

Poster Session 11: Urologic Malignancies (2)

June 28, 2016 0730-0900

MP-11.01

Validation of perioperative blood transfusion as a surgical quality indicator of radical cystectomy for urothelial bladder cancer

Siemens, D. Robert¹; Doiron, R. Christopher¹; Wei, Shelly¹; Booth, Chris¹
¹Urology, Queen's University, Kingston, ON, Canada

Introduction and Objectives: Perioperative blood transfusion (PBT) has been evaluated as a quality-of-care indicator in both oncologic and non-oncologic surgical cases. Previous single-centre studies of perioperative blood transfusion at the time of radical cystectomy (RC) have suggested a potential association with long-term cancer survival. Here, we describe factors associated with PBT at RC in routine clinical practice and evaluate its association on survival to explore its utility as a quality indicator of surgical care.

Methods: Electronic records of treatment and surgical pathology reports were linked to the population-based Ontario Cancer Registry to identify all patients with bladder cancer who underwent RC and PBT between 2000 and 2008. Hospital discharge records were used to identify PBT. Modified Poisson regression model was used to determine the factors associated with PBT. A Cox proportional hazards regression model was used to explore the association between PBT and overall (OS) and cancer-specific (CSS) survival.

Results: Among the 2593 patients with RC from 2000-2008, 62% received an allogenic red blood cell transfusion. The frequency of PBT decreased over the study period (from 68% in 2000 to 54% in 2008; $p < 0.001$). Factors associated with receiving PBT included age (80+ years RR 1.25, 95% CI 1.14-1.39), sex (female RR 1.40, 95% CI 1.33-1.48), greater comorbidity (RR 1.11, 95% CI 1.03-1.20), T stage (T4 tumour RR 1.24, 95% CI 1.12-1.36), and surgeon volume (lowest quartile RR 1.18, 95% CI 1.08-1.28). Use of PBT was associated with inferior early outcomes including median length of stay (11 days vs. 9 days; $p < 0.001$), 90-day readmission rate (38% vs. 29%; $p < 0.001$) and 90-day mortality (11% vs. 4%; $p < 0.001$). OS (32% vs. 47%; $p < 0.001$) and CSS (38% vs. 54%; $p < 0.001$) at five years were lower among patients with PBT. These differences in long-term survival persisted on multivariate analysis (OS HR 1.33, 95% CI 1.20-1.48; CSS HR 1.39, 95% CI 1.23-1.56). This observational study is limited by unmeasured confounding variables that could not be corrected for in our adjusted analyses.

Conclusions: Although rates are decreasing, these data suggest very high utilization rate of PBT at time of RC in routine clinical practice. PBT is associated with substantially worse early outcomes and long-term survival. This association persists despite adjustment for disease-, patient- and provider-related factors, suggesting that PBT is an important and valid indicator of surgical care of bladder cancer.

MP-11.02

Impact of pathology review on clinical management of patients with bladder cancer in a contemporary era

Traboulsi, Samer¹; Brimo, Fadi²; Yang, Yutong²; Maedler, Chelsea²; Tanguay, Simon¹; Aprikian, Armen-G.¹; Kassouf, Wassim¹

¹Urology, McGill University Health Centre, Montreal, QC, Canada;

²Pathology, McGill University Health Centre, Montreal, QC, Canada

Introduction and Objectives: Treatment decisions in bladder cancer depend heavily on the pathology report. The TNM and World Health Organization (WHO) classifications standardized the reporting of lesions, however, discrepancy between pathological reports and review is still considerable. We

evaluated the implications of stage and grade discrepancy and other prognostic factors on the risk category in bladder cancer and its subsequent influence on treatment strategy.

Methods: 98 consecutive pathology specimens from transurethral resections in patients with suspected bladder tumours obtained from outside hospitals were reviewed at our institution by a genitourinary pathologist. Patients were classified into risk groups according to the pathology reports obtained before and after review. A management course was proposed according to the local institutional practices and main urological guidelines.

