5%) patients had high-grade T1 disease with concomitant CIS. The majority of patients (90.1%, n=64) had pure urothelial carcinoma. The remaining 9.9% (n=7) had histological variants such as micropapillary, sarcomatoid and squamous differentiation.
Median follow up was 645 days (range=66−3,818 days). Recurrence occurred in 23 patients (32.3%) with progression occurring in only 6 patients (8.5%). Half the patients (3/6) who progressed presented initially with T1 disease of variant histology. Of the six patients that progressed, 2 patients are alive with disease and 4 patients died of bladder cancer (2 of these patients had variant histology). Most recent follow–up showed 35 (49.3%) patients to be alive without recurrent bladder cancer, 11 (15.4%) patients alive with recurrent non–muscle bladder cancer, and 25 (35.2%) had died. Only 5 (7.0%) patient deaths were attributable to bladder cancer.

Conclusions: In our cohort of veteran patients, the risk of progression of T1 bladder cancer was significantly lower than previously reported with only 8.5% of patients progressing and the majority of whom had a variant histology. Although our population of patients is relatively homogenous when compared to the general population, this study is a potential starting point in re–examining the natural history and treatment algorithm for patients with high–grade T1 bladder cancer.

Poster #116
IMPACT OF COMPLICATION GRADE ON LENGTH OF PRIMARY ADMISSION AND POST DISCHARGE READMISSION IN PATIENTS UNDERGOING CYSTECTOMY AFTER PELVIC RADIATION
Manuel Eisenberg¹, Raveen Syan², Katherine Cotter², Ryan Dorin², Georg Bartsch², Adrian Fairey², Siamak Daneshmand² and Eila Skinner³
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(Presented by: Manuel Eisenberg)

Introduction and Objectives: Radical cystectomy (RC) is a morbid procedure associated with high complication rates in patients with a history of pelvic radiation therapy (RT). Recently, the Clavien−Dindo complication grading system has gained popularity, however the implications of the various grades are not well described. In this study, we characterize the impact of complication grade after RC on length of stay (LOS) during primary admission and post−discharge readmission rate (RR).

Methods: All patients from 1983 to 2008 who underwent >60 Gy pelvic RT followed by RC with urinary diversion for any indication were included. A total of 148 patients were identified. All complications that occurred within 5 years of surgery were retrospectively graded by three independent observers according to the Clavien−Dindo system. Chi squared was used for all analyses.

Results Obtained: During the primary admission, 61 of 148 (41%) patients experienced no complications with a median LOS of 9 days (IQR 8−10). The highest grade complication was low grade (grade 1 or 2) in 62 patients with a median LOS of 11 days (IQR 9−13), and high grade (grades 3a–5) in 25 with a median LOS of 17 days (IQR 14−33, Table). The LOS for low grade was significantly longer than for no complications (p<0.0001), and LOS for high grade was significantly longer than either no or low grade complications (p<0.0001 for each). There was no difference in LOS between grades 1 and 2 and no difference between grades 3a – 5 (p>0.1 for all).

From discharge to 5 years after RC, 277 complications were recorded and evaluated independently for whether a readmission occurred. The RR for low grade complications was significantly higher than for no complications (p<0.001), and RR for grade 3a−4 complications was significantly higher than either no or low grade complications (p<0.01 for each).

Conclusions: In patients undergoing radical cystectomy and urinary diversion after high dose pelvic radiation therapy, complications as graded by the Clavien−Dindo system, including grade 1 and 2, are significantly associated with an increased length of stay and post−discharge readmission rate.
Poster Session II — Full Abstract

Poster #117
TRAVEL DISTANCE TO RADICAL CYSTECTOMY PROVIDER IS NOT A BARRIER TO PROVIDING CARE FOR MUSCLE INVASIVE BLADDER CANCER PATIENTS
Tracy Downs, Kelvin Wong, E. Jason Abel and David Jarrard
University of Wisconsin, Madison, WI
(Presented by: Tracy Downs)

Introduction: Patient, provider and health-care environmental factors can lead to a delay and/or underutilization of RC for muscle invasive disease. Older age at diagnosis, higher comorbidities, and travel distance to an available surgeon have been identified as barriers. The objective of our study was to evaluate if increasing travel distance lead to a delay in a patient receiving a radical cystectomy.

Materials and Methods: 305 patients undergoing RC for bladder cancer from 2002–2011 were included in our study. Driving time distance was calculated using an online zipcode calculator. Patients were divided into 4 groups based on driving time distance to our institution. Demographics, and clinical characteristics were compared across the 4 driving time distance quartiles. We also evaluated to see if driving time distance lead to a delay in the patient receiving RC (Figure—Scatter plot X-axis: Distance in miles to Cystectomy Provider; Y-Axis Days from TURBT to RC)

Results: Driving distances (median) for group 1 – 17.1 miles (1–41.5), group 2 – 56 miles (42.5–70.6), group 3 – 77.4 miles (70.9–91.2) and group 4 – 118.8 (92.1 – 296.3). No statistically significant differences were noted across the groups for age at diagnosis, male gender, ethnicity, marital status, BMI or ASA. Differences were noted in the following domains (% college education–P<0.0001, household income–P=0.0006, pathologic stage–P=0.01, lymph node positive disease at RC–P=0.008 and extravesical disease–P=0.02). Patients with shorter driving distances (Groups 1 and 2) had a higher % pT3/T4 and node positive disease. No significant delay in days to RC was seen across the 4 different driving time distances. Reasons for significant delays beyond 90 days included neoadjuvant chemotherapy, chemotherapy for other primary tumors, AAA surgery prior to RC, PE after chemotherapy and patient initially refusing surgery.

Conclusion: Driving distance to cystectomy provider did not seem to be a barrier to RC in our cohort of patients. Additional studies are needed to understand patient, provider and regional health-care environments to optimize care for patients with muscle invasive bladder cancer.
Poster #118
IMPACT OF HISTOLOGICAL VARIANTS ON ONCOLOGICAL OUTCOMES OF PATIENTS WITH UROTHELIAL CARCINOMA OF THE BLADDER TREATED WITH RADICAL CYSTECTOMY
Evangelos Xylinas¹, Michael Rink², Brian Robinson², Yair Lotan³, Marek Babjuk⁴, David Green², Armin Pycha⁵, Yves Fradet⁶, Talia Faison⁷, Richard Lee⁸, Douglas Scherr⁵, Pierre Karakiewicz⁷, Marc Zerbib⁸ And Shahrokh Shariat²
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(Presented by: Evangelos Xylinas)

Objective: To investigate the clinical and prognostic impact of variant histologies of urothelial carcinoma of the bladder (UCB) on oncologic outcomes after radical cystectomy (RC).

Material and Methods: Data from 1984 UCB patients treated by RC without preoperative chemo– or radiotherapy were reviewed for histological differentiation and variants. We analyzed the differences between pure UCB and UCB with variant histology, and those between the different histological variants using various stratifications.

Results: Overall, 488 (24.6%) patients had UCB variants with squamous cell (11.4%) and glandular differentiation (3.8%) being the most common. Histological UCB variants were associated with advanced tumor stage, lymphovascular invasion and lymph node metastasis (all p−values<0.01) when compared to pure UCB. In univariable analyses, patients with non−squamous UCB variants were at significantly higher risk for disease recurrence and cancer−specific mortality than those withpure UCB patients (p−values=0.001) and those with squamous cell differentiated UCB (p−values=0.04); the latter two had the same risk. In multivariable analyses that adjusted for the effects of standard clinicopathologic characteristics, variant UCB histology was not associated with both survival endpoints. In patients treated with adjuvant chemotherapy (n=492) there was no difference in cancer−specific survival between pure UCB, squamous cell differentiated UCB and other histological UCB variants.

Conclusions: A quarter of UCB patients treated with RC harbored histological UCB variants. Variant UCB histologies were associated with features of biologically aggressive disease. While variant UCB histology was associated with worse outcomes in univariable analyses, this effect did not remain significant in multivariable analyses. In patients treated with adjuvant chemotherapy, variant histology was not associated with outcomes even in univariable analyses.
Post #119
THE IMPACT OF RUNNING VERSUS INTERRUPTED URETEROENTERIC ANASTOMOSIS ON RATE OF URETERAL STRICUTURE IN RADICAL CYSTECTOMY
Michael Large, Joshua Cohn, Kyle Kiriluk, Pankaj Dangle, Kyle Richards, Norm Smith and Gary Steinberg
University of Chicago Hospitals, Chicago, IL
(Presented by: Michael Large)

Introduction: Benign ureteroenteric stricture is a common complication associated with urinary diversion following radical cystectomy (RC). The ureteroenteric anastomosis can be performed in a running or interrupted fashion. It is not known whether anastomotic technique impacts risk of stricture.

Objectives: To evaluate the impact of running versus interrupted anastomosis on stricture development following RC.

Methods: From 7/07−12/09, an interrupted anastomosis was performed, and from 1/09−7/10, a running anastomosis was performed in patients undergoing RC and ileal conduit or orthotopic neobladder. Patients who died within 30 days of surgery were excluded. The primary endpoint was time to stricture, evaluated by multivariate Cox proportional hazards model and Kaplan−Meier survival analysis.

Results: The study sample consisted of 266 patients, 152 in the interrupted cohort and 114 in the running anastomosis cohort. The groups did not differ with respect to age, gender, BMI, age−adjusted Charlson Comorbidity Index score, receipt of chemotherapy or radiation, or pathologic stage. Median follow−up was 335.5 (IQR 116−705) and 451.5 days (IQR 168−1285.5) in the running and interrupted cohorts, respectively. Ureteral stricture developed in 43 patients, 24 in the running cohort and 19 in the interrupted cohort. On univariate analysis, stricture was associated with running anastomosis (HR 1.97, 95% CI 1.07−3.60; p=0.029), postoperative UTI (HR 2.33, 95% CI 1.20−4.54), and Clavien grade ≥3 complication within 30 days (HR 2.56, 95% CI 2.56−4.86). On multivariate analysis, stricture development was associated with running technique (HR 2.18, 95% CI 1.13−4.21; p=0.021) and UTI within 30 days of RC (HR 2.76, 95% CI 1.35−5.65; p=0.005). Kaplan−Meier analysis of time to stricture was performed to account for differences in follow−up (Figure 1).

Conclusions: Our data suggest that running ureteroenteric anastomosis is associated with increased risk of benign ureteral stricture. Our data also suggest that postoperative UTI and Clavien grade ≥3 complications are associated with increased risk of stricture, demonstrating the importance of strategies aimed at prevention.
OVERALL SURVIVAL AND TIME TO PROGRESSION IN PATIENTS TREATED WITH NEOADJUVANT CHEMOTHERAPY WITH PATHOLOGIC T3/T4 OR NODE POSITIVE DISEASE AFTER RADICAL CYSTECTOMY

Joshua Griffin and Jeff Holzbeierlein
Kansas City, KS
(Presented by: Joshua Griffin)

**Introduction:** The SWOG 8710 trial demonstrated a significant improvement in overall survival (OS) in patients with bladder cancer with the use of MVAC (methotrexate, vincristine, cisplatin, and doxorubicin) prior to cystectomy. Furthermore, the survival advantage was found to be significant across all risk groups, including those with nonorgan confined disease. Although no prospective trials have been conducted, gemcitabine and cisplatin (GC) are more commonly used due to better toxicity profiles. Whether GC can produce equivalent long-term results compared to the traditional MVAC is not entirely clear. Those who gain the most benefit from neoadjuvant chemotherapy (NC) would be those with advanced disease. Here we report our outcomes in patients with these findings after NC.

**Methods:** A review of our cystectomy database and the local tumor registry was performed to identify subjects treated with NC for bladder cancer from 2005–2011. Demographic, clinical, pathologic, and follow-up data were obtained. Kaplan–Meier methods and log-rank tests were used to evaluate for differences in OS and time to progression according to pathologic stage, nodal status, and downstaging after cystectomy.

**Findings:** Mean age of the cohort was 63 years and 76% male. Mean follow-up of the entire cohort was 19.1 mo. Pathologic stage distribution was T0–26%, T1/CIS–12%, T2–26%, T3–20%, T4–16%. Nodal disease was present in 25% of cases, in which 22% were ≥N2. At most recent follow up, 21 patients (42%) have died. For pathologic stage T3–T4 mean time to progression was 8.9 months and mean OS 10 months. For patients with nodal disease after NC and cystectomy mean time to progression and time to death were both 9.8 mo. Log-rank test showed that patients with pathologic T3/T4 status after cystectomy had significantly shorter time to progression and OS compared to lower stages. Positive nodes were associated with decreased OS. When stratifying patients by lack of pathologic downstaging of any type, those with no downstaging had significantly shorter OS (13 vs 25 mo, p = .0042).

**Conclusions:** Patients with T3/T4 or nodal disease after cystectomy do poorly despite NC. More work is needed to establish the ideal treatment in this high-risk group.
Poster #121
LOW GRADE MICROPAPILLARY UROTHELIAL CARCINOMA, DOES IT EXIST? – A SURVEILLANCE EPIDEMIOLOGY AND END RESULTS (SEER) ANALYSIS OF MANAGEMENT AND OUTCOMES
Srinivas Vourganti¹, Andrew Harbin², Eric A. Singer³, Brian Shuch¹, Adam R. Metwalli¹ and Piyush K. Agarwal¹
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(Presented by: Srinivas Vourganti)

Introduction: Micropapillary Urothelial Bladder Carcinoma (MPBC) is a rare aggressive variant histology of bladder cancer. Management of non-muscle invasive (NMI) MPBC is controversial, as bladder sparing strategies routinely used when managing TCC have resulted in worse outcomes. In order to better understand its behavior, we reviewed all MPBC pts in the SEER database and compared them with TCC pts.

Methods: Data was collected from SEER 17. Age, sex, race, grade, stage, treatment, and cause of death were collected. Kaplan–Meier (KM) and Cox proportional hazards (CPH) models were performed.

Results: From 2001–2008, 120 pts with MPBC were identified, 0.1% of all bladder cancer. Mean age was 70.3 yrs, 76.7% were male, and 90.8% were Caucasian. No difference in age, sex, or race was detected between MPBC and TCC pts. MPBC presented with more high grade (HG) disease (86.1% vs. 38.7%, p<0.0001) and with higher stage (40.8% NMI vs. 90.4% NMI, p < 0.0001). KM analysis demonstrated that NMI MPBC had significantly worse overall survival (OS) than NMI TCC (not controlling for grade, p<0.0001). Low grade (LG) NMI MPBC pts had worse OS and cancer specific survival (CSS) as compared to LG TCC pts (p=0.0037, p<0.0001 respectively), and did no better than HG NMI MPBC pts. No difference was detected between HG NMI MPBC and HG NMI TCC pts. A CPH model controlling for stage, grade, treatment, age, race, and sex detected no significant survival difference in MPBC vs. TCC (HR 1.04, p=0.7966).

For NMI MPBC (n=49), only 4 pts underwent definitive therapy (2 had cystectomy and 2 received EBRT). During the median follow-up period of 31 months, no cancer specific deaths occurred in this group of pts. However, in those not receiving definitive therapy (n=45), 7 cancer specific deaths occurred (15.6%).

Conclusions: MPBC is a rare variant with high stage and grade presentation. Controlling for stage and grade, no difference could be detected in survival between MPBC and TCC. However, LG NMI MPBC behaved similarly to both HG MPBC and HG TCC in regards to survival outcomes. We propose that all MPBC (regardless of grade) be managed as HG disease, and that strong consideration for definitive therapy should be given even in the setting of NMI disease.
INVASIVE BLADDER CANCER CELLS ARE DEFICIENT IN DNA REPAIR AND HAVE MUTATOR PHENOTYPES THAT ARE DUE TO SUPPRESSION OF P63 GENE EXPRESSION

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(Presented by: Hsiang-Tsui Wang)

Introduction: Although it is well established that the two distinct clinical phenotypes of human bladder cancer, e.g. the non-invasive low-grade papillary urothelial carcinoma (N-inv-UC) and the high-grade invasive UC (Inv-UC), develop through divergent pathways, the molecular mechanisms underlying the development of these phenotypes remain unclear. We hypothesize that Inv-UC cells have a mutator phenotype because of a low DNA repair capacity and that these tumor cells have a high probability of escaping the immune surveillance system. In contrast, N-inv-UC cells have efficient DNA repair capacity and do not have a mutator phenotype; therefore, these tumor cells have a low probability of accumulating mutations that lead to tumor invasion.

Methods: Using host cell reactivation, in vitro DNA damage dependent repair synthesis, and a shuttle vector supF system, we determined 1) DNA repair capacity, 2) ability to carry out DNA damage–dependent mutagenesis, and 3) expression of nucleotide excision repair (NER) genes (XPC & XPA), base excision repair (BER) gene (hOGG1), mismatch repair genes (MLH1, MSH2 & PMS2), and p53 and p63 genes, in cultured human N-inv-UC and Inv-UC cells.

Results: We found that: 1) N-inv-UC cells have a much higher DNA repair capacity than Inv-UC cells for both oxidative and UV light–induced DNA damage, 2) both oxidative and UV–induced DNA damage elicit significantly more mutations in Inv–UC cells than in N-inv–UC cells, 3) Inv–UC cells do not express nucleotide excision repair gene XPC; base excision repair gene hOGG1, or p63 gene, and 4) the deficiency of DNA repair and the expression of XPC gene in Inv–UC can be partially rescued by transient expression of the p63 gene.

Conclusions: Our results provide the first experimental evidence indicating that Inv–UC cells are deficient in both nucleotide excision repair and base excision repair; that these deficiencies cause these cells to have a mutator phenotype which underlies their invasive behavior; and that the deficiency in DNA repair in Inv–UC can be rescued by the restoration of p63 expression. These results provide insight into the molecular underpinnings behind the two major bladder cancer oncogenic pathways, and provide a foundation for further studies to better molecularly differentiate these two distinct phenotypes.
Introduction: Treatment decisions for clinical T2 (cT2) bladder cancer (BC) in elderly patients are difficult, and current practice is unknown. We sought to characterize practice patterns in octogenarians with cT2 BC. Further, we attempted to identify predictors of radical cystectomy (RC) vs. bladder preservation therapy (BPT). Methods: We analyzed patients ≥ 80 years old with cT2 BC diagnosed between 1998 and 2010 from the National Cancer Data Base (NCDB) cancer registry. The NCDB captures approximately 70% of all cancer diagnoses annually from 1400 accredited hospitals in the US. We examined the relationship between patient-level variables and treatment for cT2 BC (RC vs. BPT). Inclusion criteria were age ≥ 80, stage cT2/cN0/cM0, histology-proven urothelial cell carcinoma, and treatment with RC or BPT. BPT was defined as either no treatment, transurethral resection of bladder tumor, radiation, chemotherapy, partial cystectomy, or combinations thereof. Using receipt of RC as the response variable, we performed both univariate chi-squared analysis and multivariate logistic regression analysis to identify independent predictors of RC in our cohort. Results: 9021 patients met our inclusion criteria. The mean age of the BPT and RC cohorts was 85.2 and 82.8 years (p<0.01), respectively. Univariate analysis revealed statistically significant associations between RC utilization and sex (p < 0.01), CCI (p < 0.01), distance from hospital (p < 0.01), geographic location (p < 0.01), year of diagnosis (p < 0.01), and tumor grade (p < 0.01). Multivariate logistic regression modeling demonstrated similar relationships (Table 1). Controlling for demographic and clinical characteristics, multivariate survival analysis revealed that RC had a decreased risk of death compared to BPT (odds ratio 0.65, 95% confidence interval 0.52–0.81, p<0.01). CONCLUSION: Predictors of variation in practice patterns for elderly patients with cT2 BC include sex, race, insurance status, distance from hospital, and geographic location, and these predictors have not changed over the past decade. Identifying non-clinical sources of variation present opportunities for quality improvement and treatment standardization for this clinical problem.
**Poster Session II — Full Abstract**

Poster #124  
**SMALL CELL CARCINOMA OF THE BLADDER: CLINICAL CHARACTERISTICS AND TREATMENT PATTERNS**  
Sanjay Patel, C.J. Stimson, Harras B. Zaid, Daniel A. Barocas, Matthew J. Resnick and Sam S. Chang  
Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN  
(Presented by: Sanjay Patel)

**Introduction:** Small cell carcinoma (SCC) of the bladder is a rare tumor that has received limited analysis in the literature. This study reports on treatment patterns and survival in the largest series of patients with SCC of the bladder.

**Methods:** We reviewed all patients with bladder SCC diagnosed between 1998 and 2010 from the National Cancer Database (NCDB) registry. We included patients with histology–proven SCC and clinical stage N0/M0. Clinical and demographic variables including age, sex, race, Charlson Comorbidity Index (CCI), clinical T (cT) stage, and treatment were evaluated. Treatment was categorized as bladder sparing surgery (BSS), radical cystectomy (RC), BSS with multimodal treatment (BSS/MMT), or RC with multimodal treatment (RC/MMT). BSS was defined as either no treatment, transurethral resection of bladder tumor, or partial cystectomy. MMT was defined as chemotherapy, radiation, or both chemotherapy and radiation. We performed a Kaplan–Meier overall survival (OS) analysis to evaluate for differential survival between treatment groups.

**Results:** A total of 625 patients met our inclusion criteria, with median follow-up time 14.7 months. The median age at diagnosis was 73 years (range 36–90), and 71% of patients were male. The percentages of patients with < cT2, cT2, cT3, and cT4 disease were 18.2%, 64.6%, 11.2%, and 5.9%, respectively. Of the < cT2 patients, 49 (43.0 %) received BSS, 52 (45.6%) received BSS/MMT, 6 (5.3%) received RC, and 7 (6.1%) received RC/MMT. For cT2 patients, 105 (26.0 %) received BSS, 219 (54.2%) received BSS/MMT, 33 (8.2%) received RC, and 47 (11.6%) received RC/MMT. 3–year OS for the entire cohort was 33.0% (95% confidence interval [CI], 26.2–39.9), while 3–year OS based on treatment was 29.1% (95% CI 16.7–42.6) for BSS, 34.5% (95% CI 25.5–43.7) for BSS/MMT, 49.9% (95% CI 17.3–75.9) for RC, and 26.7% (95% CI 11.6–44.5) for RC/MMT. See figure for Kaplan–Meier survival curves.

**Conclusion:** SCC of the bladder carries a poor prognosis, with only 33% surviving to 3 years. While there is no consensus of optimal management for this rare disease, current treatment patterns over the last decade favor BSS with or without MMT.
Poster #125
INFLUENCE OF NOTCH PATHWAY ON INVASIVE PROPERTIES OF UROTHELIAL CANCER CELL LINES AND TUMOR GROWTH IN VIVO
Kilian M. Gust, Tetsutaro Hayashi and Peter C. Black
Vancouver Prostate Centre, Vancouver, BC
(Presented by: Kilian M Gust)

Introduction: The Notch pathway is involved in tissue development, growth and differentiation, and has been shown to be involved in cancer progression in several malignancies. Little is known about the role of Notch in bladder cancer.

Objectives: Purpose of this was to evaluate the expression of Notch family members in bladder cancer and effects of pathway inhibition on invasive properties of bladder cancer cell lines and tumor growth in an orthotopic bladder cancer model.

Methods: A panel of bladder cancer cell lines was screened for expression of members of the Notch pathway in correlation to markers of epithelial–to–mesenchymal transition by Western blot and real–time PCR. In addition, expression of Notch1 and Notch2 was analyzed on a human bladder cancer tissue microarray (TMA), including cores from pTa and pT1 tumors. In vitro, migration and invasion assays were performed, after treatment with gamma secretase inhibitor and Notch2 specific siRNA. In addition, stably Notch 2 shRNA transfected cell lines were established, their in vitro properties examined and in vivo tumor growth evaluated in a previously established orthotopic bladder cancer model.

Results: Expression analysis revealed a differential expression of members of the Notch pathway. Amongst others, Notch1 expression was associated with epithelial markers, while cell lines with mesenchymal characteristics showed high levels of Notch2 and a lack of Notch1. On TMA, Notch2 expression was associated with higher grade. In vitro, general pathway inhibition resulted in a dose dependent reduced cell proliferation. Short–term treatment with gamma secretase inhibitor and Notch2 siRNA knockdown resulted in inhibition of invasion and migration in vitro, while no effect on cell proliferation was observed. Similar in vitro properties were found for stably Notch2 shRNA transfected cells. In vivo, a significant inhibition of tumor growth was observed for tumors derived from Notch2 knockdown cell lines, compared to scramble transfected control tumors.

Conclusions: These results provide preclinical evidence that Notch2 plays a role in tumor progression and the invasiveness of bladder cancer. Further investigation is needed reveal the biological function of other Notch receptors and if implementation of receptor specific targeting of the Notch pathway can improve treatment of bladder cancer.

Poster #126
SOURCES OF VARIATION IN EXPENDITURE AFTER CYSTECTOMY
Goutham Vemana, Ling Chen and Seth Strope
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(Presented by: Goutham Vemana)

Introduction and Objectives: Follow–up care after radical or partial cystectomy is poorly defined with extensive variation in practice patterns. We sought to determine sources of these variations in care.

Methods: Using the linked SEER–Medicare data from 1992 to 2007, we determined follow–up care expenditures (time and geography standardized) for 24 months after surgery. Accounted costs included office visits, imaging studies, urine tests and blood work. A multilevel model was implemented to incorporate region, surgeon level factors, and patient level factors in the model estimation. The data was further partitioned to establish the contributions from individual patient–level and surgeon–level factors in the models.
Results Obtained: Expenditures over 24 months of follow-up were calculated per month and per patient. The mean and median monthly expenditures were $33 and $21 respectively (minimum $0, maximum $429, 25th to 75th percentile ranged from $9 to $43). The total variance of expenditure situated at the surgeon−level and SEER region−level was 9.9% and 4.0% respectively. After accounting for the region, the total variance of expenditure situated at the patient−level and surgeon−level factors was 14.95% and 7.81% respectively. Patient−level factors significantly impacting receipt of follow up care included race, gender, marital status, neighborhood educational achievement, age, neighborhood median income, Charlson comorbidity score, node positivity, chemotherapy status, readmission rates, and final stage of disease.

Conclusions: While some regional and surgeon−level variations in care were found, most variation in expenditure of follow−up care was at the patient−level. Not surprisingly among patient−level factors, comorbidity, node positivity, chemotherapy status, readmission rates and final stage contributed to most of this variation. However, neighborhood income and educational achievement were also significant factors, suggesting disparities exist in the provision of follow−up care.

Poster #127
RADICAL CYSTECTOMY IN OCTOGENARIANS AND RISK OF ADVERSE EVENTS OR INPATIENT MORTALITY: ANALYSIS FROM A NATIONAL COHORT
Michael Liss, Hossein Mirheydar, Seth Cohen, Kerrin Palazzi, Kellogg Parsons, David Chang and Karim Kader
UCSD, San Diego, CA
(Presented by: Michael Liss)

Introduction and Objectives: Radical cystectomy, a procedure will necessary for invasive bladder cancer, has a high morbidity. Adverse events are thought to increase with age and comorbidities. We examined national trends using the Nationwide Inpatient Sample (NIS) specifically evaluating patients age 80 and older. Using Patient Safety Indicators (PSIs) to document adverse events (previously validated by the Agency for Healthcare Research and Quality) we sought to determine associations of perioperative PSI and mortality in octogenarians undergoing open or minimally invasive radical cystectomy.

Methods: In the NIS, we identified patients undergoing radical cystectomy (comprised of open cystectomy (OC) and laparoscopic cystectomy or RARC (MIC)) for bladder cancer from 1998 to 2010. We compared patient demographics, peril−operative outcomes, PSI’s, and mortality using the independent T−test and Chi2 test. In addition we used multivariate regression to analyze adverse in−hospital outcomes comparing MIC to OC, PSI’s, type of urinary diversion, and other demographics.

Results: We identified 82,937 patients who underwent cystectomy of which 11,855 (14.3%) were over the age of 80. Only 3% were performed using minimally invasive techniques. In the overall cohort between 2008 and 2010, the prevalence of MIC increased from 2.3% to 10.3% of all cystectomies for bladder cancer. Caucasian race (71% vs. 68%, p<0.001), comorbidities (CCI ≥ 3 in 64% vs. 60%, p<0.001) and ileal conduit diversion (98% vs. 90%, p<0.001) was more common among octogenarians. Also octogenarians had more transfusions and higher perioperative mortality (36% vs. 29% and 4.7% vs. 2.0%, both p<0.001). In multivariable analysis, Charlson score OR 1.5 [1.2−2.1] and Teaching hospital OR1.4 [1.1−1.9] were associated with more PSI’s (p=0.004 and p=0.023, respectively). The most significant variable in multivariable analysis for peri−operative mortality was if any patient safety indicator had occurred in the patients over 80 years of age the OR of mortality was 29.8 [16.9−52.6] (p<0.001).

Conclusions: Octogenarians are a unique group of patients undergoing radical prostatectomy with increased comorbidities and a significantly higher risk of perioperative mortality. The strongest predictor of mortality was any perioperative PSI event. Proper counseling and further research in identification and prevention of particular PSI in this population is warranted.
Poster #128
IMPACT OF SURGICAL VOLUME ON ADVERSE OUTCOMES OF RADICAL CYSTECTOMY: AN ANALYSIS OF THE MARYLAND HEALTH SERVICES COST REVIEW COMMISSION DATABASE

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James Buchanan Brady Urological Institute, Johns Hopkins Medical Institutions, Baltimore, MD
(Presented by: Michael A. Gorin)

Introduction and Objectives: A number of studies have demonstrated a relationship between hospital volume and improved outcomes of various surgical procedures. The aim of this study was to compare the outcomes of open radical cystectomy (RC) between high- and low-volume centers in the state of Maryland.

Methods: The Maryland Health Services Cost Review Commission database was queried for patients who underwent a RC between 2000 and 2011. During this period, patients underwent surgery at 43 medical centers. Of these, only a single institution was identified as a high-volume center (>30 cases/year). Patients who underwent a RC at this hospital were compared to those who underwent surgery at the other centers for differences in length intensive care unit and total hospital stay, 30-day readmission rate, in-hospital death rate, and inflation-adjusted medical costs. Further, multivariate linear and logistic regression analyses of these outcomes were performed adjusting for age, sex, non-white race and medical complexity as defined by all patient refined diagnosis related groups (APR-DRGs, version 12.0).

Results: In total, 1704 patients underwent a RC in the state of Maryland during the study period. Of these patients, 724 (42.5%) underwent surgery at a single high-volume medical center. On average, this center performed 60.3 ± 13.4 (range 43–80) RCs per year compared to 3.4 ± 3.5 (range 1–23) procedures per year at the other low-volume centers (p < 0.001). After adjusting for age, sex, non-white race and medical complexity, we observed that patients who underwent surgery at the high-volume center had shorter intensive care unit stays (coefficient −0.41 days [95% CI −0.78 – −0.05], p = 0.026) as well as a lower number of 30-day readmissions (OR 0.46 [95% CI 0.32–0.66], p < 0.001) and in-hospital deaths (OR 0.18 [95% CI 0.04–0.76], p = 0.020). These differences translated to a significant reduction in total medical costs (coefficient −3.4 K dollars [95% CI −6.2 – −0.6], p = 0.018), however, this was not associated with a significant reduction in length of total hospital stay (coefficient −0.36 days [95% CI −1.14 – 0.42], p = 0.365).

Conclusions: Patients undergoing surgery at a high-volume medical center have improved outcomes following RC. This translates to decreased costs associated with this procedure. In light of these data, we believe that patients in need of a RC should be referred to a high-volume center.

Poster #129
HIGHER BODY MASS INDEX AND ADVANCED AGE PREDICT WORSE OUTCOMES IN PATIENTS WITH T1 HIGH GRADE BLADDER CARCINOMA

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(Presented by: Luis Kluth)

Introduction and Objectives: To assess the impact of Body mass index (BMI) and age on clinical outcomes in a large cohort of clinical primary T1 high grade (HG) patients with primary urothelial carcinoma of the bladder (UCB).

Methods: In this multi-institutional study we retrospectively analyzed the data from 916 patients with primary non–muscle–invasive bladder cancer (NMIBC) of 7 referral centers. Patients were treated with transurethral resection of the bladder with or without intravesical instillation therapy. The patient’s age was classified into categories of younger patients than 50, 50–59, 60–69, 70–79, and >80 years or older, respectively. The patient’s BMI was classified into less than 25, 25–29.9 and more than 30, respectively. Univariable and multivariable cox regression analyses assessed the effect of BMI and age on outcomes.
Results: The median follow-up was 42.8 months (IQR: 56). Median time to disease recurrence, progression and death were 17.8 months (IQR: 46.1), 40.5 months (IQR 65.3), and 42.7 months (67.7), respectively. In univariable analyses, higher BMI and age were both associated with an increased risk of disease recurrence, progression to muscle-invasive disease, cancer-specific mortality, and overall mortality (all p<0.05). In multivariable analyses that adjusted for the effects of gender, concomitant CIS, tumour size, number of tumours, intravesical therapy, smoking status, BMI and age were both independent predictors of disease recurrence, progression cancer-specific mortality, and overall mortality (p<0.05). Patients older than 70 years and obese (BMI >30) did worse than younger patients and those with lower BMI. In a subgroup analysis in patients treated with Bacillus Calmette-Guérin (n=234) the effects of BMI and age remained.

Conclusions: Obesity and being older is associated with worse cancer-specific outcomes in patients with T1 HG UCB. This finding could be due to a change in the biological potential of the tumour cell, a decrease in the host’s defence mechanisms, or differences in care. Focusing on patient-modifiable factors such as BMI may have significant individual and public health implications in patients with T1 HG UCB. Further work is needed to improve our understanding of T1 HG outcomes in the growing segment of the elderly population and to develop strategies to improve cancer control in them.

Poster #130
OPTICAL COHERENCE TOMOGRAPHY AS AN ADJUNCT TO WHITE LIGHT CYSTOSCOPY FOR INTRAVESICAL REAL-TIME IMAGING AND STAGING OF BLADDER CANCER
Philip J. Cheng¹, Edward J. Sanchez¹, Guilherme Godoy¹, Alvin C. Goh² and Seth P. Lerner¹
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(Presented by: Guilherme Godoy)

Introduction and Objectives: Optical coherence tomography (OCT) is a novel, real-time endoscopic imaging modality that permits delineation of microarchitectural features of bladder lesions. It may provide an extension of conventional cystoscopy by allowing examination of bladder tissue at microscopic resolution (10 to 20 µm). The purpose of this study was to assess the application of OCT using the Niris Imaging System® (Imalux Corp., Cleveland, OH) in improving the endoscopic diagnosis and staging accuracy of bladder lesions. A secondary objective was to correlate white light cystoscopic impression with histopathologic stage.

Methods: We previously reported on the use of OCT for staging of bladder cancer (Urology 72:133, 2008), and we are now reporting on an expanded data set. We conducted a retrospective institutional review board-approved, single-institution, single-user review on the use of OCT as an adjunct to cystoscopy in 93 patients with a history of bladder cancer or microhematuria. We performed white light cystoscopy and OCT imaging of suspicious areas before biopsy or resection, evaluated the images in real time, and subsequently compared them with pathology results.

Results: We obtained OCT images of 135 suspicious lesions in 93 patients undergoing bladder biopsy or transurethral resection of bladder tumor. Age of the patients ranged from 37 to 97 years (mean, 68.5 years), with 77 men (83%) and 16 women (17%). White light cystoscopy was able to distinguish benign from neoplastic lesions with 100% sensitivity, 5% specificity, and 84% accuracy, while OCT performed with 100% sensitivity, 45% specificity, and 91% accuracy. OCT correctly identified tumors confined to the mucosa (Ta) in 76 of 83 lesions with 92% sensitivity, 71% specificity, and 84% accuracy. OCT detected any level of tumor invasion (T1 or higher) in 24 of 30 lesions with 80% sensitivity, 90% specificity, and 87% accuracy. Muscle-invasive tumors (T2 or T3) were detected in 13 of 17 lesions with 76% sensitivity, 97% specificity, and 94% accuracy.

Conclusions: OCT is a rapid, easy-to-use tool that can help differentiate Ta and T1 bladder tumors and identify muscle-invasive lesions. It provides real-time microarchitectural information that can aid in the evaluation of bladder tumors. Accurate information about stage and depth of invasion may have an impact on the endoscopic surgical management of these lesions.

Funding: This project was partially funded by Imalux Corp., Cleveland, OH
**Poster #131**

MICRORNA 200 FAMILY MEMBERS PREDICT PROGNOSIS IN MUSCLE INVASIVE UROTHELIAL CARCINOMA OF THE BLADDER

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(Presented by: Matthew Wszolek)

**Objective:** To determine whether primary tumor miRNA 200 family expression levels independently predict disease specific survival (DSS) and overall survival (OS) in patients with muscle invasive urothelial carcinoma of the bladder.

**Methods:** 107 macrodissected fresh frozen bladder cancer tumor samples were obtained from an established institutional database. Salient demographic, pre-surgical, and pathologic variables as well as cause of death were retrospectively obtained from medical records. Real time PCR was used to quantitate primary tumor miRNA 200b, 200c and 205 expression levels. Survival outcomes were analyzed by the Kaplan–Meier method. Cox regression modeling was used to determine whether miRNA 200 family member expression independently predicts DSS when controlling for established pre-cystectomy risk factors (age, clinical stage, lymphovascular invasion, aberrant histology, and hydronephrosis).

**Results:** Elevated expression of miRNA 200b, 200c and 205 were each associated with worse DSS (p-values = 0.017, 0.005 and <0.001, respectively). Elevated miRNA 200c and 205 were also associated with adverse OS (p-values = 0.034 and <0.001, respectively). On multivariable modeling controlling for pre-cystectomy risk factors, miRNA 200b (HR 1.37, p=0.019), miRNA 200c (HR 1.72, p=0.012) and miRNA 205 (HR 1.58, p=0.003) all independently predicted DSS as a continuous variable. The number of elevated miRNA 200 family members in a given sample (‘miRNA score’) also independently predicted DSS (HR 1.97, p=0.002).

**Conclusion:** Primary tumor expression levels of miRNA 200 family members independently predict DSS in patients with muscle invasive urothelial carcinoma of the bladder.

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**Poster #132**

ESTIMATING THE BURDEN OF PREOPERATIVELY MISCLASSIFIED, SURGICALLY REMOVED BENIGN RENAL MASSES IN THE UNITED STATES: IMPLICATIONS FOR THE CURRENT STANDARD OF CARE

David Johnson, Jed Ferguson, Will Kirby, Angela Smith, Michael Woods, Kim Rathmell, Mathew Raynor, Eric Wallen, Raj Pruthi and Matthew Nielsen
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(Presented by: David Johnson)

**Introduction and Objectives:** The incidence of renal cell carcinoma (RCC) is increasing and the average size at diagnosis is decreasing. Surgical resection without tissue confirmation is within the standard of care for renal masses suspicious for RCC, which results in a currently unknown number of preoperatively misclassified benign renal masses (BRM) undergoing nephrectomy. Against this backdrop, we estimate the population-level burden of surgically removed benign renal masses in the US.

**Methods:** A literature review for studies providing estimates of the likelihood of BRM for resected renal masses was conducted. Studies reporting the likelihood of BRM based on tumor size (<1.0 cm, 1−2 cm, 2−3 cm, 3−4 cm, 4−7 cm, >7 cm) were included. The results were pooled for a single estimate of likelihood of BRM for each size category. Combining these results with size-specific incidence rates of RCC from SEER and population estimates from census data, we estimated the burden of surgically resected BRM for 2000 and 2009.
**Results:** The size-specific likelihood of BRM was compiled from 4 studies of tumors <4 cm and 5 studies of tumors > 4 cm. The pooled estimates of the likelihood of benign histology are 41.2%, 21.5%, 20.3%, 17.7%, 9.3%, and 6.4% for <1 cm, 1−2 cm, 2−3 cm, 3−4 cm, 4−7 cm, and > 7 cm tumors, respectively. The estimated number of surgically resected benign renal masses in the United States in 2000 and 2009 for these respective size strata are 198 and 428, 386 and 1087, 790 and 1866, 788 and 1379, 925 and 1283, and 675 and 751. Overall, the estimates for preoperatively misclassified BRM undergoing surgical resection are 3762 in 2000 and 6794 in 2009, representing an 80% increase.

**Conclusions:** Given the evolving epidemiology of RCC, the burden of preoperatively misclassified BRM is an important and previously unstudied phenomenon, as no specific data are available to directly quantify this. These indirect estimates suggest the burden may be quite substantial and potentially increasing at a dramatic rate. These data underscore an important dimension of overtreatment due to unnecessary morbidity, mortality and health care costs. Furthermore, long-term effects on renal and cardiovascular health must also be considered, particularly given the still substantial proportion of the population who undergo radical nephrectomy, even for small masses. These data support further consideration of the role of renal mass biopsy and other strategies to optimize management.

**Poster #133**

**COMPARISON OF PRESERVED FUNCTIONAL VOLUME IN PATIENTS UNDERGOING CLAMPED VERSUS UNCLAMPED MINIMALLY INVASIVE PARTIAL NEPHRECTOMY FOR A SOLITARY RENAL MASS**

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University of Southern California, Los Angeles, CA

(Presented by: Mehrdad Alemozaffar)

**Introduction:** Preservation of renal mass following partial nephrectomy (PN) as well as minimizing renal clamp time are known to correlate with improved postoperative renal function. Unclamped techniques for PN have recently been described to further aid in preservation of renal function by avoiding ischemic injury altogether. We sought to determine if additional renal mass was preserved with the unclamped technique by assessing differences in preserved functional volume (PFV) in patients undergoing clamped or unclamped PN.

**Methods:** From June 2010 to December 2011, 89 consecutive patients underwent laparoscopic or robotic PN for a solitary renal mass at the University of Southern California. Forty patients had hilar clamping, while 49 patients had no clamping. Their preoperative and postoperative contrast enhanced CT scans were assessed to measure parenchymal volume using advanced image processing software (3D Synapse – Fuji film®). PFV – defined as postoperative parenchymal volume as a percentage of the preoperative parenchymal volume – was calculated and compared among the groups with the Kruskal−Wallis test.

**Results:** There were no significant differences among the unclamped and clamped groups in regards to patient demographics, tumor characteristics or perioperative outcomes with a median age = 61.0 years, BMI = 28.1 kg/m2, tumor size = 3.0 cm, R.E.N.A.L. score = 8, C−Index = 2.1, operative time = 275.0 mins, EBL = 150.0, and hospital stay = 3 days. The clamped group had a median warm ischemia time of 19.5 mins. The median PFV was greater for the unclamped versus the clamped cohort (94% vs 89.5%, p=0.0314). While there was not a significant difference among the unclamped and clamped groups in regards to median preoperative and postoperative GFR (72.6 ml/min vs 84.7, and 63.7 ml/min vs 66.8 ml/min, respectively), there was a trend towards a lesser negative median change in preoperative to postoperative GFR in the unclamped versus clamped groups (−13.7 ml/min vs −17.7, p=0.0887).

**Conclusion:** Unclamped PN may help preserve greater postoperative renal function than clamped PN not only by avoiding ischemic injury incurred during clamping of the renal hilum, but also by resulting in greater PFV following minimally invasive PN.
Poster #134

IMAGE-GUIDED BIOPSY OF SMALL RENAL MASSES IN THE ERA OF ABLATIVE THERAPIES

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(Presented by: Sepehr Salem)

Introduction and Objectives: The combination of both the increased detection of small renal lesions as well as the recent incorporation of ablative technologies in the management of these renal tumors demands a reappraisal of the role of percutaneous renal biopsy and the accuracy with which a diagnosis can be established. Our aim was to further evaluate the accuracy, safety, and also impact of image–guided renal biopsies on clinical decision making and management of the indeterminate small renal masses (SRM).

Methods: During the study period 145 patients (males 99, females 46) with SRM suspicious for malignancy were evaluated. The patients’ mean age was 67.2 (±11.6) years. Computed tomography guided biopsies were used in all SRM by an experienced interventional radiologist. An experienced genitourinary pathologist reviewed all pathologic specimens. The patients’ demographic characteristics, tumor histology, subsequent intervention, as well as peri-procedural morbidities were recorded.

Results: 145 renal biopsies were performed for indeterminate enhancing masses (mean size: 2.4±1.1cm). Biopsy was diagnostic in 126 (86.9%) cases and non-diagnostic in 19 (13.1%) cases. Of diagnostic biopsies, 107 (84.9%) were malignant, 84.1% of which were primary RCC. Histologic subtyping and grading of tumor was possible in 100% and 52.2% of RCCs, respectively. The major RCC subtype was clear cell (63.3%) followed by papillary (24.4%) and chromophobe (8.8%). Repeat biopsy was done in 9 of 19 non-diagnostic cases, and diagnosis was possible in 66.7%. Sensitivity of percutaneous renal biopsy was 91%, and its accuracy was 85.5%. Overall, patients’ age, gender, tumor size and location were not related to non-diagnostic biopsy results and/or tumor pathology. No cases of hemorrhage, seeding of biopsy tract, infection, or mortalities were observed.

Conclusions: Our findings reveal that image–guided biopsy of indeterminate SRM is safe and can provide the correct diagnosis with a high degree of accuracy and thus, plays an important role in establishing a histopathological diagnosis prior to treatment of enhancing SRM with ablative technologies. Furthermore, repeat biopsy can alter the clinical management of non-diagnostic biopsies.
Poster #135
MANAGEMENT OF SMALL RENAL MASSES: IS PERCUTANEOUS BIOPSY NECESSARY?
Stephen Blakely¹, Osama Zaytoun¹, Oleg Shapiro¹, Steve Landas², Gustavo de la Roza² and Gennady Bratslavsky¹
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(Presented by: Stephen Blakely)

Introduction: Recent reports document that as many as 22% of renal tumors less than 4cm will have benign histology on final histopathologic examination. Percutaneous renal mass biopsy may decrease the number of extirpative procedures performed for benign disease. Because we have not been using percutaneous biopsy at our institution in the management of small renal masses, we have a unique opportunity to evaluate the prevalence of benign pathology among renal cortical tumors 4cm or less managed with surgical extirpation.

Methods: We reviewed pathologic reports for all consecutive patients in a 17 year period who underwent extirpative surgery at a single institution for renal cortical tumors 4cm or less which were suspicious for malignancy on radiographic examination. Patient demographics and tumor characteristics were evaluated. The frequency of benign disease was calculated for each 1cm increase in tumor size.

Results: Of 146 patients who underwent extirpative surgery for presumed malignancy, 132 (90.4%) were diagnosed with renal cell carcinoma and only 14 (9.6%) were determined to have benign disease. There was no difference in age or gender in patients with malignant vs. benign disease. No patient was treated surgically for a tumor less than 1cm. Mean tumor sizes for those with malignant and benign disease were 2.70 and 2.85cm, respectively (p=0.37). Table 1 demonstrates frequency of benign disease with each 1cm increase in tumor size.

Conclusion: The majority of small renal masses treated surgically at our institution are malignant. A benign mass was identified in only 9.6% of our patients, which is among the lowest rates documented in the literature for small renal masses. It is unclear whether this finding reflects an improvement in patient selection, a pattern in patient referral to our tertiary center or an environmental factor in our geographic region. While there is an increasing popularity of percutaneous biopsy for small renal masses, our data indicates that greater than 90% of our patients could have been offered an unnecessary renal mass biopsy.

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Poster #136
INCREASED EXPRESSION OF KI-67 IS A SIGNIFICANT PREDICTOR OF DISEASE RECURRENCE AND DECREASED SURVIVAL IN PATIENTS WITH NON METASTATIC CLEAR CELL RENAL CANCER
Bishoy Gayed, Ramy Youssef, Oussama Darwish, Aditya Bagrodia, Payal Kapur, Arthur Sagalowsky, Yair Lotan and Vitaly Margulis
UT-Southwestern Medical Center Dallas, TX
(Presented by: Bishoy Gayed)

Introduction: Ki−67, a marker of proliferation, has been shown to be associated with aggressive biological behavior in patients with clear cell renal cell carcinoma (ccRCC). We sought to validate the impact of Ki−67 expression on oncologic outcomes of patients treated surgically for ccRCC.

Methods: Immunohistochemistry for Ki−67 was performed on tissue microarray constructs of patients treated with radical or partial nephrectomy for non−metastatic ccRCC between 1997−2010. Ki−67 was considered to be abnormal when greater than 10% positivity. Comprehensive clinical and pathologic data elements were collected and entered into an IRB approved database. Kaplan Meier method was utilized to analyze univariable recurrence and survival probabilities.