Results: Overall, 33/98 (33.7%) of reviews had significant changes associated with management implications, mainly due to changes in risk category. On review, 12 patients were recommended radical cystectomy instead of conservative management, two radical cystectomies due to downstaging from T2 to T1. Six patients who remained T1 after review were, however, advised for early cystectomy as a treatment option since they were reclassified from high-risk to very high-risk non-muscle invasive bladder cancer secondary to high-risk features, such as carcinoma in situ or lymphovascular invasion found on review. 10 patients initially staged as T2, were strongly advised for neoadjuvant chemotherapy before cystectomy after demonstrating lymphovascular invasion or high-risk variant histology on review.

Conclusions: Review by a genitourinary pathologist remains important, as it defines more clearly the tumour risk category and influences the management of bladder cancer patients. A complete initial pathological report may potentially further decrease the discrepancy between initial and review reports.

MP-11.03

Effect of metformin on recurrence and progression in patients with non-muscle invasive bladder cancer

Traboulsi, Samer¹; Bachir, Bassel G.¹; Yafi, Faysal A.¹; Tanguay, Simon¹; Aprikian, Armen-G.¹; Kassouf, Wassim¹

¹Urology, McGill University Health Centre, Montreal, QC, Canada

Introduction and Objectives: Non-muscle invasive bladder cancer (NMIBC) is characterized by high recurrence rates and significant progression rates. A large proportion of diabetics are treated with metformin, an effective antidiabetic with a good safety profile. Metformin is postulated to have antineoplastic activity due to its inhibitory activity on mammalian target of rapamycin (mTOR). We assessed the effects of metformin on bladder cancer recurrence and progression in patients with NMIBC.

Methods: A retrospective analysis of patients with NMIBC was performed between 1975 and 2014. All benign histology and non-urothelial tumours were excluded from the analysis. Standard methodology, using univariate and multivariate analysis, was conducted on various clinicopathologic variables, as well as on the use of metformin.

Results: Overall 1480 patients with a median age of 69.5 years were included. The use of metformin was not associated with recurrence-free survival. However, patients on metformin had a significantly decreased rate of grade progression on multivariate analysis (HR 0.37, CI 0.16-0.90; $p = 0.027$). The use of metformin was significantly associated with stage progression on multivariate analysis (HR 0.4, CI 0.19-0.84; $p = 0.015$).

Conclusions: The use of metformin may have protective effects in patients with NMIBC. Prospective validation of these findings is warranted.

MP-11.04

Effect of piece and tumour size from resected renal parenchyma post-laparoscopic partial nephrectomy on renal function

Chan, Ernest¹; Boyle, Shawna²; Luke, Patrick P.³

¹Schulich School of Medicine and Dentistry, Western University, London, ON, Canada; ²Urologic Oncology Branch, National Institutes of Health, Bethesda, MD, United States; ³Urology and Transplantation, London Health Sciences, London, ON, Canada

Introduction and Objectives: There is interest in predicting loss of renal function post-partial nephrectomy (PN). The relative impact of piece and tumour size with regards to alteration in renal function post-PN is controversial.

Methods: We performed a retrospective review of patients who underwent laparoscopic PN between October 2002 and May 2011. Only patients with complete data with regards to pre- and postoperative renograms, and tumour sizes from imaging and pathology reports were included (58/280). Using measurements from the resected specimen pathology reports, volumetric estimates for tumour size and piece size were generated based on ellipsoid and conoid formulas, respectively. Resected parenchyma (RP) was calculated by subtracting the tumour size from its corresponding piece size. Ipsilateral renal function (IRF) was calculated by multiplying the percentage of contribution from the MAG3 renogram by the total estimated glomerular filtration rate (eGFR). The effect of tumour size, piece size, and RP on IRF was assessed at three days and 6-12 weeks postoperatively.

Results: Increasing tumour size and RP were determined to be significantly associated with decreased postoperative IRF at three days ($p=0.002$, $R^2=0.162$; $p=0.014$, $R^2=0.096$) and at 6-12 weeks postoperatively ($p=0.008$, $R^2=0.188$; $p=0.03$, $R^2=0.116$). Not surprisingly, piece size was associated with decreased postoperative IRF only if the tumour was endophytic ($p=0.019$; $R^2=0.701$). Clamp time was not significantly associated with decreased postoperative IRF.