Results: Of 401 patients, 59.6% were males. Median age was 57 years (range 17−85). Median follow up time was 31.2 months (range 0−150). Median cancer specific survival was 34 months (range 0−150). 20.2% had advanced stage (pT3−T4, NO, MO) and 31% had advanced grade (Gr 3−4). Abnormal expression of Ki−67 was seen in 6.5% of our cohort. Abnormal expression of Ki−67 was significantly associated with increased incidence of disease recurrence and inferior cancer specific survival, p=.0001 and p=.020, respectively on univariable analysis. (Figure 1)

Independent predictors of recurrence free survival on multivariate analysis were advanced stage (HR 3.445, P=.004), grade (HR 2.755, p=034), and abnormal expression of Ki−67 (HR 3.78, p =0.012). The same predictors were not significant for cancer specific survival.

Conclusion: Our findings support the role of KI−67 as a powerful independent predictor of inferior oncologic outcomes in patients with ccRCC. Further prospective studies will be needed to determine clinical applicability.

Figure 1: Kaplan Meier estimates of Cancer Specific Survival and Recurrence Free Survival
Poster #137
IMPACT OF SMOKING STATUS AT DIAGNOSIS ON DISEASE RECURRENCE AND DEATH IN CLEAR CELL RENAL CELL CARCINOMA
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Memorial Sloan Kettering Cancer Center, NY, NY
(Presented by: Behfar Ehdaie)

Objectives: To evaluate the impact of smoking exposure on oncological outcomes in patients with clear cell renal cell carcinoma (ccRCC) treated with surgery.

Methods: Patient and disease characteristics from 1,625 patients with non–metastatic ccRCC treated with partial or radical nephrectomy between 1995 through 2012 were collected from a prospectively maintained database at the Memorial Sloan–Kettering Cancer Center. Disease recurrence was defined as distant metastases or local failure in the operative site or regional lymph nodes. Factors associated with smoking status and advanced disease (> AJCC stage 2), disease recurrence, cancer-specific death, and overall mortality were determined.

Results: The prevalence of current, former, and never smoking at diagnosis was 16%, 30%, and 54%, respectively. 62.4% of patients reported a ≥20 pack–year smoking history. With a median follow up 4.5 years, disease recurrence occurred in 10.5% (n=170) and 19.4% (n=316) died during follow-up. Multivariate logistic regression demonstrated ≥20 pack–year smoking history was associated with a significantly increased risk of advanced disease (> AJCC stage 2). While pathologic stage, Fuhrman grade, and systemic symptoms at presentation adversely affected cancer-specific survival, smoking status was not associated with risk of recurrence or death in multivariate analysis (p=0.34). Multivariate competing risks regression showed that current smokers faced a significantly higher risk of death than never smokers (hazard ratio 1.77, 95% confidence interval 1.23–2.44).

Conclusions: Patients with heavy smoking exposure presented with more advanced clear ccRCC. While smoking status at diagnosis and cumulative smoking exposure were not associated with clear cell renal cell carcinoma recurrence or cancer-specific death, our findings suggest that smoking exposure substantially increases risk of death in patients with ccRCC. Treatment plans to promote smoking cessation are recommended for these patients.

Poster #138
NEPHROSCLEROSIS IS COMMON IN YOUNG PATIENTS WITH RCC: POTENTIAL IMPLICATIONS FOR INCREASING ROLE OF RENAL PRESERVATION
Stephen Blakely¹, Ivy John², Sarrina Shraga¹, Osama Zaytoun¹, Oleg Shapiro¹, Steve Landas² and Gennady Bratslavsky¹
¹SUNY Upstate Medical University, Department of Urology, Syracuse, NY; ²SUNY Upstate Medical University, Department of Pathology, Syracuse, NY
(Presented by: Stephen Blakely)

Introduction and Objectives: In addition to baseline renal function, histopathologic evaluation of non–neoplastic renal parenchyma (NNRP) can provide important information about the renal reserve of patients with renal cell carcinoma (RCC). The extent of nephrosclerosis in the unaffected cortex may contribute to the risk of developing post–operative renal insufficiency in patients undergoing renal surgery. With the ongoing debate about medical versus surgical renal insufficiency and the role for maximal renal preservation in mind, we aimed to determine the prevalence of nephrosclerosis in young patients with RCC.
**Methods:** After exclusion of patients with end-stage renal disease, renal surgeries performed for non-malignant tumors, and those with insufficient NNRP for evaluation, 59 patients 50 years or younger were identified using an IRB approved nephrectomy database. Mean age was 42.7 years and 57.6% of patients were male. History of hypertension, smoking, and diabetes were found to be present in 30%, 58%, and 10% of patients, respectively. The average eGFR was 88 ml/sec with 90% having eGFR greater than 60 ml/sec. The mean tumor size was 4.8 cm (1.1–15 cm). Thirty-nine patients (66%) were treated by radical nephrectomy. NNRP was evaluated for presence of nephrosclerosis, defined as two of the following three features: arteriosclerosis or arteriolosclerosis, glomerulosclerosis, and interstitial fibrosis. All slides were reviewed by a single uropathologist blinded to patient medical history. Our results were compared to recent data published on parenchyma of healthy donor kidneys prior to transplantation.

**Results:** Nephrosclerosis was present in 67.8% of our patients compared to 30.3% in the age-matched, healthy cohort. Nephrosclerosis was present in 60% (23/38) of patients without a history of hypertension. In those patients without a history of hypertension, diabetes, or smoking, nephrosclerosis was present in 75% (9/12).

**Conclusions:** Nephrosclerosis in NNRP is more common in patients with RCC than in age-matched transplant kidneys. Even in the presence of excellent renal function, there is a significant rate of nephrosclerosis in patients with RCC, likely explaining the high rate of developing post-operative renal insufficiency after radical nephrectomy. It is likely that medical and surgical renal disease in patients with RCC do not exist as two distinct entities, arguing further for maximal renal preservation in patients with RCC.

**Poster #139**

**IMPACT OF RENAL PARENCHYMAL VOLUME LOSS AND COMPENSATION ON RENAL FUNCTION AFTER PARTIAL NEPHRECTOMY FOR RCC**

Henry Ajzenberg¹, Raj Satkunasivam², Ashraf Almatar², Antonio Finelli², Laura Legere¹, John Kachura³, Martin O’Malley⁴, Paul Tuchscherer⁵, Paul Quinn⁵, Jung Choi⁵ and Michael Jewett²

¹Uro-Oncology Clinical Research Unit, Princess Margaret Hospital (PMH) and University Health Network (UHN), Toronto, Canada; ²Department of Surgery (Urology), Department of Surgical Oncology, PMH and UHN, University of Toronto, Toronto, Canada; ³Department of Medical Imaging, Mount Sinai Hospital (MSH) and UHN, University of Toronto, Toronto, Canada; ⁴Division of Vascular and Interventional Radiology, Department of Medical Imaging, MSH and UHN, University of Toronto, Toronto, Canada; ⁵3D Reconstruction Lab, UHN, Toronto, Canada

(Presented by: Ashraf Almatar)

**Introduction:** Partial nephrectomy (PN) is the treatment-of-choice for early-stage RCC. Relative to radical nephrectomy, PN produces equivalent tumor control rates and improved renal outcomes. However, this nephron-sparing intervention still causes substantial post-treatment renal dysfunction (PTRD). The role of renal parenchymal volume (RPV) change is poorly understood in relation to PTRD and loss of RPV may account for a large proportion of PTRD. PTRD caused by RPV loss in the tumor-bearing (ipsilateral) kidney may be mitigated by compensatory growth in the contralateral kidney.

**Materials and Methods:** 30 patients who underwent PN for RCC were retrospectively identified. Demographics, medical history, and pre- and postoperative estimated glomerular filtration rate (eGFR) were recorded. CT images were analyzed using volumetric analysis tools to render ipsilateral RPV (iRPV), contralateral RPV (cRPV), and total RPV (tRPV). Regression analyses were used to determine predictors of PTRD.

**Results:** Mean age was 57.0 years. At follow-up (mean 383.5 days), eGFR decreased by 9.5%, from 84.7 to 76.7 ml/min/1.73m². iRPV decreased by 10.4% and cRPV increased by 6.4%, resulting in a 3.7% tRPV reduction, from 324.8 to 312.4 cc. Preoperative eGFR, hypertension, diabetes, cardiovascular disease, defined as one of the following three features: arteriosclerosis or arteriolosclerosis, glomerulosclerosis, and interstitial fibrosis. All slides were reviewed by a single uropathologist blinded to patient medical history. Our results were compared to recent data published on parenchyma of healthy donor kidneys prior to transplantation.

**Conclusion:** The primary determinants of postoperative eGFR appear to be preoperative eGFR and change in tRPV after PN. Further, there is a small but appreciable compensatory growth of the contralateral kidney after PN. These findings underscore the importance of preserving RPV in PN.
Introduction: Increasing use of antiplatelet agents among patients presenting for urologic surgery has caused concern for increased risk of perioperative hemorrhage and complications. Outcomes data regarding antiplatelet medications (aspirin or clopidogrel) in patients undergoing nephron-sparing surgery (NSS), which has significant hemorrhage risk, is sparse. We compared outcomes in patients undergoing NSS who were not on antiplatelet agents, versus those who had a short term perioperative discontinuation, and those who continued antiplatelet agents during the perioperative period.

Methods: IRB–approved single institutional retrospective analysis of patients undergoing NSS from 3/2006–3/2012. Cohort was divided into three groups based antiplatelet agents status: None (Group I), on antiplatelet agents and stopped perioperatively (Group II), and those maintained on antiplatelet agents throughout perioperative period (Group III). Demographics, disease characteristics, and perioperative outcomes and complications were compared. Primary outcome was estimated blood loss (EBL). Postoperative complications were documented using Clavien grade.

Results: 213 patients met analysis criteria. 153 patients did not use antiplatelet agents, 54 patients were on antiplatelet medication which was held prior to surgery, and 6 continued antiplatelet agents (4 aspirin and clopidogrel, 2 aspirin alone) through surgery. Patients who continued antiplatelet agents were older and had higher incidence of coronary artery disease (p<0.001). However, there was no difference between groups in terms of tumor size (p=0.716), mean RENAL score (p=0.752), and overall (p=0.529) and high-grade (p=0.723) complications. Median EBL (mL) was not significantly different between the groups (Group I 200 vs. Group II 200 vs. Group III 250). Mean OR time (minutes) was significantly greater Group III (254) vs. Groups I (181) and II (183), p=0.021. MVA revealed that the only significant factor associated with postoperative complications was increasing RENAL score, (OR 1.32, p=0.002)

Conclusion: Despite significant concern regarding perioperative antiplatelet therapy in the setting of NSS, we did not show a significant increase in EBL or postoperative complications. Further data are necessary to calibrate and stratify risks associated with antiplatelet therapy in a wider NSS population. However, it seems reasonable not to preclude NSS in select patients who must otherwise remain on antiplatelet agents.

Poster #144
R.E.N.A.L. NEPHROMETRY SCORE ACCURATELY PREDICTS COMPLICATIONS FOLLOWING LAPAROSCOPIC RENAL CRYOABLATION
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(Presented by: Zhamshid Okhunov)

Introduction: The R.E.N.A.L. nephrometry is a standardized scoring system that quantifies the complexity of kidney tumors. We sought to evaluate our experience with laparoscopic cryoablation (LC) and determine the ability of nephrometry to predict complications.

Methods: We reviewed the records of all patients undergoing LC from July 2005 to February 2010 at 3 different institutions. Composite R.E.N.A.L. score was determined using pre-operative imaging, and tumors were categorized as low– (4–6), moderate– (7–9), or high–complexity (10–12). Peri-operative data was analyzed to determine presence of complications. Distribution of surgical complications and tumor categories were compared using the Chi–squared and student’s t–test. Logistic regression was used to analyze the association between nephrometry score and post–operative complications.
Results: A total of 210 patients underwent LC, 77 of which had available preoperative imaging. Mean age was 64.5 years. Mean tumor size was 2.6cm (range: 1−4.5cm). Mean nephrometry score was 6.1 (range: 4−12). Forty seven (61%) tumors were categorized as low−, 23 (30%) as moderate− and 7 (9%) as high−complexity lesions. Overall, there were 15 (19.5%) complications, including 7 (9.5%) major and 8 (10%) minor complications. There was a significant difference in complication rate between the low (n=47) − (0%), moderate (n=23) − (35%), and high−complexity (n=7) (100%) groups, respectively (p<0.001). On multivariate analysis, nephrometry score was independently associated with a higher risk of post−operative complication (OR=2.23, 95% CI 1.05−2.11, p=0.008).

Conclusion: In a multi−institutional cohort of patients undergoing LC, R.E.N.A.L. nephrometry score is independently associated with occurrence of complications. Therefore, nephrometry can be used to successfully stratify patients in terms of anticipated risk of complication, which, in turn, may help surgical decision−making.

Poster #142
DECREASED P16, P21, P27, AND P57 EXPRESSION IS ASSOCIATED WITH INFERIOR ONCOLOGIC OUTCOMES IN PATIENTS WITH CLEAR CELL RENAL CELL CANCER
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(Presented by: Bishoy Gayed)

Introduction: Cyclin Dependent Kinase Inhibitors (CDKI) (p16, 21, p27, p57) are cell cycle regulatory molecules implicated in various stages of carcinogenesis. In this study we systematically evaluate the impact of aberrant expression of all four CDKIs on disease recurrence and cancer specific survival in clear cell renal cancer (ccRCC).

Methods: Immunohistochemistry for p16, p21, p27, p57 was performed on tissue microarray constructs of patients treated with radical or partial nephrectomy for non−metastatic ccRCC between 1997−2010. Comprehensive clinical and pathologic data elements were collected and entered into an IRB approved database. Kaplan Meier method was utilized to analyze recurrence and survival probabilities.

Results: Of 401 patients, 59.6% were males. Median age was 57 years (range 17−85). Median follow up time was 31.2 months (range 0−150). Median cancer specific survival was 34 months (range 0−150). 20.2% had advanced stage (T3−T4) and 31% had advanced grade(3−4). 20.2% had advanced stage (pT3−T4, N0, M0) and 31% had advanced grade (Gr 3−4). Tumors that displayed decreased expression of all 4 CDKIs were seen in 14% of our cohort. Decreased expression of all 4 CDKIs was significantly associated with disease recurrence and inferior cancer specific survival, p=.003 and p=.011, respectively on univariate analysis. (Figure 1)

Independent predictors of recurrence free survival on multivariate analysis were advanced stage (HR 2.921, P=.013), grade (HR 3.505, p=.008), and decreased expression of CDKI (HR 2.355, p =0.033). The same predictors were not significant for cancer specific survival.

Conclusion: Our findings indicate that altered expression of CDKIs correlates with inferior oncologic outcomes and may play an important role in ccRCC carcinogenesis. Further, prospective trials will be needed to assess if CDKIs may have any prognostic and/or diagnostic significance.

Fig 1: Kaplan Meier Estimates of Cancer Specific Survival and Recurrence Specific Survival
Poster #143
INDOCYANINE GREEN IN PARTIAL NEPHRECTOMY: IMPACT ON SURGICAL MARGIN DISTANCE
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(Presented by: Louis Spencer Krane)

Introduction: Indocyanine Green (ICG) is emerging as a potential adjunct to robotic partial nephrectomy by its ability to help in the real-time identification of renal vasculature and the neoplasm–parenchymal margin. We questioned whether the microscopic distance to margin would be different in the ICG cohort, as the enhanced visualization of renal parenchyma may enable a closer and more precise resection of the mass. Alternatively, we questioned whether ICG use would result in greater margin distance as we try to keep a rim of hyperfluorescent tissue with the specimen. The Purpose of this study was to analyze microscopic distance to margin in a consecutive series of non–ICG versus ICG partial nephrectomies.

Materials & Methods: We reviewed our prospective ICG database of the first 95 cases and compared them to the previous 133 cases of non–ICG partial nephrectomy. All specimens were read by pathologists blinded to ICG status. Patients with cystic masses(13) and benign renal parenchyma(5) noted on final pathology were excluded from analysis and we did not have margin distance on(6) patients. Patients with enucleation and negative margin had margin distance considered to be 0 cm.

Results: Mean margin distance overall was 0.14cm(SD 0.19). There was no statistical difference in the mean distance of the margin between the ICG patients, mean distance was 0.15cm(SD 0.20) and in the patients without ICG the mean distance was 0.13cm(SD 0.19) (p=0.48). Mean pathologic mass size was 2.7 cm for ICG vs 2.6 in patients without ICG (p=0.48) Nephrometry (p=0.37) and PADUA (0.12) classifications were similar between patients.

Conclusions: ICG dye does not appear to significantly alter distance of renal margin. Mean distance achieved in robotic partial nephrectomy remained small in both cohorts.

Poster #144
DETERMINANTS OF OUTCOMES AFTER RESECTION OF RENAL CELL CANCER WITH VENOUS INVOLVEMENT
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(Presented by: Abhinav Sidana)

Objective: To determine the outcomes and to identify prognostic variables determining mortality and recurrence after surgery for renal cell cancer (RCC) with venous involvement.

Methods: Retrospective evaluation of the medical records of 132 patients with RCC and tumor thrombi treated at Johns Hopkins Hospital (1997–2008) was done. Kaplan–Meier analysis was used to determine survivals. Uni– and multivariate Cox proportional analysis was done to identify predictors for recurrence, All Cause Mortality (ACM) and Cancer Specific Mortality (CSM).

Results: Mean follow up was 30.3(0.03–159.5) months. 64(48.5%) patients had renal vein thrombus (Group1), 55(41.7%) had subdiaphragmatic Inferior Vena Cava (IVC) tumor thrombus (Group2) while 13(9.8%) had involvement of IVC above diaphragm or atrial extension (Group3). IVC thrombus was more common from the right sided tumors. Patients with higher thrombus levels had more blood loss and had more complicated and longer hospital stay.
Thrombus level was not found to be a predictor of recurrence, ACM and CSM. 1 and 3-year recurrence free survivals for non-metastatic patients were 69 and 53%. Tumor size (p=0.015), grade (p=0.007) and venous wall invasion (p=0.027) were predictors for recurrence. 5-year Overall Survival was 48, 35 and 13% for 3 groups respectively. Presence of distant metastasis (p=0.032), size (p=0.002), histology(p=0.020) and grade (p=0.013) were predictors of ACM. 5-year Cancer Specific Survival was 65, 43 and 36 for 3 groups respectively. Tumor size (p=0.001) and distant metastasis at presentation (p=0.025) were the predictors of CSM. **Conclusions:** Tumor thrombus level does not predict recurrence or mortality in RCC with venous involvement. Survival is determined by inherent aggressiveness of the cancer manifested by tumor size, grade and distant metastasis at presentation.

**Poster #145**

**INTRACELLULAR SUPEROXIDE GENERATION BY NOX4 IS REQUIRED FOR BRANCHING AND INVASIVE PHENOTYPES OF HUMAN KIDNEY CANCER CELLS**

Robert Turner, Guimin Chang and Jodi Maranchie  
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(Presented by: Robert Turner)

**Introduction:** Loss of von Hippel Lindau in clear cell kidney cancer (RCC) leads to accumulation of HIF−α. We have shown that generation of reactive oxygen species (ROS) by Nox4 is necessary for HIF−2α expression and activity and that branching morphogenesis and invasion are abrogated by Nox4 shRNA silencing. However, the mechanism of Nox4−induction of these invasive phenotypes is unknown. To determine if Nox4−generated superoxide is required, we measured invasion and branching following superoxide induction or suppression in 786−0 and RCC4 RCC cells.

**Methods:** For branching assays, 1.2x10⁴ 786−0 or RCC4 cells were suspended in 60 µL DMEM and mixed 1:1 with Matrigel in 96−well plates. Once set, 125 mL of DMEM containing hepatocyte growth factor was added to each well. The percentage of branching cells was determined after 24 hours. Invasion was quantitated as the number of cells crossing a Matrigel−coated 8 micron pore filter toward an HGF gradient. To induce intracellular superoxide, cells were treated with DTT. Superoxide suppression was achieved by exposure to Tempol or by transient infection with adenoviral Mn superoxide dismutase (SOD) or catalase.

**Results:** Untreated 786−0 and RCC4 cells showed robust branching and invasion. DTT superoxide induction increased branching by 83% (p=0.03) and 49% (p=0.02) in 786−0 and RCC4 cells, respectively, whereas superoxide suppression by Tempol decreased branching morphogenesis by 60% (p=0.02) and 89% (p=0.04). To exclude off−target drug effects, we expressed the ROS scavengers SOD and catalase. Both markedly suppressed ROS relative to Ad−GFP control. SOD and catalase significantly suppressed branching (p=0.003 and p=0.008, respectively) in both 786−0 and RCC4. Although we did not observe induction of invasion by DTT, exposure to Tempol suppressed invasion by greater than 90% in both cell lines (p=0.006 and p=0.005, respectively). Similar suppression of invasion was seen for RCC4 following expression of adenoviral SOD or catalase (p<0.01 for both).

**Conclusions:** The suppressive effects of Nox4 silencing on branching morphogenesis and invasion are mimicked by reduction of intracellular superoxide by pharmacologic inhibition or by expression of ROS scavengers. Conversely, superoxide induction enhances branching. These findings suggest that Nox4 promotes the kidney cancer tumorigenic phenotype via generation of intracellular superoxide and further support a role for Nox4 as a therapeutic target for kidney cancer.
Poster #146

RENAL NEPHROMETRY SCORE IS ASSOCIATED WITH COMPLICATIONS AFTER RENAL CRYOABLATION: A MULTI-CENTER ANALYSIS

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(Presented by: Michael Liss)

Introduction: To analyze outcomes and complications of percutaneous (PRC) and laparoscopic (LRC) renal cryoablation utilizing the RENAL nephrometry system.

Methods: Retrospective multicenter analysis of 154 consecutive patients who underwent either ultrasound−guided LRC (n=88) or CT−guided PRC (n=66) from 3/2003–12/2011. RENAL nephrometry score including other demographics were compared to post−operative complications (Clavien grade). Univariate and multivariable analysis was carried out for factors associated with development of post−procedure complications.

Results: Mean age was 68 years (94 Male/60 Female). Median follow−up was 34 months (23.6−45.6). Mean tumor size was 2.6±1 cm. Mean RENAL score was 5.2±1.4. There were 14.9% complications, all of which were low−grade (Clavien 1,2). There were no differences in complications between LRC and PRC (15.9% vs. 13.6%, respectively, p=0.82). Differences in the (A)nterior/posterior component and (H)ilar domain of the RENAL scores include PRC favoring posterior tumors and hilar lesions as compared to LRC (p<0.001 and p=0.044, respectively). Multivariable analysis demonstrated that RENAL score was the only factor associated with post−procedure complications (OR=1.37, 95% CI, p=0.025).

Conclusion: Increasing RENAL nephrometry score was associated development of post−procedure complications after renal cryotherapy. Further investigation is requisite to elucidate the role of RENAL nephrometry score in risk stratification prior to renal cryotherapy.

Poster #147

ASSOCIATION OF MICROVASCULAR AND CAPILLARY-LYMPHATIC INVASION WITH OUTCOME FOR PATIENTS WITH RENAL CELL CARCINOMA

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(Presented by: Manuel Eisenberg)

Introduction And Objectives: Microvascular invasion (MVI) is a known prognostic factor in several urologic malignancies; however, its role in renal cell carcinoma (RCC) remains to be established. In this study, we evaluated the association of MVI or capillary−lymphatic invasion (CLI) with patient outcome after adjusting for known predictors of progression.

Methods: We identified 1433 patients surgically treated for sporadic, unilateral RCC between 2001 and 2008 that were pathologically assessed for MVI or CLI by a single urologic pathologist. MVI and CLI were defined as presence of microscopic tumor invasion into vessels or capillary−lymphatic spaces with and without a muscular coat, respectively. Associations with time to metastases and death from RCC were evaluated using Cox proportional hazards models, controlling for PROG and SSIGN scores which are predictive models that account for TNM stage, size, grade, and coagulative necrosis.
**Results Obtained:** There were 1,103 (77%) patients with clear cell, 219 (15%) with papillary, 86 (6%) with chromophobe, and 25 (2%) with other RCC. MVI and CLI were identified in 119 (11%) and 17 (2%) with clear cell, 5 (2%) and 1 (<1%) with papillary, and 1 (1%) and 0 with chromophobe RCC, respectively. In clear cell RCC, MVI was univariately associated with an increased risk of metastases (HR 3.5, p<0.001) and cancer-specific death (HR 3.0; p<0.001) (Table). However, after adjusting for the PROG and SSIGN scores, these were no longer statistically significant (HR 1.2, p=0.4 and HR 1.3, p=0.1, respectively). CLI was significantly associated with an increased risk of metastases and death both univariately (HR 15.9, p<0.001 and HR 11.6, p<0.001, respectively) and after adjusting for the PROG and SSIGN scores (HR 3.2, p<0.001 and HR 3.1, p<0.001, respectively).

**Conclusions:** Microvascular invasion in patients with clear cell RCC is associated with an increased risk of metastases and cancer death; however, it is not an independently significant prognostic feature. CLI appears to be independently associated with metastases and cancer death even after controlling for known prognostic risk factors, however given its rarity, it may prove to be of limited clinical significance.

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**Poster #148**

**VASCULAR BYPASS IN PATIENTS UNDERGOING NEPHRECTOMY AND INFERIOR VENA CAVA THROMBECTOMY FOR RENAL CELL CARCINOMA**

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(Presented by: Timothy Kim)

**Introduction:** Renal cell carcinoma associated with inferior vena cava (IVC) thrombus represents a challenging operative patient population. In addition to nephrectomy and IVC thrombectomy, those patients with higher level thrombus may require vascular bypass.

**Methods:** A retrospective review was performed at our institution on patients who underwent either cardiopulmonary bypass with hypothermic circulatory arrest (CPB–HCA) or veno–venous bypass (VVB) at the time of nephrectomy and IVC thrombectomy for renal cell carcinoma. In all cases requiring supra–diaphragmatic IVC access or IVC reconstruction, we were assisted with a cardiothoracic or vascular surgeon, respectively.

**Results:** Of 125 consecutive patients with renal cell carcinoma and IVC thrombus, twenty–one patients required vascular bypass during nephrectomy and IVC thrombectomy (11 male, 10 female), and all patients had either intrahepatic (4) or supra–diaphragmatic thrombus (17). Sixteen patients underwent CPB–HCA, while VVB was utilized in five. The median operative time was 402 minutes (range 248–865) for CPB–HCA and 358 minutes (range 288–478) for VVB. CPB–HCA patients had an estimated blood loss of 900–9000 mL (median 3000), and 1300–4200 mL (median 2300) for VVB. Intraoperative packed red blood cell transfusions ranged from 1–38 units (median 8) for CPB–HCA patients, and 4–12 units (median 6) for VVB patients. Fresh frozen plasma was utilized in thirteen CPB–HCA patients (median 6 units, 1–23), and all VVB patients (median 6, 2–7), as well as platelet transfusion (CPB–HCA median 10 units [0–60], VVB median 0 [0–20]). Patients were maintained on bypass for 16–138 minutes (median 60) during CPB–HCA, and 20–50 minutes (median 29) with VVB. Post–operative cardiac complications with CPB–HCA include atrial fibrillation (2 patients), and one cardiac tamponade requiring mediastinal exploration for hematoma evacuation. One VVB patient had a post–operative myocardial infarction.

**Conclusion:** Although challenging, complete surgical resection offers the best prognosis for those patients with renal cell carcinoma and IVC thrombus. We present our experience in this patient population requiring vascular bypass.
Objective: The utility of the modified Glasgow Prognostic Score (mGPS) calculated from pre-operative C-reactive protein and albumin levels, has been well proven as a predictive tool in patients with various solid organ malignancies, including clear cell renal cell carcinoma. We hypothesize that patients with an mGPS of 0 and 1 have improved survival, when compared to patients with an mGPS of 2.

Methods: Patients who underwent nephrectomy with curative intent and negative surgical margins for renal cell carcinoma between October 2005 and April 2010 were studied. Inclusion criteria required clear cell histology, no nodal or metastatic disease at the time of surgery, and greater than two years follow up time. Demographic and clinico-pathological variables were analyzed as categorical variables with the exception of age and tumor size, which were analyzed as continuous variables. To identify variables associated with recurrence free (RFS) or overall survival (OS), univariate analysis employed chi-square or fisher’s exact test for categorical variables and one-way ANOVA for continuous variables. Variables significant in univariate analysis at p <=0.05 were entered into multivariate analysis which used a backward stepwise regression to identify significant predictors of recurrence or overall survival. Age, ethnicity, gender, tumor T stage, SSIGN, tumor size, tumor grade, pre-operative CRP and mGPS were all included in the multivariate analysis.

Results: Study criteria were met in 132 patients. Mean age was 60.1 years (Range 33–91 years). Of the study population, 65.2% were men. Mean tumor size was 5.10 cm (± 2.97). No patients had T4 disease, while 18.2% had T3, 10.7% had T2, and 71.2 % had T1 disease. Ratios of mGPS scores were 83.6%, 6.2% and 10.2% for 0, 1 and 2 respectively. Age and race had no impact on RFS. On univariate analysis, mGPS score showed a trend toward predicting OS and RFS (p=0.08). On multivariate analysis, there was no difference in OS or RFS for patients with an mGPS of 0 compared to a score of 1 (p=0.99 and p=0.24 respectively). However, patients with an mGPS score of 2 had a statistically significant decrease in OS and RFS (p=0.018 and p=0.03).

Conclusions: In patients with clear cell renal cell carcinoma who have undergone a curative nephrectomy, patients with mGPS of 2 (CRP <10 and albumin <3.5) is an independent predictor of worse overall and recurrence free survival when compared to patients with an mGPS of <2.
Poster Session II – Full Abstract

Poster #150
PRE-OPERATIVE C-REACTIVE PROTEIN AS A BINARY VARIABLE PREDICTS RECURRENCE-FREE SURVIVAL IN PATIENTS WITH RENAL CELL CARCINOMA
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(Presented by: Lindsey Herrel)

Objective: Pre and post-operative C-reactive protein (CRP) levels have been well proven as a predictive tool in patients with clear cell renal cell carcinoma. We hypothesized that CRP measurement as a binary variable of normal (<10 mg/L) versus abnormal (≥10 mg/L) predicts recurrence and overall survival.

Methods: Patients who underwent nephrectomy with curative intent and negative surgical margins for renal cell carcinoma at Emory University Hospital between October 2005 and April 2010 were studied. Study inclusion criteria required clear cell histology, no nodal or metastatic disease at the time of surgery, and greater than two years follow up time. Demographic and clinico-pathological variables were analyzed as categorical variables with the exception of age and tumor size, which were analyzed as continuous variables. To identify variables associated with recurrence free (RFS), univariate analysis employed chi-square or fisher’s exact test for categorical variables and one-way ANOVA for continuous variables. Variables significant in univariate analysis at p <=0.05 were entered into multivariate analysis which used a backward stepwise regression to identify significant predictors of recurrence or overall survival. Age, ethnicity, gender, tumor T stage, SSIGN, tumor size, tumor grade and pre-operative CRP were included in the multivariate analysis.

Results: Study criteria were met in 132 patients. Mean age was 60.1 years (Range 33–91 years). Of the study population 65.2% were men. Mean tumor size was 5.10 cm (SD 2.97 cm). No patients had T4 disease, while 18.2% had T3, 10.7% had T2, and 71.2% had T1 disease. Mean CRP level was 15.08 mg/L preoperatively with 81.1% of patients presenting with a CRP <10 mg/L and 18.9% with CRP ≥10 mg/L. Age and race had no impact on RFS. Patients with a preoperative CRP <10 mg/L had a statistically significant improved RFS on multivariate analysis (p=0.020).

Conclusions: Pre-operative CRP level <10 mg/L is associated with improved RFS in patients compared to those with a CRP ≥10 mg/L, and is an independent predictor, even after adjusting for SSIGN and other common variables. Further studies are necessary to confirm the role of pre-operative CRP in other populations.

Poster #151
PRESENCE OF COEXISTING HYBRID MALIGNANCY IN SOLITARY SPORADIC ONCOCYTOMA
Serge Ginzburg¹, Robert Uzzo¹, Tahseen Al-Saleem¹, Essel Dulaimi¹, Elizabeth Plimack¹, David Kurz², Christopher Miller², Anthony Corcoran¹, Marc Smaldone¹, Rosalia Viterbo¹, David Chen¹, Richard Greenberg¹ and Alexander Kutikov¹
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(Presented by: Serge Ginzburg)

Introduction and Objectives: Reports in urologic literature state that up to 20% of oncocytomas coexist as hybrid tumors with adjacent malignant pathology. This claim deters renal biopsy and, when oncocytoma is found, undermines its validity. Nevertheless, presence of hybrid pathology in a solitary non-familial renal oncocytoma is yet to be fully defined. As such, we examined rates of coexisting malignant and high grade pathology in resected tumors that contained elements of oncocytoma.

Methods: We queried our prospectively maintained kidney cancer database to identify patients with solitary renal tumors who underwent surgical resection. Lesions containing elements of oncocytoma were reviewed. Patients who were characterized as having an oncocylic malignancy, without any presence of a classic oncocytoma, were excluded. Diagnosis of oncocytoma was based on morphological features, with immunohistochemical and/or cytogenetic analysis performed in select cases. All specimens were reviewed by an experienced uropathologist.
**Results:** We identified 1829 patients who underwent partial or radical nephrectomy between 1990 and 2012 at our institution. After excluding multifocal and bilateral masses and patients with hereditary renal pathology, 100 patients were found to have a solitary lesion that contained pathologically−proven elements of oncocytoma. Mean age at the time of surgery was 64 ± 11.1 years [33 – 85], 61% were male and 86% Caucasian. Mean tumor size was 3.7 ± 2.1 cm [1.0−12.0cm]. Tumor anatomic complexity was low in 25%, moderate in 64%, and high in 11%, as quantified by the RENAL nephrometry score. Sixty−nine patients (69%) underwent nephron−sparing surgery. Only 5 patients (5.0%) were documented as having hybrid malignant pathology, all involving a low grade chromophobe RCC. At a mean follow−up of 29 months [0−152], one patient with classic oncocytoma has evidence of a new lesion, away from the previous resection site, and is on active surveillance.

**Conclusions:** In our cohort of patients with a solitary sporadic renal oncocytoma, 5% of tumors contained coexisting hybrid malignancy and no patients exhibited coexisting high grade malignant pathology. We believe that uncertainty regarding hybrid malignant pathology coexisting with oncocytoma should not deter renal biopsy nor undermine its validity.

**Poster #152**

**ANATOMIC COMPLEXITY QUANTITATED BY NEPHROMETRY SCORE IS ASSOCIATED WITH PROLONGED WARM ISCHEMIA TIME DURING ROBOTIC PARTIAL NEPHRECTOMY**

Jeffrey Tomaszewski, Anthony Corcoran, Marc Smaldone, Alexander Kutikov, Rosalia Viterbo, David Chen, Richard Greenberg and Robert Uzzo

Fox Chase Cancer Center, Philadelphia, PA

(Presented by: Jeffrey Tomaszewski)

**Introduction and Objectives:** The Nephrometry Score (NS) is a standardized, reproducible classification system used to quantify salient renal mass anatomy. Our objective was to assess the association between NS and prolonged warm ischemia time (WIT) in patients undergoing robotic partial nephrectomy (RPN) for clinically localized renal masses.

**Methods:** We queried our prospectively maintained kidney cancer database to identify all patients undergoing RPN for localized tumors from 2007−2012. Patients were stratified into low (4−6), medium (7−9) and high (10−12) complexity groups using NS. Patient and tumor characteristics were compared between complexity groups using ANOVA and Chi square tests. Multivariate logistic regression models were used to examine the relationship between NS complexity and warm ischemia >30 minutes adjusting for patient age, gender, race, co−morbiditiy (CCI), body mass index (BMI), estimated blood loss (EBL), tumor location, proximity to the hilum, and collecting system entry.

**Results:** 375 patients (mean age 58±11.6 years, mean CCI 0.98 ±1.3) undergoing RPN for clinically localized renal tumors (mean tumor size 3.1±1.5 cm, mean NS 7.4±1.8) met inclusion criteria. Categorized by NS, patients underwent PN for low (n=165), intermediate (n=186) and high (n=24) complexity tumors respectively. Stratified by complexity, groups differed with respect to age at surgery, tumor size, operative time, proximity to the hilum, collecting system entry, EBL, and operative time (all p values ≤ 0.05). No differences were observed between patient age, race, tumor location, CCI, and BMI. Significant differences in mean warm ischemia time were observed when comparing low (19.4±12.1min), intermediate (28.6±12.8min) and high (36.1±13.7min) NS complexity groups (p<0.0001). Adjusting for confounders, patients with intermediate (OR 2.1 [CI 1.2−3.9]) and high (OR 3.7 [CI 1.1−11.8]) NS complexity were more likely to require prolonged warm ischemia time when compared to patients with low complexity tumors.

**Conclusions:** In our large institutional cohort, quantification of anatomic complexity using Nephrometry Score is associated with prolonged WIT greater than 30 minutes in patients undergoing robotic partial nephrectomy for localized renal tumors. This provides further evidence that tumor objectification using Nephrometry Score facilitates meaningful comparisons in clinical practice.

Source of Funding: Fox Chase Kidney Cancer Keystone grant
Poster #153
UTILITY OF RENAL NEPHROMETRY SCORE FOR PREDICTING DISEASE RECURRENCE OR METASTASES AFTER SURGERY FOR LOCALIZED RENAL CELL CARCINOMA
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(Presented by: Ryan Kopp)

Introduction: Tumor size and TNM staging systems have historically been used in prognostic models for kidney cancer disease recurrence after surgery. We sought to identify if RENAL nephrometry score, which describes anatomical characteristics of the tumor in addition to size, may provide an additional benefit as a prognostic indicator for disease recurrence or metastases.

Methods: Retrospective analysis of patients who underwent partial nephrectomy for renal cell carcinoma at one of three institutions from 2003–2011. We excluded metastatic disease at presentation, urothelial tumors, and patients without RENAL scores. Recurrent disease (RD) was defined as new metastases or local recurrence. RENAL score was analyzed within subgroups based on RD status. Association between RENAL sum and component scores including R, E, N, A, L, and h score and survival from RD was analyzed using Cox-proportional Hazard models. Receiver operating characteristic (ROC) curves were created with area under the curve (AUC) measurements to evaluate the utility of tumor size and RENAL score for predicting RD.

Results: Cohort of 248 patients with median follow-up 26.5 months. RD occurred in 15 patients (6.1%). Mean RENAL sum was 9.4 in those with RD vs. 7.3 in those without, p<0.001. Component scores were higher in the RD group for R (p=0.001), E (p=0.044), and L (p<0.001) scores, but not N score. RD was more likely to have an A score of “x” (p=0.026). Presence of h score was more common in RD (p=0.003). Regression models demonstrated increased risk of RD for RENAL sum 11 (HR 21.8, 95%CI 2.08 – 227.23, p=0.01), and sum 12 (HR 107, 95%CI 5.99 – 1921.52, p=0.001) compared to RENAL sum ≤6. ROC curve (Figure 1) to predict RD using RENAL score (including h) had an AUC of 0.782, p<0.001; tumor size had an AUC of 0.638, p=0.083. Removing the R score from the nephrometry sum equated to an AUC of 0.761, p=0.001.

Conclusion: RENAL performed competitively with tumor size as a prognostic indicator of disease recurrence after surgery, and may have significant performance even without the R score. Larger cohorts with further follow up are needed to determine potential advantages of using RENAL score to assess oncologic risk.
Poster Session II – Full Abstract

Poster #154
ROBOTIC PARTIAL NEPHRECTOMY WITH COLD ISCHEMIA AND ON-CLAMP TUMOR EXTRACTION: RECAPITULATING THE OPEN APPROACH
Khurshid Ghani, Ramesh Kumar, Wooju Jeong, Mani Menon and Craig Rogers
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(Presented by: Khurshid Ghani)

Introduction and Objectives: The ability to ice the kidney and grossly evaluate the excised tumor during open partial nephrectomy has been difficult to replicate in a reliable fashion using a minimally–invasive approach. We describe a reproducible technique for cold ischemia during robotic partial nephrectomy (RPN) with intra–operative tumor assessment.

Methods: A total of five patients underwent RPN with iced cold ischemia and intra–operative tumor assessment, three by a transperitoneal approach and two by a retroperitoneal approach. A Gelpoint® access port (Applied Medical, CA, USA) was inserted through a three–fingerbreadth incision at the periumbilical midline or below the twelfth rib for transperitoneal and retroperitoneal approaches, respectively. The assistant port was inserted through the Gelpoint®. For the retroperitoneal approach, the camera was also inserted through the Gelpoint®. Following hilar clamping, iced saline slush was introduced through the Gelpoint® to cover the kidney surface (figure 1A). Following tumor excision, the tumor was immediately extracted, allowing gross margin assessment by pathology during the renorrhaphy (figure 1B).

Results Obtained: RPN was achieved in all cases with successful introduction of ice slush and tumor extraction while on clamp. Mean pre–operative glomerular filtration rate (GFR) was 88 ml/min/1.73m2 (range 59–102), median renal nephrometry score was 8 (range 6–10), and there was one solitary kidney. Mean cold ischemia time was 21.6 minutes (range 8–37), mean estimated blood loss was 375 ml (range 150–1000), mean total operative time was 267.2 minutes (range 235–330), and mean post–operative stay was 2.4 days (range 2–4). Intra–operative assessment of the excised tumor showed adequate gross margins in all cases and final pathology confirmed renal cell carcinoma with negative surgical margins in all patients. There were no intra–operative or post–operative complications. Mean post–operative GFR at 2–4 weeks was 66 ml/min/1.73m2 (range 52–78).

Conclusions: We describe a reproducible technique for achieving cold ischemia and tumor assessment during hilar clamping for RPN that recapitulates the open approach.
Poster #155
PRECISION OF EXCISION/RECONSTRUCTION AND RECOVERY FROM ISCHEMIA: QUALITY PARAMETERS FOR FUNCTIONAL RECOVERY AFTER PARTIAL NEPHRECTOMY
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(Presented by: Maria Carmen Mir)

Purpose: Parenchymal volume loss, a function of tumor size/location and precision of excision/reconstruction, and recovery from ischemic injury (recoveryisch) are important determinants of renal function after partial nephrectomy. Quality parameters related to these considerations are introduced and evaluated in a conventional series of PN.

Materials and Methods: Volumetric CT was utilized to determine the volume of functional parenchyma before/after surgery, and estimate the amount of parenchyma that could be preserved with an “ideal PN” (preservation of all but the tumor and a 5 mm rim related to excision and loss of vascularity related to reconstruction). Estimated glomerular filtration rate (eGFR) was determined by the MDRD2 equation.

Results: 48 consecutive patients (2008–2009) for whom the eGFR specifically in the operated kidney could be compared pre/post PN were analyzed (inclusion required a high quality CT scan pre/post, and RFS pre/post unless solitary kidney). All reported parameters refer specifically to the involved kidney alone. Median tumor size was 3.6cm. 54% of cases were open; 35% used hypothermia. Median warm ischemia time was 18 minutes; median cold ischemia time was 29 minutes. In most cases a substantial majority of the functioning parenchyma was saved (median=83%, IQR 77–92), and preservation of renal function in the involved kidney (at 6–12 months) paralleled this (median GFR preservation=81%, 70–88), suggesting that volume loss was an important determinant of ultimate renal function. Precision of excision/reconstruction (volume actually saved/volume predicted for an “ideal PN”) averaged 91.5% (84–98); demonstrating that most of the potentially salvageable functional parenchyma was saved. Median recoveryisch (%GFR preserved/%volume preserved) was 99.5% (90.2–110.5), suggesting that most nephrons (>90%) recovered from the ischemic insult experienced during conventional PN.

Conclusions: Quality parameters for functional recovery after PN are introduced with preliminary analysis to illustrate their potential utility. Given the importance of parenchymal volume preservation, precision of excision/reconstruction must be prioritized during PN, but efforts to optimize recoveryisch will also be important.
Poster #156

ASSESSMENT OF KIDNEY CANCER PATIENTS EVALUATED IN A HEREDITARY CANCER CLINIC

Kelly Stratton, Shaheen Alanee, Rohini Rau-Murthy, Kasmintan Schrader, Sohela Shah, Emily Glogowski, Paul Russo, Robert Motzer, Liying Zhang, Zsofia Stadler, Mark Robson, Jonathan Coleman and Kenneth Offit
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(Presented by: Kelly Stratton)

Background: Kidney cancer represents a heterogenous collection of diseases each with potentially unique genetic causes. Identification of patients with familial cancer syndromes has important implications for treatment options and patient education. Here we investigate characteristics of patients evaluated for possible kidney cancer syndromes.

Methods: We performed a retrospective review of patients with a history of kidney cancer referred for evaluation by the Clinical Genetic Service at Memorial Sloan–Kettering between 1999 and 2011. Cancer diagnosis was either self-reported or obtained from pathologic assessment. Genetic testing was performed in accordance with state law. Fisher's exact test was used for statistical analysis.

Results: We identified 86 patients with a kidney cancer diagnosis, of which 49 were women (57%) and 37 men (43%). The median age at diagnosis was 55 (IQR: 20). European ancestry was reported in 37 patients (43%), along with 31 Ashkenazi Jewish (36%), 6 African Americans (7%), 4 Non–Ashkenazi Jewish (5%), 4 Asian (5%), and 4 Hispanic (5%). Kidney cancer represented the primary cancer diagnosis in 46 cases, secondary in 27 and tertiary in 13. Clear cell renal cell carcinoma (RCC) was identified in 22 primary, 14 secondary, and 6 tertiary tumors. Upper tract urothelial carcinoma (UTUC) was identified in 4 primary, 3 secondary, and 6 tertiary tumors. UTUC represented a significantly larger percentage of tertiary than primary diagnoses (46 vs 9%, p<0.05). Genetic testing identified mutations in 18 patients. Six patients (all UTUC) with mutations associated with Lynch syndrome, 4 with hereditary leiomyomatosis and renal cell cancer (HLRCC), 3 with hereditary breast–ovarian cancer syndrome, 2 with Von Hippel–Lindau, and 1 each of Birt–Hogg–Dubé, MEN2a, and Muir–Torre Syndrome mutations. Three of 6 patients with HNPCC had a tertiary cancer diagnosis of UTUC.

Conclusions: Early identification of patients with familial cancer syndromes is important for appropriate disease management and patient counseling. Clear cell RCC represents the most common diagnosis in patients referred to CGS with renal malignancies.

Poster #157

INCREASED INTRA-ABDOMINAL FAT PREDICTS PERIOPERATIVE COMPLICATIONS FOLLOWING MINIMALLY INVASIVE PARTIAL NEPHRECTOMY

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(Presented by: Michael A. Gorin)

Introduction and Objectives: Body mass index (BMI) is often used as a crude metric to predict the risk of surgical complications. When studied systematically, however, BMI has not been uniformly shown to be associated with complications of minimally invasive partial nephrectomy (PN). The objective of this study was to evaluate the anthropometric measurements of BMI, outer–abdominal fat (OAF) and intra–abdominal fat (IAF) for their utility in predicting perioperative complications following minimally invasive PN.

Methods: We retrospectively reviewed the clinical data of patients who underwent a robotic–assisted or laparoscopic PN between August 2006 and July 2012 by a single surgeon. Measurements of OAF and IAF were obtained from preoperative cross–sectional imaging available through our institution’s imaging archive. Preoperative clinical parameters, including BMI, OAF and IAF, were evaluated for associations with postoperative complications, operative time and length of hospital stay.

Results: In total, 257 patients underwent a laparoscopic or robotic PN. Of these patients, 195 (75.9%) had preoperative scans available for analysis of OAF and IAF. A total of 52 patients experienced a Clavien grade I–IV complication within 30 days of surgery. Of the 52 complications, 18 (34.6%) were grade III/IV. No patient experienced a grade V complication. On multivariate analysis, only IAF (OR 1.05 [95% CI 1.02–1.09], p < 0.01) was associated with grade I–IV complications, while IAF (OR 1.05 [95% CI 1.00–1.10], p = 0.04) and intermediate to high nephrometry complexity (OR 5.31 [95% CI 1.47–19.17], p = 0.01) were associated with grade III/IV complications.

Conclusions: IAF is independently associated with the risk of complications following minimally invasive PN. With further validation, this measurement may prove useful in the preoperative risk stratification of patients with small renal masses.
Poster #158
NEPHRON SPARING WITH PARTIAL URETERECTOMY PROVIDES ONCOLOGIC OUTCOMES EQUIVALENT TO RADICAL NEPHROURETERECTOMY
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(Presented by: Aditya Bagrodia)

Purpose: Data on oncologic efficacy of partial ureterectomy (PU) in patients with upper tract urothelial carcinoma (UTUC) is sparse. We compared outcomes in an international cohort of patients who underwent either PU or radical nephroureterectomy (RNU) for UTUC.

Materials and Methods: A subgroup of patients from the UTUC Collaboration with operation classified as PU or RNU was utilized (n=835). Clinicopathologic outcomes were evaluated. Survival was assessed with Kaplan–Meier method. Cox regression addressed recurrence-free survival (RFS) and cancer-specific survival (CSS).