Conclusions: Increasing RP and tumour size were associated with decreased IRF in patients undergoing laparoscopic PN. In endophytic tumours, piece size predicted IRF loss, which may have implications on surgical technique (enucleation, clamp time) when trying to minimize renal functional loss in these cases.

MP-11.05

Can early dynamic phase of 18 F-FDG PET/CT better predict grade and T-stage of urinary bladder cancer compared to post-diuretic phase imaging: A prospective study

Mete, Uttam¹; Sharma, Abhishek²; Sood, Ashwani²; Kakkar, Nandita³; Mittal, B.R.²

¹Urology, Post Graduate Institute of Medical Education & Research, Chandigarh, India; ²Nuclear Medicine, PGIMER, Chandigarh, India; ³Pathology, PGIMER, Chandigarh, India

Introduction and Objectives: To find out the correlation of standardized uptake value (SUVmax) calculated during early dynamic and delayed post-diuretic phase of 18 F-FDG PET/CT studies with the grade and T-stage of urinary bladder cancer.

Methods: 39 patients with bladder carcinoma had undergone 18 F-FDG PET/CT. The SUVmax of the bladder tumours during early dynamic imaging of the pelvis (initial two minutes and at 10 minutes indicating perfusion phase), at the rate of two minutes/frame starting from the time of injection and at delayed imaging (60 minutes post-injection, indicating metabolic activity) were calculated. All patients had undergone surgery within the following three months. The SUVmax of both the phases were compared to the grade and T-stage of the tumours.

Results: SUV max of the early dynamic imaging of various grades and stages was different from the SUVmax at 60 minutes. High-grade tumours showed a trend towards higher SUVmax both at two minutes (5.4 ± 1.4 vs. 4.7 ± 1.6 ; $p=0.144$) and at 10 minutes (8.7 ± 2.2 vs. 7.5 ± 2.7 ; $p=0.160$). This difference was statistically significant for stage T1 tumours (6.8 ± 0.8 vs. 5.5 ± 1.2 ; $p=0.04$). Non-invasive Ta tumours had significantly less SUVmax than higher-stage tumours during the early dynamic imaging at two minutes (SUVmax for Ta, T1, T2, T3, and T4 were 3.3 ± 2.6 , 6.2 ± 1.2 , 4.4 ± 1.0 , 6.4 ± 1.3 , and 5.9 ± 1.3 , respectively). No

such difference was noted in delayed imaging (SUVmax for Ta, T1, T2, T3, and T4 were 13 ± 4.6 , 14.9 ± 6.8 , 18.3 ± 15.5 , 19.9 ± 3.6 , and 10.3 ± 1.5 , respectively).

Conclusions: Statistically significant low SUVmax at early dynamic phase imaging was noted for low-grade tumours compared to high-grade lesions. This difference was not noted at standard imaging done at 60 minutes. Ta tumours had very low SUVmax compared to non-Ta tumours. Compared to delayed imaging, early dynamic imaging better predicts the T-stage, grade, and aggressiveness of the bladder tumours.

MP-11.06

Nutritional preoperative factors and risk of complications for subjects undergoing radical cystectomy: A systematic review

Allaire, Janie¹; Ben-Zvi, Tal²; Lamarche, Benoit¹; Fradet, Yves^{1,2}; Lacombe, Louis^{1,2}; Fradet, Vincent^{1,2}

¹Centre de recherche du CHU de Québec, Université Laval, L'Hôtel-Dieu de Québec, Québec, QC, Canada; ²Urology, Université Laval, Hôtel Dieu de Québec, Québec, QC, Canada

Introduction and Objectives: Radical cystectomy (RC) with urinary diversion is the standard surgical treatment of muscle invasive bladder cancer, but is associated with a high complications rate. Reports of RC complications have drawn much attention during recent years. While nutritional status influences the cancer patients's ability to resist and respond to surgical stress, few nutritional factors have been identified to predict the risk of developing complications after RC. We conducted a systemic review to identify preoperative nutritional factors reported in the literature and their effects on RC complications.