Results: Median age and follow up were 69 years (range 32–97) and 34 months (range 1–246) respectively. Relapse occurred in 28.5% of patients (19.6% local, 8.9% systemic). At analysis, 180 patients (21.6%) died from UTUC. Eighty-one patients (9.7%) underwent PU and 754 (90.3%) underwent RNU. High tumor grade (77.3% vs. 55.6%, p<0.001) and advanced T stage (>T1, 41.7% vs. 30.9%, p<0.001) were significantly more common in the RNU cohort. Significantly more patients in the PU group received adjuvant chemotherapy than the RNU arm (25.9% vs. 16.8%, respectively, p=0.05). Kaplan–Meier median 5 year survival for RFS (69.4% vs. 75.9%, p=0.06) and CSS (67.5% vs. 72.1%, p=0.06) were not significantly different between PU and RNU (Figure 1). Analyzing only patients with ureteral tumors, Kaplan–Meier 5 year survival for RFS (59.5% vs. 70.9%, p=0.53) and CSS (67.4% vs. 73%, p=0.21) were not significantly worse for PU than RNU. On multivariable analysis for all patients, Eastern Cooperative Oncology Group performance status, tumor stage, tumor necrosis, and lymph node status were significantly associated with cancer specific survival. On multivariable analysis incorporating tumor grade, stage, and LVI in the subset of patients that received PU, tumor stage was the only independent predictor of survival.

Conclusion: In patients with UTUC, PU appears to provide oncologic efficacy equal to RNU. Ability to maximize global renal function with utilization of PU is an attractive strategy in carefully selected patients and may allow for optimal adjuvant chemotherapy regimens to be administered.
CANCER SPECIFIC SURVIVAL IN LOW GRADE, LOW STAGE UPPER TRACT UROTHELIAL CARCINOMA PATIENTS UNDERGOING RADICAL NEPHROURETERECTOMY VERSUS NEPHRON SPARING MEASURES

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(Presented by: Jay Simhan)

Introduction and Objectives: Recent reports suggest equivalent oncologic efficacy for low grade, low stage upper tract urothelial carcinomas (UTUC) managed through conservative, nephron−sparing (NSM) measures compared to radical nephroureterectomy (NTxU). We compared overall and cancer−specific outcomes between UTUC patients managed with NTxU and those managed through NSM using a large national dataset.

Methods: Using SEER data, patients diagnosed with low grade Ta/T1N0M0 UTUC were stratified into two groups: those treated through NTxU or NSM (surveillance, endoscopic ablation, or segmental ureterectomy). Cancer and non−cancer specific mortality rates were determined using cumulative incidence estimators. Adjusting for clinical and pathologic characteristics, the associations between surgical type, overall survival, and cancer specific survival were tested using Cox regressions and Fine and Gray regressions, respectively.

Results: Of 1,227 patients (mean age 70.2±11.0yrs, 63.2% male) meeting inclusion criteria, 907 (73.9%) and 320 (26.1%) patients underwent NTxU and NSM for low grade, low stage UTUC from 1992–2008. Conservatively managed patients were older (mean age 71.6 vs. 69.7yrs, p<0.01) with a greater proportion of well differentiated (G1) tumors (26.3% vs. 18.0%, p=0.001). There were no differences between groups with regard to gender, marriage status, or race. While there were differences in other cause mortality observed between the two groups (p<0.01), cancer−specific mortality trends were equivalent. Following adjustment, NTxU treatment was associated with improved non−cancer cause survival (HR=0.78, CI [0.64−0.94]) while no association with cancer−specific mortality was demonstrable (HR=0.89, CI [0.63−1.26])

Conclusions: Patients with low grade, low stage UTUC managed through NSM have similar cancer−specific survival rates to those managed with NTxU. These data may be useful when counseling UTUC patients with significant competing comorbidities.
Poster #160
SURVIVORSHIP CARE IN CANADIAN GENITOURINARY ONCOLOGY: TOWARDS A MULTIDISCIPLINARY PERSPECTIVE
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(Presented by: Ashraf Almatar)

Purpose: Genitourinary (GU) cancer survivors comprise nearly 25% of cancer survivors and >50% of all male survivors. To further improve care of this patient population, we need to better understand physician specialist perceptions of survivorship care.

Material and Methods: All urologists and those radiation and medical oncologists treating GU cancers in Canada were surveyed with a web-based questionnaire. Twenty seven multiple choice and Likert scale questions were developed in 5 domain areas to capture demographic data, current post cancer treatment care practice, perspectives on barriers to survivorship care, accessibility to survivorship resources, and perspectives about advocacy groups. The questionnaire was sent by e-mails lists provided from the respective professional association headquarters.

Results: There were 306 responses and 260 were eligible for analysis; 125 from urologists, 90 from radiation oncologists and 45 from medical oncologists. A total of 56% of physicians discharged GU cancer survivor follow-up care to a general practitioner at some point after treatment. Urologists across the country, medical and radiation oncologists practicing in Quebec or working in a community hospital mostly reported they do not refer treated patients to the general practitioner, 18%, 22% and 21%, respectively. Only 47% of physicians consistently provided a written follow up plan to the primary care physicians and only 25% of these provided lifestyle recommendations. The lack of time and resources were the most commonly reported barriers. About half of the physicians think that access to cancer rehabilitation programs is difficult and British Colombia was the most frequently cited region without access. Urologists compared to the other subspecialties, thought that psychosocial support, pain management and genetic counselling were more difficult to access and in general, physicians in community hospitals had the most difficulties. Utilization of advocacy groups was limited, e.g. 23% for prostate cancer. The most underutilized advocacy group was for testis cancer, 4%.

Conclusion: To our knowledge this is the first study to address the challenges of GU cancer survivorship care in Canada. The barriers and accessibility of survivorship care quoted in this survey may be used to plan better care for this group of patients. Underutilization of the advocacy groups may stimulate the advocacy groups and institutions to address possible causes and propose solutions.
Poster #161
A COMPARISON OF PEDIATRIC, ADOLESCENT AND ADULT TESTICULAR GERM CELL MALIGNANCY
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(Presented by: Nicholas Cost)

Introduction and Objectives: Testicular Germ Cell Tumors (T–GCTs) occur in males from infancy to adulthood, and are the most common solid tumor in males from 15−29yr. Recent investigation has focused on the adolescent and young adult (AYA) cancer population and how they generally suffer worse outcomes than children or adults. Generally, pediatric T−GCTs are perceived as more benign than post−pubertal, adult T−GCTs. However, there are few studies comparing these groups and none that specifically evaluate adolescents.

Methods: We retrospectively reviewed an institutional database of all patients with T–GCT. We organized them into pediatric (0−12yr), adolescent (13−19yr) and adult (≥20yr) cohorts. We compared them in terms of demographics, tumor characteristics, disease stage, treatment type, event−free survival (EFS) and overall survival (OS).

Results Obtained: We identified 413 patients (20 Pediatric, 39 Adolescent and 354 Adult) followed for a median of 2.0yr (0.01−23.6). Median age at diagnosis was 1.4yr (0.29−7.5) in the Pediatric group, 17.3yr (13.0−19.9) in the Adolescents, and 32.0yr (20.0−69.9) in the Adults. Adolescents presented with more advanced AJCC Group Stage than either the children (p=0.018) or adults (p=0.008). Consequently, fewer adolescents were managed with observation and more treated with initial chemotherapy, p<0.0001.

There were more events in Adolescents (13, 33.3%) than in Adults (61, 17.2%) or Children (2, 10.0%). 3yr EFS was 87.2% in the Pediatric group, 59.9% in Adolescents and 80.0% in Adults, p=0.011 (Figure). 5yr OS was 100% in the Pediatric group, 84.8% in Adolescents and 92.8% in Adults, p=0.388. Using a Multivariate Analysis and controlling for AJCC Group Stage, the IGCCCG Risk Classification and Histology, the Hazard Ratio (HR) was: 1 (Reference) for Adults, HR=0.86 (95%CI 0.21−3.61) for the Pediatric group, and HR=2.07 (1.12−3.83), p=0.02 for Adolescents.

Conclusions: We observed lower EFS in adolescent T–GCT patients than in either children or adults. Our data supports the larger interest in adolescent cancer patients, who appear to be a unique population. The next step is identifying which factors place these patients with T–GCT at risk for worse outcomes.

![Figure: Kaplan Meier Curve of Event Free Survival in Pediatric, Adolescent and Adult T-GCT Patients]
Poster #162
LONG-TERM MORTALITY IN PATIENTS WITH GERM CELL TUMORS: EFFECT OF PRIMARY CANCER SITE ON CAUSE OF DEATH
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(Presented by: Shaheen Alanee)

Objectives: To examine the effect of extragonadal tumor site on the risk for cardiovascular, hematopoietic malignancies, and solid cancer–related causes of death.

Methods: Male patients diagnosed with germ cell tumors (GCTs) between 1973 and 2008 were identified from the Surveillance, Epidemiology and End Results (SEER) database, and stratified by site of primary cancer (mediastinal and nonmediastinal extragonadal vs. gonadal). Using competing risk analysis restricted to events that happened at least 5 years after diagnosis, we examined the possible effect of primary tumor site on the risk for death related to hematopoietic malignancies, cardiovascular disorders, and solid cancers in the study cohort.

Results: Of 37,283 patients included in our analysis, 17,715 were diagnosed with nonseminomas and 19,568 with seminomas. Eight hundred and twenty four patients (2%) had mediastinal primary site and 1469 (5%) developed nonmediastinal extragonadal tumors. Patients with mediastinal GCTs had an increased risk for death related to hematopoietic malignancies (hazard ratio [HR] = 8.84; 95% confidence interval [CI]: 3.16–24; P < 0.0001) and cardiovascular disorders (HR = 4.45; 95% CI: 2.52–8.0; P < 0.0001), but no significant difference in risk for dying of solid cancers (HR = 1.46; 95% CI: 0.36–5.9; P = 0.59) compared to patients with gonadal GCTs. Patients with nonmediastinal extragonadal GCTs had a significantly increased risk for dying of cardiovascular disorders (HR = 2.75; 95% CI: 1.67–4.51; P < 0.0001), but not a significantly different risk for dying of hematopoietic malignancies (HR = 0.93; 95% CI: 0.13–6.84; P = 0.94) or solid cancers (HR = 1.45; 95% CI: 0.68–5.0; P = 0.23) compared with patients with gonadal GCTs.

Conclusions: GCT patients with extragonadal primary sites have an increased risk for death from cardiovascular disease and hematopoietic malignancies compared to those with gonadal GCTs, and could benefit from more intense preventive measures to modify their risk for death related to these disorders.

Poster #163
RECURRENCE RATE FOR PATIENTS WITH TERATOMA ONLY AT PRIMARY RETROPERITONEAL LYMPH NODE DISSECTION
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(Presented by: Nick Liu)

Introduction: The objective of this study was to evaluate the clinical outcomes of patients with teratoma only at primary retroperitoneal lymph node dissection (RPLND).

Methods: The Indiana University Testicular Cancer Database was queried to identify patients with teratoma only in the retroperitoneum at primary RPLND. 23 patients met the inclusion criteria. No patient received adjuvant chemotherapy.

Results: Pathologic stage was B1 in 14 patients (61%), B2 in 8 patients (35%), and B3 in 1 patient (4%). At a median follow up of 5.8 years (2.0 – 22.4) the 5-year disease free survival was 94%. Two of the 23 patients recurred both with initial pathologic B1 disease. One patient with primitive neuroectodermal tumor (PNET) in the primary recurred 4 years later with PNET in the lung requiring a partial lobectomy and adjuvant chemotherapy. He is disease-free 2 years from his last surgery. The second patient had a pelvic recurrence 11 years after the initial RPLND. Pathology at surgery revealed embryonal cell carcinoma. He is currently disease-free 12 years after the second surgery.

Conclusions: The recurrence rate for patients with teratoma only at primary RPLND is low. Adjuvant chemotherapy is unnecessary in this population irrespective of pathologic stage.
Poster #164
OVERALL-SURVIVAL INVERSELY RELATED TO THE FREQUENCY OF PERFORMING TRANSRECTAL ULTRASOUND-GUIDED BIOPSY OF THE PROSTATE IN THOSE PATIENTS WITH LOW-RISK TUMORS ELECTING FOR ACTIVE SURVEILLANCE.
David Buethe, Christopher Russell, Binglin Yue, Hui-Yi Lin and Julio Pow-Sang
H. Lee Moffitt Cancer Center and Research Institute
(Presented by: David Buethe)

Introduction: The literature has noted the often indolent nature of low-risk prostate cancer (CaP). Limited benefit of definitive treatment has been observed with respect to prostate cancer-specific mortality (PCSM) in low-risk disease and only small absolute risk reductions in both overall PCSM and incidence of metastasis. Thus, active surveillance (AS) strategies have been adopted; using a digital rectal exam (DRE), serum PSA, and serial transrectal ultrasound (TRUS)-guided biopsy of the prostate to monitor for disease progression with intent for intervention at time of disease reclassification. Yet, the timing and frequency of surveillance remain without evidence-based standardization.

Objective: We assessed the relationship between the frequency of surveillance prostate biopsies and the oncologic outcomes in those patients with low-risk CaP managed by AS.

Methods: Upon IRB approval, a retrospective chart review identified 114 patients placed on AS for their CaP between November of 1997 and November of 2000. Of those, 96 patients meet study inclusion criteria mandating a Gleason sum of < 7, tumor presence in < 4 sextets, involvement of <50% of any single biopsy core. Patient's follow-up had to include at least one surveillance prostatic biopsy. Eligible patients were surveyed by serum PSA, DRE, and surveillance TRUS-guided biopsies at physician determined intervals.

Results: At diagnosis, the mean age was 70.3 (SD±5.3) years with a mean PSA value of 8.2 (SD±8.2) ng/dL. While on AS, patients underwent a median of 3.5 (SD±2.02) TRUS-guided biopsies; at a frequency approaching 1 biopsy every 18 months. At a median follow-up of 134.8 months (95%CI: 114.5, 148.7), multivariate analysis found more frequent prostatic biopsy acquisition to be inversely associated a worse prognosis with respect to both progression-free (p<0.0001) and overall survival (p=0.0002). Both progression-free (p<0.0001) and overall survival (p=0.0207) were progressively shorter as the interval between biopsies declined from greater than 2 years, to 1–2 years, and then less than 1 year. Of those demonstrating progression, no significant survival advantage was gained by receipt of pursuant treatment (p=0.5095).

Conclusions: No survival advantage was achieved by frequent re-biopsy of the prostate. Patients biopsied more frequently were paradoxically found have poorer survival outcomes. Further, subsequent treatment at time of disease progression did not confer survival benefit.
Poster #165
DOES INCREASING THE NODAL YIELD IMPROVE OUTCOMES IN PATIENTS WITHOUT NODAL METASTASIS AT RADICAL PROSTATECTOMY?
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(Presented by: Luis Kluth)

Introduction and Objectives: To determine whether the number of lymph nodes (LNs) removed is associated with the risk of biochemical recurrence (BCR) in patients who had no lymph node metastasis at the time of radical prostatectomy (RP).

Methods: We retrospectively analyzed data from 7310 patients treated at seven referred centers with RP and pelvic lymph node (PLND) without preoperative radiotherapy, hormonal treatment, or chemotherapy. BCR of patients who had no LN metastasis (n = 6540) were examined according to the LN yield analyzed as continuous variable, tertiles, and using the cutoffs of ≥6, ≥10 and ≥20.

Results: The median number of LNs removed was 6 (interquartile range (IQR): 8, range 1–77). A total of 3698 (57%), 2064 (32%) and 508 (8%) patients had ≥6, ≥10 and ≥20 LNs removed, respectively. Within a median follow-up of 21 months (IQR: 16), a higher number of LNs removed was associated with an increased risk for biochemical recurrence (continuous: HR = 1.018, p=0.021; 3rd vs 1st tertile: HR = 1.416, p=0.014). In multivariable analyses that were adjusted for the effect of standard clinical and pathologic factors, none of the nodal stratifications predicted BCR (continuous, tertiles, cutoffs of ≥6, ≥10 and ≥20: all p>0.05). The same was true in patients with high risk PCa, regardless of the biologic aggressiveness of the cancer.

Conclusion: The lack of prognostic significance suggests that a higher LN yield does not impact the risk of BCR in patients who had no LN metastasis at the time of RP in this large multicenter cohort. In contemporary RP, increasing the number of LNs removed does not seem to lower BCR rates. This would suggest that the risk of missed micrometastases is minimal in contemporary RP series treated of referral centers.

Poster #166
WITHDRAWN
Poster #167
POST TRANSRECTAL ULTRASOUND GUIDED PROSTATE (TRUS) BIOPSY COMPLICATION
Neeti Bagadiya¹, Denisse Andrade², Sofia Gondal², Louis Kavoussi², Carl Olsson³ and Manish Vira²
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(Presented by: Neeti Bagadiya)

Introduction: There has been a recent observed increase in post prostate biopsy infection and complications. Prior studies have reported up to 6.9 percent per month post procedure hospitalization rate and a 69/1000 rate of complications. There is considerable variability in management and patient specific co-morbidities that may contribute to the nature and severity of complications. The objective of the current study is to assess the complication rate and to identify factors that may predict sepsis among those patients presenting with infectious complications following transrectal ultrasound guided biopsy of the prostate.

Method: A total of 19,143 patients were biopsied at in the North Shore LIJ Health System and Integrate Medical Professionals from 2009–2011. A total of 230 patients were admitted post biopsy, of which 100 were admitted to Health System hospitals (for which we have access) for infectious complications within 2 weeks of biopsy. A retrospective chart review was performed and demographics, co-morbidities, procedural parameters, antibiotic use, microbiology culture results, hospital course, and clinical outcome were recorded. The Clavien Score was assigned for each patient to classify the complication.

Results: We found an overall 1.2% admission rate an average of 2.8 days post biopsy. Among the patients who were admitted, 27% had significant comorbid illness including 27% cardiovascular, 15% pulmonary and 11% renal insufficiency. 90% of the patients presented with fevers and chills with mean temperature of 100.6 F. Following admission, 25 patients progressed to sepsis of which 16 developed severe septic complications (evidence of multi-organ system dysfunction). 7% of patients were admitted to the ICU during their hospital admission. 47% of the patients had positive blood cultures. Escherichia coli was the most common pathogen (93%) with 8 producing Extended–spectrum–beta–lactamase. Overall, 25% developed Clavien class 3 and 4 complications. The major limitation of the study was its retrospective hospital–based nature.

Conclusion: We found a significant overall rate of admission due to infectious complications after TRUS biopsy. 25% progressed to suffer a major complication during their hospital course. We also found that a significant number of these patients to have history co-morbidities, which may indicate potential independent risk factors for complicated hospital course following TRUS biopsy upon further analysis.

Poster #168
PROSPECTIVE PATIENT-REPORTED URINARY CONTINENCE (UC) AND SEXUAL FUNCTION (SF) AFTER ROBOTIC-ASSISTED LAPAROSCOPIC (RALRP) AND OPEN RADICAL PROSTATECTOMY (ORP)
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(Presented by: Joseph Klink)

Introduction: RP may negatively impact UC and SF, but this may be technique–dependent (RALRP vs. ORP). We compared UC and SF among patients treated by RALRP and ORP at a high–volume hospital who were enrolled in a prospective, longitudinal quality–of–life (QOL) protocol.
**Methods:** From 2007 to 2012, 516 patients treated by RALRP, ORP, brachytherapy, cryotherapy and active surveillance were enrolled in a QOL protocol at our institution. The focus of this study is 361 patients who were treated by RALRP (N=190) and ORP (N=171). Functional outcomes were assessed at baseline and at 1, 3, 6, 12, and 24 months using a validated QOL instrument (Giesler RB et al. Qual Life Res 2000). SF was assessed by adding the scores from questions on the quality and frequency of erections. UC was assessed by adding the scores from three questions about the frequency and quantity of incontinence and pad usage. Wilcoxon rank sum test and linear regression multivariable analysis were used to assess SF and UC at each time point.

**Results:** Treatment groups were similar in age, PSA, clinical stage, Gleason grade, BMI, baseline UC and SF scores and baseline PDE−5 inhibitor use (all P > 0.05), but the RALRP patients were slightly older (60 vs 61 years, p=0.04) and had larger prostates (38 vs 44 grams, p=0.001). On multivariate analysis, UC was worse in the RALRP cohort at 1 month (12.0 vs 10.9, P = 0.02), 3 months (9.9 vs 8.5, P = 0.01), and 6 months (8.1 vs 6.8, P=0.01) but was similar at 12 and 24 months (all P > 0.2). SF was similar between both RALRP and ORP at all time points (all P > 0.3). At 24 months, UC for RALRP and ORP was 7.1 vs. 6.4, respectively which was not significant in multivariable analysis (P = 0.5). Likewise, SF for RALRP and ORP was 5.3 vs. 6.2 (multivariable P = 0.9). On repeated measures analysis there was no difference between the groups in UC or SF (P=0.4 and 0.5, respectively).

**Conclusions:** In a high−volume hospital, prospectively collected, patient reported QOL endpoints for SF are similar after RALRP and ORP at all time points. Final UC is similar between both techniques, although RALRP patients may experience a slightly slower return to continence.

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**Urinary Continence Score**

- **Open Prostatectomy**
- **Robotic Prostatectomy**

**Sexual Function Score**

- **Open Prostatectomy**
- **Robotic Prostatectomy**
**Poster #169**

**POPULATION-BASED ANALYSIS OF GENITOURINARY COMPLICATIONS FOLLOWING PROSTATE NEEDLE BIOPSY**

Amit Patel¹, Beatrix Choi², Christopher Lyttle² and Sandip Prasad³

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(Presented by: Amit Patel)

**Introduction and Objectives:** The patterns of utilization of antibiotic use prior to prostate needle biopsy (PNB) and associated post-biopsy genitourinary (GU) complications are not well characterized nationally. We sought to longitudinally compare trends of infectious complications and utilization trends of prophylactic antibiotic use for PNB.

**Methods:** We conducted an observation study using MarketScan data from 2003–2010. Patients age 40 – 64 who underwent PNB were included. We excluded patients with prior GU complications or chronic GU diagnoses 6 months prior to the index PNB date. Demographic information included age, region, rural vs. urban setting, comorbidities, and antibiotic prophylaxis used. Antibiotics were grouped by class and included only if frequency of use was greater than 500 patients. Multiple logistic regression analyses were used to explore associations of covariates with complications.

**Results:** The study sample contained 171,004 patients, of which 3,534 (2.1%) had a GU complication following PNB. Complications included prostatitis in 1,695 (0.99%), UTI/cystitis in 2062 (1.21%), orchitis/epidydimitis in 98 (0.06%) and obstruction in 175 (0.1%). Complication rates did not vary with respect to age, but increased over the study period (correlation coefficient = 0.093, P=0.009). North Central (OR 0.73; 95%CI 0.66−0.79, P<0.001) and West (OR 0.71; 95%CI 0.64−0.78, P<0.001) regions were less likely to have complications than the South (1.71% and 1.67% vs. 2.35%). Patients with 2 or more comorbidities or diabetes were associated with complications (OR 1.2; 95%CI 1.1−1.3, P<0.001) and OR 1.24; 95%CI 1.13−1.36, P<0.001). Fluoroquinolone use was associated with the lowest complication rates (1.6%) compared to the other prophylactic regimens that were observed. Patients given fluoroquinolones (OR 0.78, 95%CI 0.72−0.85, P<0.001) were less likely to have complications following PNB, while patients given sulfa (OR 1.76, 95%CI 1.4−2.2, P<0.001), penicillins (OR 1.48 95%CI 1.1−1.9, P<0.001) cephalosporins (OR 1.79, 95%CI 1.4−2.2, P<0.001) were more likely to have complications.

**Conclusions:** GU complications following PNB increased from 2003–2010. Multiple factors appear to be associated with complications, but type of antibiotic prophylaxis appears to be the strongest predictor for complications following PNB.

**Funding:** Institute for Translational Medicine Core Subsidies Grant #UL1RR024999

**Poster #170**

**READABILITY ASSESSMENT OF INTERNET-BASED PATIENT EDUCATION MATERIALS RELATED TO ACTIVE SURVEILLANCE FOR PROSTATE CANCER**

Richard Johnston, Elysia Spencer, Claudio Jeldres and Chris Porter

VMMC

(Presented by: Richard Johnston)

**Introduction:** Over the past decade the percentage of Americans who regularly access the internet has more than doubled to over 80%, with increasingly precise search terms. Most professional societies, commercial entities, and universities/hospitals provide Internet–based patient education materials (PEMs). The US Department of Health Services recommends that PEMs be written between the 6th and 8th grade levels. We assessed the readability of information on active surveillance (AS) for management of prostate cancer (CaP) available on the Internet and compared readability levels of PEMs provided by three different sources types from eight geographical locations.
Methods: Using a virtual network program to set our ISP address to five different geographic locations within the USA and also to locations in Australia, England, and Canada, we searched on Google using the key terms ‘prostate cancer active surveillance’. We recorded the source type and assessed the readability of AS related PEMs using three different readability indices: Flesch–Kincaid Grade Level (FKGL), Flesch Reading Ease Score (FRES), and Simple Measure of Gobbledygook (SMOG). Averages were evaluated against national recommendations, and between each source and geographic location using analysis of variance and t−tests.

Results: All unique PEMs (100%) were written above the recommended reading level, based on FKGL and SMOG. Only one article of 31 (3.2%) had an FRES at or below the recommended level. The mean readability values were: FRES $42.2 \pm 13.4$, FKGL $13.3 \pm 2.4$ and SMOG $15.8 \pm 1.6$. There was no significant variation in PEM readability by geographic location or source type.

Conclusions: Current Internet–based PEMs related to AS for CaP, regardless of source type or geographic location, were written above the recommended grade level. Materials from hospital websites had better readability but were still above recommended levels. We recommend that authors of PEM’s consider the readability of online material. Since patients under AS that have a high degree of cancer–related anxiety are more likely to choose to undergo treatment, it is critical that patients have access to understandable PEMs regarding the well–established safety and efficacy of AS.
Background: 2009 AJCC prostate cancer staging subclassifies T2 cancer into 3 subcategories. T2a tumors occupy one half or less of one lobe, T2b tumors occupy more than one half of a lobe, while T2c tumors involve both lobes. The validity, prevalence and prognostic significance of T2b staging is under debate. We examine the incidence, positive margin rates, and mean months to biochemical recurrence for clinical and pathologic T2 prostate cancer.

Methods: Our IRB approved, prospectively maintained robotic radical prostatectomy database was retrospectively examined. Patients who underwent surgery from January 1, 2004-December 31, 2011 were included. Clinical and pathologic T2 prostate cancer was identified. Corresponding margin positive rates and mean months to biochemical recurrence were determined. Univariate analysis was performed using SPSS v 14.0 (SPSS, Inc., Chicago, IL, USA.). Kaplan Meier curves were generated to determine months to biochemical recurrence and statistical significance was determined with log rank testing. P values <0.05 were considered significant and adjusted when appropriate using the Bonferroni method.

Results: 2,687 patients underwent surgery during this time period. There were 295 cT2a, 158 cT2b, 24 cT2c, and 25 cT3a prostate cancers. There were 178 pT2a, 37 pT2b, and 1,354 pT2c prostate cancers. The positive margin rates for cT2a, cT2b, cT2c, and cT3a were 20.1%, 32.5%, 25.0%, and 45.8% respectively while the mean months to biochemical recurrence were 69.2, 54.2, 37.7, and 30.2 (Table 1). The positive margin rates for pT2a, pT2b, and pT2c were 7.5%, 18.9%, and 16.5%, respectively while the mean months to biochemical recurrence were 74.9, 55.0, and 77.5 (Table 2).

Conclusions: Gleason score, positive margin rates, and biochemical recurrence differ significantly among the substages of cT2 prostate cancer. However, there were no significant differences between the Gleason score, positive margin rates, and biochemical recurrence of pT2b and pT2c prostate cancers. These findings, coupled with the low incidence of pT2b cancers, support the elimination of pT2b substaging.
Poster #172
IS ACTIVE SURVEILLANCE ASSOCIATED WITH ADVERSE PATHOLOGIC OR SURGICAL OUTCOMES IN MEN EVENTUALLY CHOOSING DEFINITIVE TREATMENT WITH ROBOTIC RADICAL PROSTATECTOMY?
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¹University of Connecticut School of Medicine, Farmington CT; ²University of Connecticut School of Medicine, Division of Urology, Farmington CT; ³Hartford Hospital, Hartford CT
(Presented by: Kristen Scarpato)

Introduction and Objectives: Many men with low risk prostate cancer choose active surveillance (AS) as opposed to definitive treatment such as initial robotic prostatectomy (RP) with the hope that opportunity for surgical cure will not be lost and in an effort to avoid the morbidity associated with definitive treatment. We evaluate whether a delay in definitive treatment with RP secondary to an initial treatment decision of AS was associated with adverse pathologic features, inability to perform nerve sparing surgery and biochemical recurrence.

Methods: From our RP database we identified men with low risk prostate cancer (prostate-specific antigen (PSA) <10 ng/mL, biopsy Gleason sum ≤6, cancer involvement of <33% of biopsy cores, and clinical stage T1/T2a tumor) who were managed with initial AS, all of whom eventually underwent RP. Two control groups were selected: Control 1 was based on biopsy data at the time of diagnosis and Control 2 was based on biopsy data just prior to surgery. All unique patients fitting matching criteria (year of engagement +/-1 year, PSA Partin Table Category (0−2.5, 2.6−4.0, etc), percent positive cores +/- 10%, clinical stage and Gleason score) were included. Ability to perform nerve sparing surgery, adverse pathologic features, and biochemical recurrence were compared between the study group and each control group.

Results: See Table

Conclusion: For men with low risk prostate cancer, treatment with AS followed by delayed RP impacted the incidence of bilateral nerve sparing surgery. There was an association between delayed RP and adverse pathologic features when comparing our cohort to a group of men with similar parameters at the time of diagnosis who chose treatment with initial RP. Since many men went on to surgery due to upgrading on surveillance biopsies, this was not unexpected. We hypothesized that close monitoring and multiple surveillance biopsies would correlate with improved pathologic outcomes compared to patients who had undergone one set of biopsies and immediately underwent surgery. This was not the case as our cohort had the same outcomes when comparing them to men with similar parameters just prior to surgery who were not an on AS protocol.

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Table: Active Surveillance Outcomes
Poster #173
MICRORNA-124 SUPPRESSES PROSTATE TUMOR GROWTH BY DOWN-REGULATING THE EXPRESSION OF ANDROGEN RECEPTORS AND THEIR SPLICE VARIANTS IN CW22-RV1 IN-VIVO MODEL
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¹UC Davis Medical Center, Department of Urology, Sacramento CA; ²UC Davis Medical Center, Department of Urology, Department of Biochemistry, Sacramento CA; ³UC Davis Medical Center, Department of Urology, UC Davis Comprehensive Cancer Center, Sacramento CA
(Presented by: Hao Nguyen)

Introduction and Objective: The androgen receptor (AR) and its splice variants play a central role in the progression to castrate-resistant prostate cancer (CRPC). The unique ability of microRNA to modulate the expression of genes important to prostate cancer progression can be exploited for therapeutic intervention. We hypothesize that microRNA−124 (miR124), unlike androgen receptor signaling inhibitors, targets both AR and it’s alternatively splice variant V7 (AR−V7) in CWR22−Rv1 cells and delays the development of CRPC.

Materials and Methods: miR124 was introduced into CWR22−Rv1 cells transiently using Lipofectamine 2000 and stably using lenti−virus system. To determine the expression of AR and AR−V7, we used Western Blot analysis with specific antibodies to full−length AR and the variant. Real−time quantitative PCR was employed to evaluate the mRNA level of AR and alternate splice variants AR−V1, AR−V3, AR−V4, and AR−V7. Xenograft mouse model using subcutaneous injection with CWR22−Rv1 cells stably over−expressing miR−124 was used to evaluate the effect of miR124 on tumor growth in−vivo.

Results: miR124 was identified as key regulators of AR spliced variants AR−V7 and AR−V3. We showed that miR124 significantly down−regulated the expression of AR−V7 at the post−translational level (about 70% reduced expression) and AR−V3 at the post−transcriptional level (35% reduced expression). It modestly down−regulated full−length AR expression in addition to suppressing the AR signaling targets, including the anti−apoptosis protein Survivin. Xenograft tumors with enhanced expression of miR124 showed significant reduced levels of both full−length AR and AR−V7 (80% and 90% respectively), resulting in reduced tumor growth.

Conclusion: Our study demonstrated the novel finding that miR124 significantly suppresses the full length AR expression and its alternative splice variants, AR−V7 and AR−V3 and their downstream targets. We showed in preclinical setting, that miR124 is a potential therapeutic opportunity to delay the development of CRPC. We have shown that miRNA 124 can be delivered systemically, a prerequisite for its clinical use.

Poster #174
MEASURING THE CLINICAL IMPACT OF THE USPSTF GRADE D RECOMMENDATION OF PSA SCREENING: EVALUATION OF PSA UTILIZATION, PSA REFERRAL PATTERNS, AND PROSTATE BIOPSY IN A LARGE MULTISPECIALTY HOSPITAL SYSTEM
Timothy Tausch¹, Deo Perez² and Douglas Sutherland³
¹Madigan Hospital; ²MultiCare Health System; ³MultiCare, Tacoma WA
(Presented by: Douglas Sutherland)

Introduction and Objectives: The impact of the 2011 United States Preventive Services Task Force (USPSTF) grade ‘D’ rating for prostate cancer screening is unknown. We examined rates of the prostate specific antigen (PSA) testing, urologic referrals, and prostate biopsies performed within a single large hospital system to detect the impact, if any, of the USPSTF recommendations.

Methods: The research was authorized by the MultiCare Hospital System (MHS) quality assurance committee as part of a broad assessment of PSA practices within the system, and therefore IRB approval was not sought. MHS is a 450−member multidisciplinary hospital system based in Tacoma, Washington, that employs two urologic practices. We retrospectively measured new referrals for elevated PSA, the overall number of prostate biopsies performed, and the number of PSA tests ordered by the entire organization, during the six months preceding October 2011 (when the draft USPSTF recommendations were published) to the July 31, 2012.
**Results:** A total of 8 urologic providers (6 MD, 1 PA, 1 ANRP) were included in the analysis. During the 9 months period after the USPSTF PSA recommendation was made public, we noted a 17% decrease in the number of referrals for elevated PSA. Overall, a 22% reduction in prostate biopsies was found, and when excluding men undergoing prostate biopsy as part of an active surveillance protocol, the decline was 16%. The total number of PSA test performed by the MHS laboratory was 5%.

**Conclusions:** While the true impact of the USPSTF recommendations will take years to assess, the draft recommendations have had little effect on the absolute number of PSA tests ordered in our system, however there was a noticeable decline in urologic referrals for elevated PSA and prostate biopsies following their publication.

**Funding:** None

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**Poster #175**  
**A PHASE 1 PILOT STUDY OF 99MTC-MIP-1404 SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY (SPECT)/CT IMAGING IN MEN WITH PROSTATE CANCER UNDERGOING RADICAL PROSTATECTOMY**  
David Green¹, Joseph Osborne¹, Anastasia Nikolopoulou¹, Shankar Vallabhajosula¹, Stanley Goldsmith¹, Brian Robinson¹, Sagit Goldenberg¹, John Babich² and Douglas Scherr¹  
¹Weill Cornell Medical College; ²Molecular Insight Pharmaceuticals  
(Presented by: David Green)

**Introduction and Objectives:** Imaging Prostate Cancer (PCa) lesions within the gland is challenging with conventional imaging modalities. Theoretically, Prostate specific membrane antigen (PSMA) based imaging could help delineate not only specific lesions, but also differentiate between aggressive and indolent disease (as PSMA is up-regulated in aggressive cancers). Using the small molecule antagonist to PSMA, 99mTc-MIP-1404 (study drug), we conducted a Phase I Single Photon Emission Computed Tomography (SPECT)/CT imaging trial in patients scheduled for radical prostatectomy (RP). We hypothesized that our targeted imaging would pre-operatively predict PCa lesion location.

**Methods:** Patients diagnosed with localized PCa who were scheduled for RP participated in this study. Inclusion criteria were: a) Gleason ≥7 with ≥3 biopsy cores positive, and at least one core ≥30% involved with PCa OR b) presence of any Gleason ≥8. Within two weeks of RALP, subjects were injected with a single IV dose of study drug followed by SPECT/CT scan at 3–6 hours. Prostates were processed in standard fashion and stained for PSMA. SPECT studies and pathologic specimens were analyzed for the presence of PCa on a six sector grid (Right and Left; Base/Mid/Apex).

**Results:** Eight patients completed the study yielding 48 evaluable prostate sectors. 40 of 48 sectors contained a PSMA+ prostate cancer nodule. The dominant tumor nodule was detectable by imaging in all 8 patients and correlated with pathological location within the prostate. As expected, imaging detection, in part, depended upon both PSMA concentration and tumor volume(Fig.1). When stratified by Gleason grade, imaging detection occurred in 3/6(50%) Gleason 6, 9/16(56%) Gleason 3+4, 4/6(66%) Gleason 4+3, and 9/12(75%) Gleason 9 regions.

**Conclusion:** Our novel PSMA–based small molecule SPECT imaging may be able to visually distinguish aggressive from indolent disease as evidenced by the trend towards improved detection with increasing Gleason grade. Further development of this modality should include exploring its role in guiding focal therapy. Limitations of our study include the small sample size and the limits of SPECT resolution.

**Funding:** Molecular Insight Pharmaceuticals, Inc.

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**Figure 1**

Thick horizontal arrow: Gleason 9; Diagonal arrow: Gleason 7
Introduction and Objectives: Success of salvage radiation therapy (SRT) for recurrent prostate cancer (PC) after radical prostatectomy (RP) depends on eradication of local microscopic disease. As SRT results in log killing, the fewer tumor cells present, in theory should lead to better response. Clinically, when done for PSA <1 ng/mL, SRT results are better. However, in the <1 ng/mL range (i.e. when all tumors are “small”), the best PSA cut−off to predict SRT outcomes is unclear. We examined if pre−SRT PSA divided in groups was associated with SRT outcomes.

Methods: In SEARCH, we identified 288 men with recurrent PC who started SRT ≥6 months after RP without hormonal therapy. Two men with positive lymph nodes were excluded. We analyzed pre−SRT PSA in 4 groups (0.2−0.5, 0.51−1.0, 1.01−1.5 and >1.5 ng/mL) and defined SRT failure as PSA >0.2 ng/mL above post−SRT nadir. We tested if pre−SRT PSA was associated with SRT failure using log−rank test and Cox models adjusted by pre−RP PSA, Gleason score (GS), margins, seminal vesicle invasion and race.

Results Obtained: Of 286 men, 145 (51%) were white, 130 (46%) were black and 11 (4%) were from other races. Median pre−SRT PSA was 0.33 ng/mL (IQR:0.15−0.8) and distribution in PSA groups were: 0.2−0.5 (50%), 0.51−1.0 (23%), 1.01−1.5 (12%) and >1.5 (15%). Predominant GS was 7 (59%), followed by GS 2−6 (29%) and GS 8−10 (12%). Margins and seminal vesicles were positive in 64% and 14% of men, respectively. With median follow−up of 49 months, 76 men (27%) had SRT failure. Pre−SRT PSA was associated with SRT failure (log−rank:P<0.0001), and PSA groups<1.0 ng/mL had less failure than others (Fig). Race was unrelated to failure (P=0.81). In adjusted analysis, risk of SRT failure was similar between PSA groups of 0.2−0.5 and 0.51−1 (P=0.82), but increased for PSA groups of 1.01−1.5 (HR:2.5, 95%CI:1.2−5.5, P=0.019) and >1.5 (HR:2.6, 95%CI:1.3−5.0, P=0.006) compared to the lowest group.

Conclusions: In a racially−mixed SRT cohort, men with pre−SRT PSA ≤1.0 vs. >1.0 ng/mL had less SRT failure. Within PSA levels ≤1.0 ng/mL, no differences in SRT outcomes were seen, suggesting that, if there is any potential benefit of starting SRT very early in this range, it is likely subtle.(Funding:DoD)
**Poster #177**

**CONTEMPORARY ANALYSIS OF NATIONAL TRENDS OF LYMPH NODE DISSECTION DURING RADIAL PROSTATECTOMY**

Michael Liss, Kerrin Palazzi, Ramzi Jabaji, Kellogg Parsons, David Chang and Christopher Kane  
¹UCSD, San Diego, CA  
(Presented by: Michael Liss)

**Introduction and Objective:** Lymph-node dissection (LND) during radial prostatectomy remains controversial, but can be an important staging tool with potential therapeutic benefits. However, LND can be time consuming and may increase morbidity. We investigated national trends of frequency and extent of LND during minimally invasive and open radical prostatectomy

**Methods:** Using the National Inpatient Sample (NIS) from 2003–2010, we investigated all ICD9 codes for open or minimally invasive prostatectomy with or without lymph node dissection exclusively with the diagnosis of prostate cancer. We used the ICD9 code for iliac lymph node dissection (405.4) to identify those with more extended lymph node dissection. We divided the patients into groups based on open or minimally invasive approach. Groups were compared using Chi–squared analysis and p for trend when appropriate using the STATA statistics program.

**Results:** A total of 461,174 patients were identified having a prostatectomy for the diagnosis of prostate cancer. Comparing ORP and MIS, patients were of the same age (61 +/−&) and insurance status. Patients of Caucasian race, higher income and urban location were more likely to get MISRP (all p<0.05). Of the entire group (ORP and MISRP), 271,201 (58.8%) had a LND performed. LND was performed in 63.5% of ORP and 45.2% of MISRP respectively (p<0.001). The proportion of patients having MISRP, as compared to ORP, increased from 1% in 2003 to 64.5% in 2010. In addition, LND during MISRP steadily increased from 22.7% in 2005 to 52.3% in 2010 (p=0.038). Despite this increase, more LND was performed in ORP compared to MISRP in each year with a median difference of 18.5 (range 15%–40%). Extended LND (ICD9 405.3) to involve the iliac nodes specifically has decreased in ORP from 8.1% to 3.7% from 2003 to 2010 (yearly rates are variable, p trend =0.1932) and is rarely done in MISRP (range 0.9 – 2.5, p trend = 0.345).

**Conclusions:** The penetration of LND during MISRP is increasing however remains lower than during ORP. The increasing utilization of LND during MISRP may be due to increasing surgeon experience, increasing prostate cancer risk of the patients undergoing surgery, or related to reimbursement or other issues. Guidelines regarding the indication for limited and extended lymph node dissection in intermediate and high–risk prostate cancer are needed independent of approach.

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**Poster #178**

**ACTIVE SURVEILLANCE: PREDICTORS OF PATHOLOGICAL RE-CLASSIFICATION ON THE SECOND PROSTATIC BIOPSY.**

Lih-Ming Wong¹, Greg Trottier¹, Neil Flesher¹, Nathan Lawentschuk¹, Girish Kulkarni¹, Alexandre Zlotta¹, John Trachtenberg¹, Ants Toi², Narhari Timilshina³ and Antonio Finelli¹  
¹Division of Urology Oncology, Department of Surgical Oncology, Princess Margaret Hospital, Toronto; ²Department of Radiology, Princess Margaret Hospital, Toronto; ³Division of General Internal Medicine & Clinical Epidemiology, University Health Network  
(Presented by: Lih-Ming Wong)

**Background:** Active surveillance (AS) is a popular method to minimize the morbidity associated with overtreatment of prostate cancer. The proportion of patients who re–classify and leave AS is reported at 9–35%. We examine baseline factors that may predict pathological re–classification on the 2nd biopsy.

**Patients and Methods:** We identified patients from our prospectively maintained, single academic institution, database with PSA <20, Gleason sum (GS) ≤6, stage T1c, ≤ 3 positive cores (PCore) for cancer, <50% of single core involved, age ≤ 75y years and had a repeat biopsy within 48 months after the initial biopsy (n=628). Logistical regression was performed to identify predictors of pathological re–classification on the 2nd biopsy, which was defined as GS ≥7, > 3 PCores and > 50% tumor involvement of any single core.
Results: Of the 628 patients included, 129 patients had pathological re-classification on the 2nd biopsy. For both groups, median number of biopsy cores taken at 2nd biopsy was the same (n=15). On multivariate analysis, predictors of pathological re-classification found were age OR 1.04 (1.00–1.08) p=0.04, Log(PSA) OR 2.06 (1.30–3.27) p=0.002, prostate volume OR 0.97 (0.96–0.99) p= 0.001, positive cores (3 vs 1) OR 2.57 (1.08–6.13) p= 0.03, 5ARI use OR 0.29 (0.13–0.71) p= 0.006, total number of cores >10 OR 0.56 (0.35–0.91) p=0.02, time between 1st and 2nd biopsies (for every 1 month increase, OR 1.05 (1.02–1.07) p= 0.001.

Conclusion: We have identified predictors at baseline of re-classification on the second biopsy for patients on AS. These could be incorporated into consideration as to urgency of the 2nd biopsy.

Poster #179
MULTIPLE SCLEROSIS AND THE INCIDENCE OF PROSTATE CANCER: A POPULATION BASED ANALYSIS
Zachary Klaassen¹, Alexander Tatem¹, Sachin Patil², Rabii Madi¹, Martha K. Terris¹ and Kelvin A. Moses¹
¹Georgia Health Sciences University, Augusta, GA; ²Saint Barnabas Medical Center, Livingston, NJ
(Presented by: Zachary Klaassen)

Introduction and Objectives: Multiple sclerosis (MS) is a complex autoimmune disease with a poorly understood pathogenesis that is thought to be the result of both genetic and environmental factors. The geographic distribution that is traditionally displayed by MS is also seen with prostate cancer (PCa). Furthermore, recent studies suggest that deficiency of vitamin D may be implicated in the development of both MS and PCa. The objective of this study was to assess the incidence of PCa in patients with previously diagnosed MS using the Nationwide Inpatient Sample (NIS) database.

Methods: Data on patients with a history of MS and a subsequent diagnosis of PCa was abstracted from discharge records of 40,276,240 patients obtained from the NIS database, a part of the Healthcare Cost and Utilization Project, from 2004–2008. The age–specific incidence of PCa in this cohort of patients was compared to an external cohort of patients from the Surveillance, Epidemiology and End Results (SEER) Program (2000–2009).

Results: Overall 33,790 patients in the NIS database had a history of MS (18−30 years, n=1,614; 31−40 years, n=3,577; 41–50 years, n=1,614; 31−40 years, n=3,577; 41–50 years, n=7,702; 51–60 years, n=10,222; 61–70 years, n=6,831; 71–80 years, n=3,064; >81 years, n=780). The overall incidence of PCa in patients with MS was 3.9–times that compared to the general population and was increased for all age groups. Specifically, for groups at higher risk for clinically relevant PCa (41–50 years, 51–60 years and 61–70 years) the incidence was more than ten−times more common in patients with MS compared to the general population.

Conclusion: This is, to our knowledge, the first population based study to suggest that the incidence of PCa is higher in patients with MS. Further studies are needed to explain the potential relationship between MS and PCa. Additionally, studies analyzing the time to diagnosis of PCa after diagnosis of MS should be performed. Patients with MS may require a lower PSA threshold for considering prostate biopsy.

Disclosures: The authors have no financial relationships to disclose.
PROSTATE CANCER INCIDENCE IN PATIENTS WITH DISCOID AND SYSTEMIC LUPUS ERYTHEMATOSUS: A POPULATION BASED ANALYSIS
Zachary Klaassen¹, Alexander Tatem¹, Sachin Patil², Rabii Madi¹, Martha K. Terris¹ and Kelvin A. Moses¹
¹Georgia Health Sciences University, Augusta, GA; ²Saint Barnabas Medical Center, Livingston, NJ
(Presented by: Zachary Klaassen)

Introduction and Objectives: Systemic lupus erythematosus (SLE) and discoid lupus are complex autoimmune diseases that afflict more than 150,000 people in the US and are associated with a high degree of morbidity and mortality. Although previous studies have demonstrated that these patients are at an increased risk for developing certain malignancies, there are disparate results regarding the incidence of prostate cancer (PCa). The objective of this study was to assess the incidence of PCa in patients with SLE or discoid lupus utilizing the Nationwide Inpatient Sample (NIS) database.

Methods: Data on patients with a history of SLE or discoid lupus and a subsequent diagnosis of PCa was abstracted from discharge records of 40,276,240 patients obtained from the NIS database, a part of the Healthcare Cost and Utilization Project, from 2004–2008. The age-specific incidence of PCa in this cohort of patients was compared to an external cohort of patients from the Surveillance, Epidemiology and End Results (SEER) Program (2000–2009).