Methods: We searched MEDLINE and EBSCO publications dating from January 2005 to November 2015. All English language cohort and case-control studies evaluating preoperative nutritional status and the risk of complications or mortality after RC in bladder cancer subjects were selected. Two reviewers performed the study selection. We used the Quality Assessment Tool for Quantitative Studies for the objective assessment of studies.

Results: Low serum albumin values increases the risk of mortality. High body mass index appears to increase the risk of developing venous thromboembolism after RC in bladder cancer patients. No other significant predictor of complications has been identified.

Conclusions: To date, only serum albumin values and body mass index have been isolated as nutritional factors impacting RC complications. A large heterogeneity in study structure, results, and reporting methods was found in the urological literature and hampers. Prospective studies, using standardized methods of defining and reporting complications, are required in order to identify modifiable nutritional preoperative risk factors of morbidity, mortality, and complications post-RC.

MP-11.07

Impact of epidural analgesia for open radical cystectomy with ileal conduit on bowel function and length of stay: A retrospective study in 61 patients

Gratton, Matthieu¹; D'aragon, Frédéric²; Carrier, Guillaume¹; Ouellet, Simon¹; Jeldres, Claudio¹; Sabbagh, Robert¹

¹Urology, Université de Sherbrooke, Sherbrooke, QC, Canada; ²Anesthesiology, Université de Sherbrooke, Sherbrooke, QC, Canada

Introduction and Objectives: To assess the effect of perioperative analgesia on postoperative outcomes in adult patients undergoing open radical cystectomy with ileal conduit.

Methods: We retrospectively reviewed all cases of open radical cystectomy with ileal conduit for bladder cancer between 2011 and 2015 at our institution. Patients were divided into two groups: epidural analgesia (EA) and patient-controlled analgesia (PCA). Clinicopathologic data were available for all patients and four postoperative outcomes were compared between the groups, namely: time to normal transit (TNT), time to normal diet (TND), length of stay (LOS), and total systemic morphine consumption at seven days in postoperative equivalent (TSM). A subanalysis was performed to address the impact of high thoracic EA (HT) (T6-T10) vs. low thoracic and lumbar EA (LTL) (T11-L4) on the same outcomes. Statistics

Table 1. MP-11.07. Patient and tumour characteristics based on type of analgesia

Variables	PCA (n=12)	Epidural (n=49)	p value
Age, years (SD)	64.48 (11.6)	72.03 (12.6)	0.095
Male, n (%)	10 (83.3)	40 (81.6)	0.89
Charlson Comorbidity Index (SD)	5 (1.45)	6 (1.61)	0.002
BMI, kg/m ² (SD)	27.6 (4.01)	28.51 (5.59)	0.337
EBL	600 (743.7)	600 (368.41)	
Hb variation pre to postoperative	17.5 (15.08)	20 (12.68)	
ASA, n (%)			0.96
1	0 (0)	1 (2)	
2	7 (58.3)	27 (55.1)	
3	5 (41.7)	21 (26.5)	
Active smoking	10 (83.3)	44 (89.8)	0.532
24h perioperative fluids (SD)	6.33 (0.71)	6.05 (1.67)	0.92
Operative time	315 (26.2)	300 (37)	0.26
Pathologic stage (%)			0.84
pT0	(33.3)	22.4	
pTa/pTis/pT1	(8.3)	24.5	
pT2+	(58.3)	53.1	
N+	(33.3)	24.5	0.66
Clavien Complication Scores at 30 days (%)			
None	33.3	32.7	0.970
2 or less	41.7	42.8	
3 and 4	25	24.5	

Table 2. MP-11.07. Postoperative outcomes

Variables	PCA (n=12)	Epidural (n=49)	p value
Time to normal diet (SD)	6 (4.08)	6 (3.71)	0.435
Total morphine consumption (SD)	131.53 (159)	95.0 (76.15)	0.081
Time to transit (SD)	4.5 (2.59)	3.5 (2.48)	0.071
Length of stay (SD)	12.5 (8.46)	10 (9.8)	0.270

relied on Fisher test or Chi-square comparison between the group and uni- or multivariate analysis relied on logistic regression models.