Results: Overall 16,305 patients had a history of SLE and 1,242 male patients had a history of discoid lupus. The overall incidence of PCa was five–times greater for patients with SLE and ten–times greater for patients with discoid lupus compared to the general population. This increased incidence was also consistent for both SLE and discoid lupus when specifically looking at age groups of patients at higher risk for clinically relevant prostate cancer (51–60 years: SLE 5.3–times, discoid lupus 10.2–times, and 61–70 years: SLE 5.7–times, discoid lupus 8.6–times).

Conclusion: The current study represents, to our knowledge, the first large population based study to suggest an increased incidence of PCa in patients with a history of SLE or discoid lupus. As these autoimmune diseases more commonly affect females than males, further studies are needed regarding this subset of males to explain the potential relationship with PCa.

Disclosures: The authors have no financial relationships to disclose.

Table: Incidence of prostate cancer in male patients with systemic lupus erythematosus or discoid lupus from the NIS database compared to the general population.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>SLE</th>
<th>Discoid Lupus</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-30 years</td>
<td>0**</td>
<td>0 **</td>
</tr>
<tr>
<td>31-40 years</td>
<td>0.51</td>
<td>0.43</td>
</tr>
<tr>
<td>41-50 years</td>
<td>26</td>
<td>131</td>
</tr>
<tr>
<td>51-60 years</td>
<td>238</td>
<td>1254</td>
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<tr>
<td>61-70 years</td>
<td>733</td>
<td>4181</td>
</tr>
<tr>
<td>71-80 years</td>
<td>956</td>
<td>5708</td>
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<tr>
<td>&gt;80 years</td>
<td>716</td>
<td>9398</td>
</tr>
<tr>
<td>Overall</td>
<td>445</td>
<td>2930</td>
</tr>
</tbody>
</table>

*Exterior comparison cohort - Surveillance, Epidemiology and End Results (SEER). SEER 18 Data from 2000-2009
**Statistic not given due to less than 16 cases
# Values are patients per 100,000
Poster #181
PROSTATE CANCER DISEASE CHARACTERISTICS FOR FOREIGN BORN SOUTH ASIAN MEN LIVING IN THE UNITED STATES
Trushar Patel¹, Edan Shapiro¹, Christopher Wambi¹, William Berg¹, Mireya Diaz-Inusa², Mani Menon² and Ketan Badani¹
¹Columbia University Medical Center, NY, NY; ²Vattikuti Urology Institute, Henry Ford Health System, Detroit, MI
(Presented by: Edan Shapiro)

Introduction and Objectives: The incidence and mortality associated with prostate cancer is known to vary by region and race. We report the largest known cohort of foreign-born South Asian (SA) men treated by radical prostatectomy in the United States. Our objectives were to characterize this sub-population and compare them to our wider cohort of prostate cancer patients treated with radical prostatectomy.

Methods: All patients who underwent radical prostatectomy at 2 high-volume academic centers (Vattikuti Urology Institute, VUI, and Columbia University Medical Center, CUMC) between 1990–2011 were identified. Demographic and clinicopathologic data (pre-operative PSA, biopsy Gleason score, pathologic Gleason score, pathologic stage, margin status, node status) were collected. In addition to SA men, African American (AA) men were identified and used for comparative analysis as a high-risk cohort.

Results Obtained: A total of 93 SA men (VUI = 69, CUMC = 24) were identified out of 10,053 total patients, representing 0.9% of our experience. SA men were similar to the overall cohort in terms of age, year of surgery, biopsy Gleason score, and pathologic Gleason score. However, SA men at VUI were found to have significantly higher pre-operative PSA values (p=0.01), pathologic stage (p<0.01), and positive node status (p=0.04); similarly, SA men at CUMC had a significantly higher proportion of positive surgical margins (p=0.04). In a sub-set analysis, SA men had similar pathologic characteristics to AA men at both institutions.

Conclusions: SA men have worse pathologic disease profiles than the general population of men undergoing radical prostatectomy in the United States. Overall, SA men appear to have similar pathologic disease profiles to AA men, who are known to have a high risk of prostate cancer mortality. Further data is needed to understand the biologic, epidemiologic, and social influences that affect the natural history of prostate cancer in SA men, but these findings may influence future screening guidelines for this population.

Poster #182
DIFFERENCES IN COMPLICATIONS BETWEEN OPEN VERSUS LAPAROSCOPIC PROSTATECTOMY
Jed Ferguson, Will Kirby, David Johnson, Jonathan Matthews, Matthew Nielsen, Raj Pruthi, Eric Wallen, Michael Woods and Angela Smith
Chapel Hill, NC
(Presented by: Jed Ferguson)

Introduction and Objectives: Laparoscopic (or robotic) radical prostatectomy has diffused quickly into community and academic centers. While much has been written about quality of life side effects, including urinary incontinence and erectile dysfunction, our objective was to compare overall complication rates between open and laparoscopic prostatectomy while attempting to define risk factors predictive of these complications utilizing the ACS–NSQIP database.

Methods: We performed a retrospective review of the NSQIP 2010 Participant Use Data File. ACS–NSQIP collects data on 135 variables, including peri-operative data, 30-day post-operative complications and mortality on all major surgical procedures at participating institutions from 2005–2010. During this time period, 1179 patients underwent open radical prostatectomy (ORP) and 4012 underwent laparoscopic radical prostatectomy (LRP). The overall complication rates for both groups were calculated and predictors of complications were identified using multivariate logistic regression models.

Results: As shown in the table below, univariate analysis revealed a significant difference between those undergoing open versus laparoscopic radical prostatectomy, with the latter experiencing decreased complications (25% vs. 11%) (p<0.0001). This effect persisted on multivariate analysis after controlling for age, sex, race, BMI, comorbidities and PGY level assisting case (p<0.0001). Other predictive factors for complications on multivariate analysis included increased age (p=0.0013) and pulmonary comorbidities (0.0030).

Conclusion: In a large database, which includes both community hospitals and academic centers, we found that there were increased complications in the open radical prostatectomy cohort compared to the laparoscopic group, even with controlling for other risk factors. This supports the continued use of this technology, which has demonstrated its safety in the treatment of localized prostate cancer.

<table>
<thead>
<tr>
<th></th>
<th>No Complications</th>
<th>Complications</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORP</td>
<td>873 (75%)</td>
<td>286 (25%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>LRP</td>
<td>1121 (89%)</td>
<td>138 (11%)</td>
<td></td>
</tr>
</tbody>
</table>
Poster #183
EXAMINATION OF RACIAL DISPARITIES FOR PROSTATE CANCER SCREENING AND DETECTION IN VETERANS
M’Liss Hudson¹, Robert Grubb² and Jeffrey Scherrer²
¹John Cochran VAMC; ²Washington University, St. Louis, MO
(Presented by: M’Liss Hudson)

Background: Prostate cancer has been shown to disproportionately affect African American (AA) men and worse outcomes to treatment have been associated with disparities in healthcare coverage. Prostate specific antigen (PSA) testing remains controversial, but limited data is available on AA cohorts who have had equal insurance coverage as whites for prostate cancer screening and detection. Observations on racial differences in treatment outcomes must be interpreted in the context of equal or unequal use of screening and detection tools.

Objective: To determine if there are racial differences in use of prostate cancer screening and detection tools in the routine care of white and AA regular users of the Veterans Healthcare Administration (VHA).

Methods: From a national cohort of 536,415 veterans ages 40−70 years we determined the frequency of PSA testing, frequency of an elevated PSA level (> 4.0 ng/mL), frequency of prostate biopsy after an elevated PSA level, and incidence of prostate cancer detection after biopsy. Additionally, we sought to determine if race was significantly associated with PSA testing, time to elevated PSA detection, time to prostate biopsy and diagnosis of prostate cancer.

Results: > 80% of veterans ages 40−70 years undergo PSA testing. AA veterans are as likely as white veterans to undergo PSA testing, and are more likely to have a PSA > 4.0 ng/mL, undergo prostate biopsy and be diagnosed with prostate cancer. AA veterans had a shorter time interval between screening and diagnosis. See Table.

Conclusions: The majority veterans undergo prostate cancer screening. No disparities toward AA veterans exist in the use of prostate cancer screening and detection tools. Thus, any racial differences in outcomes to prostate cancer care in veterans are not related to disparate use of PSA testing or prostate biopsies.
Poster #184
PROSTATE CANCER MICROPARTICLES A NOVEL BLOOD BASED PROGNOSTICATOR OF METASTASIS
Ali Al-zahrani¹, Honsing leong², Vladimir Yutkin², Nickolas Power², Jonathan Izawa², John Lewis³ and Joseph Chin²
¹Urology Department, University of Dammam, Saudi Arabia; ²Urology Division, Department of Surgery, UWO, London Ontario, Canada; ³Department of Oncology, University of Alberta
(Presented by: Ali Al-zahrani)

Background: Due to the hematogenous nature of metastatic prostate cancer (PCa), both tumor cells and tumor cell fragments can be detected, characterized and enumerated in patient plasmas. The presence of plasma–borne tumor cell fragments, also known as microparticles, is thought to correlate with the magnitude of primary and metastatic tumor burden. In this prospective study, we assess the ability of the metastasis–specific 1A5 mAb to detect prostate cancer microparticles (PCMPs) in patient plasma as a means to distinguish indolent cancer from high–risk metastatic cancer. We compared 1A5–PCMP counts with circulating tumor cells (CTCs) in patient blood.

Methods: Patients were recruited into two different cohorts; localized PCa and metastatic PCa (N=47 in total). Blood was collected for: 1) CTC enumeration by the CellSearch instrument, and 2) PCMP enumeration by flow cytometry. To identify the PCMP population in flow cytometry, fluorophore conjugated antibodies specific for the extracellular domain of PSMA (anti–PSMA mouse IgG–RPE) and the metastasis–specific 1A5 antibody (1A5 mouse IgG–FITC) were used to stain 20 uL of plasma. Counting beads (1.0 um) were used to determine the gating parameters for identification and analysis of 1A5+PCMPs. We compared the total number of PSMA–positive events, 1A5+PSMA–positive events and percentage of 1A5+PSMA/total PSMA–positive events between the two patient groups.

Results: We found statistically significant differences between both groups, in particular, metastatic PCa patients exhibit a greater proportion of PCMPs that bind the 1A5 mAb, as well as higher absolute counts of 1A5–PSMA–positive events and total PSMA–positive events (p<0.05). Furthermore, within the localized PCa group, we identified a subpopulation of patients that exhibited high counts of 1A5+PSMA–positive events. Clinical follow–up to determine if these are localized PCa patients at risk for progressing onto metastatic disease is currently underway. CTC enumeration was not a useful parameter for distinguishing localized vs. metastatic patients. The majority of metastatic patients exhibited a zero CTC count.

Conclusions: Enumeration of prostate cancer microparticles may provide a clinical mean to distinguish indolent from high risk or metastatic PCa.
Introduction and Objectives: Radical prostatectomy (RP) offers durable cancer control in most patients with localized prostate cancer. Nevertheless, 30–40% of patients are deemed at high risk for metastasis based on clinical criteria alone, and are therefore subject to additional therapy. In reality, few of these patients will die from prostate cancer following surgery. This study employed transcriptome–wide expression profiling to discover and validate molecular markers that can more accurately identify patients who will metastasize, and may thus be the best candidates for post–RP therapy.

Methods: Archived primary tumors from patients who underwent RP (1987–2006) were profiled by a high–density microarray assay. An initial discovery study (n=545) was used to train and test a 22–feature genomic classifier (GC) for predicting metastasis (defined by positive bone or CT scans). A blinded independent case–cohort study of clinically high–risk RP patients (n=219) was used to validate the GC. The results were compared to a clinical classifier (CC) comprising of clinicopathologic variables, and an integrated genomic–clinical classifier (GCC). Concordance indices, Cox modeling and decision curve analyses were used to compare the different models.

Results: In the discovery study, CC, GC and GCC had c–indices of 0.76, 0.90 and 0.90 in the training set, and 0.70, 0.76 and 0.75 in the test set, respectively, for predicting metastasis. In blinded validation analysis, these classifiers had c–indices of 0.70, 0.79 and 0.82, respectively. For a tentative GC score cutoff of 0.5, cumulative incidence of metastatic disease was 3% versus 17% (p<0.001). Decision curve analysis showed that the GC model had a higher overall net benefit compared to clinical variables over a wide range of ‘decision–to–treat’ thresholds for risk of metastasis. GC scores reclassified 64% of clinically high–risk patients to low–risk; only 20% of these patients eventually developed metastasis, compared to 52% of patients with high GC scores. In multivariable modeling with clinicopathologic variables, GC score was the only predictor of metastasis (HR=1.51, for each 0.1 unit increment, p<0.001).

Conclusions: This study shows that the GC can predict development of metastases independent of clinical variables in high–risk prostate cancer patients. The GC’s prognostic performance and its usefulness in guiding decision–making for post–RP therapy is undergoing further testing.

Funding: NHI SPORE, NRC–IRAP
Poster Session II – Full Abstract

Poster #186
STATIN USE AND THE RISK OF BIOCHEMICAL RECURRENCE OF PROSTATE CANCER AFTER DEFINITIVE LOCAL THERAPY: A META-ANALYSIS OF EIGHT COHORT STUDIES
Emil Scosyrev, Scott Tobis, Heather Donsky, Guan Wu, Jean Joseph, Hani Rashid and Edward Messing
University of Rochester, Rochester, NY
(Presented by: Edward Messing)

Background: In-vitro and animal studies suggested that the rate of prostate cancer (PC) progression may be influenced by 3-hydroxy-3-methylglutaryl coenzyme A (HMG-coA) reductase inhibitors, commonly known as statins. The main objective of the present study was to perform a systematic review and a meta-analysis of clinical studies with statin use as the exposure variable and biochemical recurrence after definitive local therapy for PC as the outcome.

Methods: Studies eligible for this meta-analysis were identified through PubMed / Medline database. Literature search was performed independently by two investigators. The pooled estimates of the hazard ratios were computed using the inverse-variance weighting approach. Heterogeneity was assessed using the Cochran’s Q test.

Results: We identified a total of eight eligible studies, all based on the retrospective cohort design. These studies included a total of 2,812 statin users and 10,031 non-users. Five of these were based on radical prostatectomy series and three on radiotherapy series. In the prostatectomy series, biochemical failure was defined as >0.2 ng/mL, while the radiotherapy series used the Phoenix definition of PSA nadir + 2 ng/mL. Hazard ratios for biochemical recurrence reported from these studies are summarized in Figure 1. There was evidence of heterogeneity in the entire set of eight studies (p=0.002) as well as in the prostatectomy studies (p=0.05) and in the radiotherapy studies (p=0.01), when these were considered separately. Based on the random effects inverse-variance weighting approach, pooled hazard ratios for the risk of biochemical recurrence in statin users versus non-users were 0.91 (95% CI:0.72–1.13) for the entire set of eight studies, 1.02 (95% CI:0.80–1.29) for the prostatectomy series and 0.71 (95% CI:0.44–1.16) for the radiotherapy series.

Conclusions: Observational studies reported conflicting findings regarding the association of statin use with biochemical recurrence of PC after definitive local therapy. The pooled estimates of the hazard ratios were not significantly different from the null value in this meta-analysis; however, substantial evidence of heterogeneity between the studies was present.
Introduction and Objectives: Active surveillance (AS) is an increasingly popular treatment modality for patients with low risk prostate cancer, but there is little data on whether AS is appropriate for intermediate risk patients with Gleason 3+4 disease who otherwise meet AS criteria. We therefore evaluated the clinicopathologic findings for such intermediate risk patients undergoing radical prostatectomy.

Methods: Patients with Gleason 3+4 on prostate biopsy who underwent radical prostatectomy from 2001 through 2011 were identified from a tumor bank database. Candidates for active surveillance were defined as those with ≤ 3 cores with cancer, ≤ 50% of cancer in any core, and PSA < 10 ng/ml. Logistic regression was performed to evaluate the association of pre-operative variables with adverse pathologic findings at surgery.

Results Obtained: A total of 111 patients were candidates for active surveillance based on the above criteria. Mean age, pre-operative PSA, and prostate weight were 61.1 ± 6.6 years (IQR 56.3 – 66.1), 5.1 ± 2.0 ng/ml (IQR 3.6 – 6.6), and 50.2 ± 22.2 grams (IQR 36.0 – 57.7). Clinical stage was cT1c in 93 (86.9%) patients and cT2 in 14 (13.1%) patients. Median number of cores at biopsy was 12 (range 6–24). Prostatectomy Gleason score was 3+3 in 28 (25.2%) patients, 3+4 in 70 (63.1%) patients, 4+3 in 10 (9.0%) patients, and 8–10 in 3 (2.7%) patients. Adverse pathologic findings included positive surgical margins in 12 (10.8%) patients, extracapsular extension (ECE) in 11 (9.9%) patients, and seminal vesicle invasion (SVI) in 3 (2.7%) patients. A total of 21 (18.9%) distinct patients had either pT3 disease or positive surgical margins. On logistic regression, number of positive cores and highest percentage of core with cancer were not associated with adverse pathologic findings at prostatectomy (Table 1).

Conclusions: There is a significant rate of adverse pathologic findings for patients with Gleason 3+4 disease who otherwise meet AS criteria. Although limited by small sample size, number of positive cores or highest percentage of core with cancer did not predict adverse pathology at prostatectomy. These results have implications for active surveillance protocols.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Univariate OR</th>
<th>p-value</th>
<th>Multivariate OR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>1.01</td>
<td>0.72</td>
<td>1.04</td>
<td>0.36</td>
</tr>
<tr>
<td>PSA (ng/ml)</td>
<td>1.24</td>
<td>0.07</td>
<td>1.33</td>
<td>0.03*</td>
</tr>
<tr>
<td>Prostate weight (grams)</td>
<td>0.98</td>
<td>0.20</td>
<td>0.97</td>
<td>0.07</td>
</tr>
<tr>
<td>Positive cores (no.)</td>
<td>1.03</td>
<td>0.93</td>
<td>0.97</td>
<td>0.94</td>
</tr>
<tr>
<td>Highest % core positive</td>
<td>1.11</td>
<td>0.95</td>
<td>0.36</td>
<td>0.61</td>
</tr>
<tr>
<td>cT2</td>
<td>0.69</td>
<td>0.64</td>
<td>0.70</td>
<td>0.68</td>
</tr>
</tbody>
</table>
PREOPERATIVE ASPIRIN INTAKE AND RECURRENT PROSTATE CANCER RISK REDUCTION: DOES EXCESS BODY WEIGHT MATTER?

Monique B. Araujo¹, Judd W. Moul², Roberto L. Muller², Suzanne B. Stewart², Cagri Senocak², Thomas J. Polascik², Cary N. Robertson², Philip J. Walther¹ and Lionel L. Bañez¹

¹Veterans Affairs Medical Center, Durham, NC; ²Duke Prostate Center, Duke University Medical Center, Durham, NC

(Presented by: Monique B. Araujo)

Introduction and Objectives: The anti-inflammatory drug aspirin (ASA) has been shown to inhibit prostate cancer (CaP) growth in vitro and reduce biochemical recurrence (BCR) risk in radiation-treated patients. Whether ASA reduces BCR risk among men treated with radical prostatectomy (RP) is unknown. Given that obesity has been linked to both inflammation and CaP progression, it is possible that excess body weight may also influence the relationship between ASA and BCR. Thus, we examined the link between ASA intake and recurrent CaP overall and as a function of body mass index (BMI) group among RP-treated men.

Methods: We retrospectively analyzed data from 1,183 men who underwent RP at the Duke Prostate Center from 2005 to 2009. We compared time to BCR between men taking ASA on a regular basis prior to RP and non-users using multivariable proportional hazards regression controlling not only for demographic and clinicopathologic covariates but also intake of anti-hypertensive, anti-diabetes and anti-lipemic (statins, etc.) medications. Whether BMI modifies the association between BCR risk and ASA was determined using test of interaction as well as individual Kaplan-Meier plots and Cox models for normal weight, overweight and obese men.

Results Obtained: A total of 411 men (32%) were ASA users and 336 (27%) were obese. Mean follow-up was 26 months (range 1–84). After controlling for potential confounders, ASA use was found to be associated with decreased BCR risk (HR 0.53; 95%CI 0.18–0.84; p=0.003) and BMI modified this association (p-interaction=0.03). Compared to non-users, ASA users were less likely to experience BCR among overweight (HR 0.41; 95%CI 0.21–0.80; p=0.009) and obese (HR 0.45; 95%CI 0.23–0.91; p=0.03) but not normal weight men (p=0.65; Figure 1).

Conclusions: Preoperative regular intake of ASA was associated with reduced BCR risk only among men with excess body weight. These findings suggest that although the pro-inflammatory state associated with obesity could play a role in CaP recurrence, it may also serve as a possible therapeutic target for ASA. If validated, further studies investigating ASA as a potential chemopreventive agent against CaP progression among overweight and obese men are warranted.

[Graph showing the proportion of BCR free by BMI categories and ASA use status]
Poster #189
SPARC EXPRESSION IS ASSOCIATED WITH METASTASIC PROGRESSION AND PROSTATE CANCER-SPECIFIC MORTALITY AFTER RADICAL PROSTATECTOMY
Claudio Jeldres, Richard Johnston and Christopher Porter
Virginia Mason Medical Center, Seattle, WA
(Presented by: Claudio Jeldres)

Purpose: We assessed the expression of the glycoprotein SPARC (secreted protein, acidic, rich in cysteine) in patients with prostate cancer (PCa) treated with radical prostatectomy (RP) and studied its association with metastatic progression and cancer-specific death.

Materials and Methods: Tissues from 77 patients with PCa were used to quantify SPARC expression using tissue microarray and immunohistochemistry techniques. A score for cellular staining was assigned to each core (score 0–3). Analyses of the data relied in T-test analyses, survival plots and Cox regression models.

Results: Higher expression of SPARC was recorded in patients with metastases (p=0.025) [Figure] and in patients who died of PCa (0.002). Median follow-up was 9.3 years. At 10 years, 17.8%, 23.0% and 30.1% of the patients developed metastases for SPARC score 1, 2 and 3 respectively (Log rank tests all p≤0.05). Similarly, patients with high SPARC expression had worse cancer-specific survival at 5 and 10 years (Log rank tests all p≤0.01).

Conclusions: High SPARC expression was associated with worse outcomes in men with PCa. Men who developed metastatic disease and men who succumbed to prostate cancer had higher levels of SPARC at RP than their counterpart.

Figure. SPARC average staining intensity according to metastatic progression after radical prostatectomy.
Poster #190

OBSESE MEN UNDERGOING RADICAL PROSTATECTOMY HAVE LONGER LENGTH OF STAY AND CHARGES COMPARED TO NONOBSESE MEN, BUT SIMILAR IMMEDIATE COMPLICATION RATES

Chad Ellimoottil¹, Adam Kadlec¹, Kristin Greco¹, John Jesse¹ and Gopal Gupta²
¹Loyola University Medical Center, Stritch School of Medicine, Maywood, IL; ²Departments of Urology and Surgery, Oncology Institute, Loyola University Chicago, Chicago, IL
(Presented by: Chad Ellimoottil)

Introduction: Obesity can make surgical procedures more challenging and can cause increased morbidity, which may lead to increased costs. We sought to determine how hospital charges, length of stay and immediate post–operative complications (POC) vary between obese and non–obese patients who underwent radical prostatectomy (RP) using a national database.

Methods: Discharge records from the 2010 Nationwide Inpatient Sample were analyzed to identify patients who had either an open (ORP) or robotic radical prostatectomy (RARP). From this group, we identified patients who had obesity and/or morbid obesity coded as a comorbidity. We compared blood transfusion rate, length of stay (LOS), total charges, and rates of immediate POC (digestive, wound, respiratory, cardiac, hematologic, infectious, vascular, urinary, seroma, and other) between the obese and the non–obese population. We then compared similar variables between ORP and RARP in the obese population.

Results: 13,770 RPs were identified, of which 62.1% percent were RARPs and 37.9% were ORPs. 912 patients (6.6%, 554 RARP and 358 ORP) had obesity or morbid obesity coded as a comorbidity. We found no significant difference in blood transfusion rate (0.5% vs 0.8%, p=0.37) between obese and non–obese men. Length of stay (LOS) was longer in the obese group (2.35 days vs 2.05 days, p <0.001), as were total charges ($41,182 versus $37,569, respectively, p < 0.001). The rates of immediate POC did not differ between obese and non–obese men, with the exception of urinary (0.98% vs. 0.45%, p=0.025) and infectious (0.44% vs 0.12%, p=0.016) complications. When we compared ORP and RARP in obese men, LOS (2.92 vs 1.98, p < 0.001), total charges (33,958 vs 45,924, p < 0.001), and blood transfusion rate (1.4% vs 0%, p=0.005) differed. Post–operative infections were higher in the ORP group compared to the RARP group (1.13% vs 0%,p=0.013)

Conclusion: Obese men undergoing RP tend to have longer LOS and higher total charges than non–obese men. Obese men have slightly higher rates of immediate urinary and infectious complications, though the actual rates are very low. Among obese men alone, those undergoing RARP tend to have shorter LOS, higher total charges, lower blood transfusion rates, and lower rates of immediate post–operative infectious complications.

Funding sources: None

Poster #191

PROSTATIC CALCIFICATIONS DURING TRANSRECTAL ULTRASOUND-GUIDED BIOPSY ARE NOT ASSOCIATED WITH PROSTATE CANCER

Claudio Jeldres, Richard Johnston and Christopher Porter
Virginia Mason Medical Center, Seattle, WA
(Presented by: Claudio Jeldres)

Purpose: Prostatic calcifications are commonly seen during transrectal ultrasound–guided biopsy (TRUS–biopsy). Association with chronic inflammation, corpora amylacea and congenital cysts has been reported, but to date, there is limited data regarding PCa.

Materials and Methods: Between 2005 and 2009, TRUS–biopsies were performed in 874 patients for PCa. Prostatic features such as cysts, calcifications, prostate and transition zone volume, and hypoechoic nodules were recorded at time of TRUS–biopsy. Our study focused on patients with prostatic calcifications. Descriptive statistics and proportions were used to report our results.

Results: TRUS–biopsy was performed in 874 men and prostatic calcifications were found in 130 (14.9%) patients. Among them, 59 (45.4%) had a previous TRUS–biopsy (Median 1, range 1–7). Digital rectal examination was positive in two third of these patients, but site agreement only reached 25%. PCa was detected in 33 patients, and among them, 17 (27.4%) had a concomitant hypoechoic lesion. Only 2 (6%) PCa were near a calcification. Finally, Gleason sum 6 was the most frequent grade (58%).

Conclusions: The presence of prostatic calcification is not associated with higher rate of PCa or worst pathological characteristics. Moreover, calcifications do not predict the location of PCa at biopsy.
Introduction and Objectives: Additional prostatic and periprostatic tissue (PPT) can be removed during radical prostatectomy (RP) when there is concern for incomplete removal of the entire prostate gland or residual extraprostatic extension of cancer. The presence of cancer in PPT during RP is largely unknown. We analyzed the rate of positive PPT findings during RP in a community-based health system to determine the yield of PPT resection to inform future clinical practice.

Methods: Retrospective review of pathology reports from 976 patients undergoing RP between 1998–2011 was performed. Demographic and pathologic data were collected in an IRB−approved database.

Results: Of 976 RP, 267 patients (27%) had PPT excised (median: 1, range: 1–4). Median PSA was 5.0 (IQR: 3.9−7), clinical stage was T1c in 69%, and biopsy Gleason score was 6 or lower in 39%, 7 in 52% and 8 or higher in 9%. Pathologic stage was pT2 in 85%, T3 in 13%, and LN positive in 2.6%. Among 177 bladder neck biopsies, 31% contained benign prostate and 3.4% (n=6) had adenocarcinoma. Of 37 urethral biopsies, 46% contained benign prostate and 16% (n=6) had adenocarcinoma. Of 21 prostatic apical excisions, 86% contained benign prostate and 14% (n=3) contained adenocarcinoma. Of 35 excisions of suspected residual (or fragmented) prostate (posterior-lateral, median, base, capsule, pedicle), 94% contained prostate and 0% contained adenocarcinoma. No prostate tissue or cancer was present in 15 samples labeled as “periprostatic fat” and 9 “neurovascular bundle”.

Conclusion: Complete excision of adenocarcinoma during RP remains the primary surgical objective. Clinical suspicion of incomplete excision of benign or cancer-containing prostate tissue may lead to removal of additional PPT samples. In this single-center study, prostate tissue was present in 45% of such samples overall, supporting this practice. However, cancer is rarely present in such samples (5.6% of cases with PPT removed, 1.5% of RP overall), with apical/urethral regions appearing to be at highest risk (~15% of samples).
**Poster Session II – Full Abstract**

**Results:** The mean age was of 60.5 years. At first repeat biopsy session, 17/59 (29%) men had an upgrade to Gleason 7 or more. The prostate tissue of men with Gleason 6–only PCa had a higher level of EPA (mean = 0.19% vs 0.04%, p=0.00007) and a higher omega−3/omega−6 ratio (mean = 0.17 and 0.14, p= 0.006) than that of men with Gleason 7 PCa. Differences in EPA levels across grade were progressively less significant when measured in RBC (p=0.041) and in diet (p=0.083). Compared to men in the lowest tertile of prostate tissue EPA, men with in middle tertile had an odds ratio (OR) of Gleason 7 upgrade of 0.33 (p=0.098), while men in the highest tertile had an OR of 0.05 (p=0.007).

**Conclusion:** The marine omega−3 EPA and a high omega−3/omega−6 ratio in the target prostate tissue appear to be protective in a dose−dependent manner against prostate cancer aggressiveness, in active surveillance context. This suggests that dietary omega−3 could be an appealing intervention to be tested. The difference across grade was progressively less marked as the EPA measure was more distant from target prostate tissue, where omega−3 are affecting PCa. This may explain the controversy surrounding omega−3 and prostate cancer.

**Poster #194**

**SIPULEUCEL-T (S) DELAYS TIME TO FIRST USE OF OPIOID ANALGESICS (TFOA) IN PATIENTS WITH ASYMPTOMATIC OR MINIMALLY SYMPTOMATIC METASTATIC CASTRATION-RESISTANT PROSTATE CANCER (MCRPC)**

Celestia Higano¹, Philip Kantoff², Daniel Petrylak³, James Whitmore4, Mark Frohlich4 and Eric Small5
¹Seattle Cancer Care Alliance, Seattle, WA; ²Harvard Medical School, Boston, MA; ³Columbia-Presbyterian Medical Center, New York, NY; ⁴Dendreon Corporation, Seattle, WA; ⁵UCSF Medical Center, San Francisco, CA
(Presented by: Celestia Higano)

**Introduction:** S is an autologous cellular immunotherapy designed to stimulate an immune response against prostate cancer. It has been shown to prolong survival in patients with mCRPC [1]. We analyzed pooled data from 3 trials, D9901, D9902A, and D9902B, to assess the effect of S vs placebo (P) on TFOA.

**Methods:** Opioid analgesics were identified by medical review of preferred drug names in the coded concomitant medication information on case report forms (CRFs). Opioid analgesic use (OAU) unrelated to cancer pain was excluded by medical review of CRFs. In D9902B, weekly pain and medication logs were initially collected (recorded until confirmed objective disease progression [DP]), but ceased when TFOA was removed as a secondary end point (EP) following a protocol amendment that expanded enrollment to include minimally symptomatic as well as asymptomatic patients. In D9901 and D9902A, TFOA was not a specified EP, but weekly pain and analgesic−use logs were collected (until DP or ≤4 weeks beyond if disease−related pain [DRP] had not occurred at time of DP). Patients not reporting OAU were censored on cessation of secondary EP collection (D9902B) or at DP (D9901 and D9902A). A Cox model, stratified by study and adjusted for baseline (BL) prostate−specific antigen (PSA) and lactate dehydrogenase (LDH), was used to compare S and P for TFOA; stepwise selection was used to identify independent prognostic variables.

**Results:** For S (n=488) vs P (n=249) there was a significant delay in TFOA (hazard ratio 0.755; 95% confidence interval 0.579, 0.985; p=0.038) and median TFOA was 12.6 vs 9.7 months. Kaplan−Meier estimates of being opioid free at 12 months were 50.6% for S vs 43.1% for P; curve separation began at 6 months. Censoring rate was high (S 68.6%; P 65.1%). Median follow−up time was 4.7 months (S 4.8; P 4.6). Significant independent BL predictors of shorter TFOA were: higher PSA, alkaline phosphatase, and LDH; younger age; higher number of bone metastases; Gleason score ≥8; Eastern Cooperative Oncology Group Performance Status 1; higher weight; prior radiotherapy.

**Conclusions:** Post hoc analysis of pooled data from 3 trials suggests that S can significantly delay TFOA in patients with mCRPC, consistent with the trend of delayed time to DRP found in pooled analysis of the same 3 trials [2].

**References**
This study was sponsored by Dendreon Corporation.
COMPLICATIONS OF PELVIC LYMPH NODE DISSECTION (PLND) DURING ROBOTIC ASSISTED LAPAROSCOPIC PROSTATECTOMY (RALP): A SINGLE INSTITUTION EXPERIENCE

Kristen Scarpato¹, Tyler Cotrell², Ilene Staff², Alison Champagne², Joseph Tortora², Joseph Wagner² and Stuart Kesler²
¹University of Connecticut School of Medicine, Division of Urology, Farmington CT; ²Hartford Hospital, Hartford CT

(Presented by: Kristen Scarpato)

Introduction: Pelvic lymph node dissection (PLND) at the time of robotic assisted laparoscopic prostatectomy (RALP) is commonly performed. While much uncertainty exists regarding the specific indications, optimum extent and survival benefit of nodal dissection, PLND is frequently performed during RALP with limited data regarding the potential additive complications. We compare rates of complications between two groups, those who underwent PLND and those who did not, at a single institution over six years.

Methods: An IRB prospectively managed database was analyzed. 2191 patients who underwent RALP from January 2004 to December 2010 were included. Two groups were identified: Group One underwent RALP alone and Group Two underwent RALP with PLND. Patient age, Gleason score, clinical stage, estimated blood loss (EBL), length of hospital stay (LOS), positive margin rate and year of surgery were evaluated. All complications experienced were prospectively recorded, analyzed, and the fifteen most common are reported. Pearson Chi-square, Fisher’s Exact, and Linear by Linear test statistics were used to determine statistical significance.

Results: 993 patients underwent RALP alone (Group One) while 1198 patients underwent RALP with PLND (Group Two). Rates of PLND per year reveal a trend towards more PLNDs over time. Patient age, pre-operative PSA, and EBL were found to be statistically different between groups. No difference in overall complication rate was found. Specific rates of complications that were found to be significantly higher in Group Two included delayed urine leak, incontinence, urinary tract infection (UTI), lymphocele and deep vein thrombosis (DVT).

Conclusion: Although the overall complication rate of those undergoing PLND during RALP was not statistically higher in our review, rates of major complications such as lymphocele and DVT were found to be significantly more common in patients after PLND. These additive risks should be considered during surgeon decision making and the consent process.

Table: Percentage of Specific Complications in Group One and Group Two

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<th>Complication</th>
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<th>% RALP + LND (1198)</th>
<th>% Overall (2191)</th>
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Table: Comparison of complication rates between RALP group and RALP + LND group
Poster #196
REPEAT PROSTATE BIOPSIES DO NOT CAUSE AN INCREASED RISK OF ERECTILE DYSFUNCTION
Richard Johnston, Claudio Jeldres and Christopher Porter
(Presented by: Richard Johnston)

Introduction: The impact of transrectal ultrasound (TRUS)−guided biopsy on erectile dysfunction (ED) remains uncertain. We examined whether the TRUS−guided biopsy contributes to the development or worsening of erectile function as assessed by international index of erectile function (IIEF) scores in patients who underwent multiple TRUS prostate biopsies.

Methods: The study population consists of 826 men who underwent TRUS 10–12 core prostate needle biopsies (PNB) either for diagnosis or surveillance for prostate cancer. Men were evaluated for ED using the IIEF. ED was modeled as a categorical variable defined as any, mild, mild−moderate, moderate, or severe. The impact of multiple prostate biopsies on IIEF score was investigated.

Results: 826 men had undergone one prostate biopsy, 240 had undergone ≥2, and 168 had undergone ≥3 biopsies. In univariate analyses, age (OR 1.11, 95% CI 1.09–1.14), and one (OR 1.79, 95% CI 1.06–3.03) or two (OR 1.80, 95% CI 1.02–3.17) prior PNBs were associated with ED of any level. A history of three or more biopsies was associated with less ED (OR 0.89, 95% CI 0.66–1.00), although this was not significant (p=0.050). A repeat PNB within less than 12 months vs. more than 12 months was associated with worse ED of any level (OR 1.33, 95% CI 1.09–1.14, p=0.043).

In multivariate analyses, age was predictive for moderate ED (OR=1.08, 95% CI 1.05–1.11) and severe ED (OR=1.09, 95% CI 1.05–1.12) ED. PNB number was no longer significant (p=0.185) after adjustment for other covariates.

Conclusions: A history of multiple prostate biopsies does not predict long term ED in aging men. There may be an association with transient (<1 year) ED.

Figure 1: % Any ED by Biopsy Number
Poster #197
SARCOMA OF THE PROSTATE: CLINICOPATHOLOGIC CHARACTERISTICS AND OUTCOMES AT A TERTIARY CARE CENTER
Mark Ball¹, Nita Ahuja², Christian Meyer³, Jonathan Epstein⁴ and Trinity Bivalacqua¹
¹Department of Urology; ²Department of Surgery; ³Department of Oncology; ⁴Department of Pathology
(Presented by: Mark Ball)

Introduction and Objectives: Prostate sarcoma is a rare entity with a poor prognosis. Radical resection is the mainstay of treatment; however, patients with positive margins often fail locally and have limited survival. Multimodality therapy with adjuvant chemoradiation has improved survival in retroperitoneal sarcomas, raising the possibility of a benefit in prostate sarcoma. In this study, we report the clinicopathologic characteristics of patients treated at our institution over the last 20 years and their clinical outcomes. We also propose our institutional paradigm for treating this aggressive disease.

Materials and Methods: A search of the surgical pathology database from 1992 – 2012 yielded a total of 15 patients with prostate sarcoma treated at our institution. Histologic subtype, grade, size and treatment modality were reviewed. Survival, local recurrence and metastasis were assessed.

Results: The mean age at presentation was 58.7 years. Mean follow up was 29.7 months (median 16 months). Histological subtypes were stromal sarcoma in 6 patients (40%), leiomyoma 5 (33.3%), spindle 2 (13.3%), fibrosarcoma 1 (6.7%) and angiosarcoma 1 (6.7%). Surgery was performed in 14 of 15 patients. Surgical margins were positive in 3 patients. The most common symptom on presentation was urinary obstruction. Neoadjuvant radiation was utilized in 7 patients, and four patients received intraoperative radiation. Pre- and post tumor sizes were available for 5 of these patients, and all five tumors decreased in size after neoadjuvant radiation. Neoadjuvant chemotherapy was utilized in 5 patients. Adjuvant chemotherapy was used 2 patients. Four patients died of their disease. Positive margin status was a significant predictor of disease specific mortality. Tumor histology, size, and patient age were not significant predictors of mortality.

Conclusions: Sarcomas of the prostate are rare tumors with historically poor prognosis. Durable survival can be attained, but microscopically negative (R0) resection is necessary and is the single strongest predictor of survival. Multimodality therapy with neoadjuvant chemotherapy and radiation, along with intraoperative radiation may increase the likelihood of R0 resection and should be considered in the treatment planning of this aggressive disease.

Poster #198
DISTANCE TO BIOPSY SITE INCREASES NON-COMPLIANCE TO PROSTATE BIOPSY IN A LARGE SCREENING PROGRAM IN BRAZIL
Roberto Muller¹, Eliney Faria², Gustavo Carvalhal³, Rodolfo Reis⁴, Edmundo Mauad⁵, Andre Carvalho³ and Stephen Freedland⁶
¹Division of Urologic Surgery, Department of Surgery, Durham, NC, USA; ²Division of Urologic Oncology and Laparoscopy, Barretos Cancer Hospital, Barretos, SP, Brazil; ³Research Support Center, Barretos Cancer Hospital, Barretos, SP, Brazil; ⁴Division of Urology, Ribeirao Preto Medical School of Sao Paulo University, Ribeirao Preto, SP, Brazil; ⁵Department of Preventive Medicine, Barretos Cancer Hospital and Pio XII Foundation, Barretos, SP, Brazil; ⁶Division of Urologic Surgery, Department of Surgery, and Department of Pathology, Durham, NC, USA
(Presented by: Roberto Muller)

Introduction and Objectives: Screening underprivileged men for prostate cancer (PC) over large geographic areas is challenging. PC detection relies on prostate biopsy (PXBx), which may not be accessible in remote areas. Doing PXBx in a central site has advantages, but distance to the site may be a barrier. We tested if distance to a central PXBx site was associated with non-compliance to PXBx in a large PC screening program.
**Methods:** Between 2004−7, 17,571 men were screened for PC in 231 cities from underprivileged areas in Brazil. PNBx criteria were: abnormal digital rectal examination (DRE) or PSA >4.0 or 2.5–4 ng/mL (if %fPSA ≤15). Men recommended to PNBx were contacted by mail sent to their closest health unit. Indication was confirmed at central PNBx site with a new DRE and repeat PSA. Of screened men, 2,808 (16%) were invited to central PNBx site and 2,130 (75.9%) came for further evaluation. Distances from the subject’s city to the PNBx site were estimated using Google Maps website and plotted vs. PNBx non–compliance (being invited to PNBx site and not coming for further evaluation) using Locally Weighted Scatterplot Smoothing (LOWESS). We tested if the distance to the PNBx site increased non–compliance with logistic regression adjusted for age, DRE, education, PSA, PC family history and prior screening.

**Results Obtained:** Non–compliant men were older (68.0 vs 66.0 y, P<0.001), had higher PSA (4.8 vs 4.1 ng/mL, P<0.0001), were more likely to have a normal DRE (46.8% vs 40.9%, P=0.007), lived farther from the PNBx center (770 vs 260 km, P<0.001), were less educated (34.6% vs 21.8% illiteracy rate, P<0.001), and had less prior PSA or DRE screening (36.4% vs 46.7%, P<0.001). Non–compliance rates increased with increasing distance to the PNBx center in LOWESS plot (Fig) and in adjusted analysis (OR per 100 km: 1.16, CI95%:1.14–1.18, P<0.001). Excluding men who presented for PNBx, but upon further work–up were not recommended for PNBx (n=481), did not change the results.

**Conclusions:** Among underprivileged men, larger distance to the PNBx center was associated with increased rates of PNBx non–compliance. These findings have implications for regionalization of care for PC screening.(Funding: DoD, Pio XII Foundation)
Poster #199
RETURN TO WORK AFTER PRIMARY EARLY PROSTATE CANCER SURGERY
Andrew Salner¹, Ilene Staff¹, Tara MLaughlin¹, Rene Jahiel¹, Keith Bellizzi² and Joseph Wagner¹
¹Hartford Hospital, Hartford, CT; ²UConn, Storrs, CT
(Presented by: Andrew Salner)

Background: Primary prostate cancer surgery is highly prevalent in men who are still in work−force age. Because of the large size of this population, treatment approaches associated with less time away from work will have significant implications for the socio-economic productivity of that population. The present study was undertaken in order to explore this issue.

Method: A 32−item questionnaire was mailed in 2011−2012 to 1491 men aged 44 to 89 who had received primary surgical treatment for stages 1−2 prostate cancer between 1995 and 2011. The main dependent variable was time interval in weeks between dates of surgery and return to work. Logistic and linear regression was used to analyze the association between time to return to work and surgical approach (robotic vs open). Multivariate analyses included a series of demographic and sociological variables.

Results: We received 315 questionnaires completed by men who were working at the time of primary surgical treatment, a return rate of 21.2%, (137 with open abdominal surgery, 178 with robot−assisted laparoscopic surgery). Almost all (99%) of subjects who completed the questionnaire continued to work after surgery. Time to return to work was significantly shorter for those who had robotic−assisted surgery relative to open: 3.4 vs. 4.8 weeks (p= 0.01); 23.6% returned after 4 weeks vs 38.2% (robotic vs. open; p= 0.01). Overall, short return (return to work after less than 4 weeks) was significantly associated with fewer symptoms, older age, higher socio−economic /educational status, or self−employment; we noted no effect for level of family or employer support. Multivariate analysis indicated that the type of surgery remained a significant predictor of return to work independent of age, income, socio−economic status, self−employment, or symptoms, and, with some overlap, date of surgery.

Conclusion: Robot−assisted laparoscopic surgery for primary prostate cancer is associated with a more than−one−week shorter time to return to work relative to open−abdominal surgery.
Poster #200
PSA DENSITY OF THE TRANSITION ZONE AND PSA VELOCITY AS PREDICTORS FOR PROGRESSION IN PATIENTS ON ACTIVE SURVEILLANCE FOR PROSTATE CANCER

David Margel¹, Oleksandr Stakhovskyi², Sean C. Skeldon², Paul Athanasopoulos³, Tristan Juvet², Narhari Timilshina², Cynthia Kuk², Greg Trotter², Andrew Evans³, Theodorus H. van der Kwast¹, Ants Toi² and Alexandre R. Zlotta⁴
¹University Health Network, Toronto, ON; ²Princess Margaret Hospital, University Health Network, Toronto, ON, Canada; ³Toronto General Hospital, Toronto, ON, Canada; ⁴Mount Sinai Hospital & Princess Margaret Hospital, University Health Network, Toronto, ON, Canada
(Presented by: David Margel)

Introduction and Objectives: Active surveillance (AS) is a common strategy for men with low-grade, low-volume prostate cancer (PCa). Predicting whether a cancer will progress is difficult and thus, new effective predictors are urgently needed. In AS patients, there is the concern that sampling error during biopsy can underestimate the true burden of the disease. PSA density of the transition zone (PSA/TZ) was previously shown to increase the sensitivity and specificity of PSA for predicting PCa. We studied the value of baseline PSA/TZ for predicting pathologic progression of patients with PCa on AS.

Methods: A retrospective review of 389 patients on AS from 1995–2010 was performed. 250 patients fulfilled the criteria for AS and had measurable TZ volumes on their initial biopsy. Univariate and multivariate Cox proportional hazard regression analyses were performed to analyze the predictive role of PSA, PSA/TZ, prostate volume (Pvol), PSA density (PSAD), PSA velocity (PSAV), TZ volume, age and 5ARI for pathologic progression.

Results: Eighty-one patients (32.4%) progressed pathologically after a median follow-up of 39.7 months. PSA/TZ (0.28 vs 0.16 ng/ml/cc, p<0.001) and PSAV (0.59 vs 0.19 ng/ml/year, p<0.001) were significantly different when comparing patients who progressed and those who did not. Univariate Cox proportional hazards regression analysis showed that PSA/TZ and PSA/V were the most significant predictors for pathological progression. The hazard ratios (HR) for PSA/TZ and PSA/V were 1.93 (1.42–2.62) and 1.42 (1.19–1.69), respectively. Multivariate analysis using logistic regression modeling showed that the most predictive parameter for overall progression on AS was PSA/TZ (with odds ratio (OR) 7.09, 95%CI 1.92–26.01, p=0.003). PSAV was also an independent predictor of progression (OR 1.81, 95%CI 1.21–2.69, p=0.004). The area under (AUC) the ROC curve for the prediction of pathological progression in men on AS was the largest for PSA/TZ (0.69) compared to the other parameters.

Conclusions: PSA/TZ at baseline may help to predict which men starting AS are at higher risk for pathological progression. A high PSA/TZ level at the time of the initial biopsy may suggest that a larger volume of cancer or a higher Gleason score tumor might have been missed on biopsy. PSAV appears to provide some useful information about patients at a higher risk for progression under AS as well.
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<td>11/29/12</td>
<td>4:00 p.m.</td>
<td>Poster #23</td>
</tr>
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</table>
**Alphabetical Index of Authors**

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Time</th>
<th>Session</th>
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</thead>
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<td>11/30/12</td>
<td>4:10 p.m.</td>
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</tbody>
</table>
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The Society of Urologic Oncology (SUO) was created in 1984 to include members interested in the care of patients with malignant genitourinary disease. The SUO develops educational and research initiatives, studies in urologic oncology, and provides physician statements representing state-of-the-art assessments of these issues to other organizations.

For more information, visit www.suonet.org.

The National Cancer Institute (NCI) is the government’s primary agency for conducting and supporting research in cancer causes, diagnosis, prevention, and treatment. In support of the entire community of cancer researchers, NCI employs its funding mechanisms, organizations, and networks to support basic, translational, and clinical research, and to invest in extraordinary opportunities to further progress made possible by previous discoveries.

For more information, visit www.cancer.gov.
MARK YOUR CALENDARS

SUO-SBUR Joint Meeting at the 2013 AUA Annual Meeting
May 2013
San Diego, CA

SUO at the 2013 AUA Annual Meeting
May 2013
San Diego, CA

SUO 2013 Annual Meeting
December 2013
Bethesda North Marriott Hotel & Conference Center
Bethesda, Maryland