Results: A total of 61 patients were identified, 49 in the EA group and 12 in the PCA group. No differences were recorded for body mass index (BMI), American Society of Anesthesiologists (ASA) score, estimated blood loss, received perioperative fluid, operative time, pathologic staging and Clavien scores at 30 days. In univariate analysis, no statistically significant differences were recorded in the TNT (3.5 vs. 4.5 days; $p=0.071$), TND (6 vs. 6 days; $p=0.435$), LOS (10.0 vs. 12.5; $p=0.270$) and TSM (95.0 vs. 131.5; $p=0.081$) between both groups. However, a trend toward shorter TNT, TND, and LOS was observed in the EA group with a lower TSM. Sample size may have underpowered our analysis. A subanalysis of the impact of HT vs. LTL on the same four postoperative issues showed no differences.

Conclusions: Type of analgesia was not associated with TNT, TND, LOS, or TSM. However, a favourable trend was recorded toward EA use regarding the studied outcomes. Sample size limitation may have resulted in underpowered analyses.

1. Maffezzini M, Campodonico F, Canepa G, et al. Current perioperative management of radical cystectomy with intestinal urinary reconstruction for muscle-invasive bladder cancer and reduction of the incidence of postoperative ileus. *Surg Oncol* 2008;17:41-8. <http://dx.doi.org/10.1016/j.suronc.2007.09.003>

- Mazul-Sunko B, Gilja I, Jelisavac M, et al. Thoracic epidural analgesia for radical cystectomy improves bowel function even in traditional perioperative care: A retrospective study in eighty-five patients. *Acta Clin Croat* 2014;53:319-25.
- Maffezzini M, Gerbig G, Campodonico F, et al. Multimodal perioperative plan for radical cystectomy and intestinal urinary diversion. I. Effect on recovery of intestinal function and occurrence of complications. *Urology* 2007;69:1107-11. <http://dx.doi.org/10.1016/j.urology.2007.02.062>
- Werawat Ganon T, Charuluxanun S. Patient-controlled intravenous opioid analgesia vs. continuous epidural analgesia for pain after intra-abdominal surgery. *Cochrane Database Syst Rev* 2005; 25:CD004088.
- Taqi A, Hong X, Mistraletti G, et al. Thoracic epidural analgesia facilitates the restoration of bowel function and dietary intake in patients undergoing laparoscopic colon resection using a traditional, nonaccelerated, perioperative care program. *Surg Endosc* 2007;21:247-52. <http://dx.doi.org/10.1007/s00464-006-0069-5>
- Freise H, Fischer LG. Intestinal effects of thoracic epidural anesthesia. *Curr Opin Anaesthesiol* 2009;22:644-8. <http://dx.doi.org/10.1097/ACO.0b013e32832eb7e8>

7. Toren P, La dak S, Ma C, et al. Comparison of epidural and intravenous patient controlled analgesia in patients undergoing radical cystectomy. *Can J Urol* 2009;16:4716-20.

MP-11.08

Total penile glans resurfacing to maximize penile form and function in superficial penile cancer: MI-PECANS

O'Kelly, Fardod¹; London, Dara¹; Lonergan, Peter¹; Sweeney, Paul²; Cullen, Ivor³; Hegarty, Paul¹

¹Urological and Reconstructive Surgery, Mater Misericordiae University Hospital, Dublin, Ireland; ²Urological Surgery, Mercy University Hospital, Cork, Ireland; ³Urological Surgery, University Hospital Waterford, Waterford, Ireland

Introduction and Objectives: The treatment of malignant penile lesions has traditionally been with radical surgery (2 cm margins). Radical surgery has demonstrated excellent local control rates, although associated with significant psychological morbidity and sexual dysfunction. Total glans resurfacing results in a good cosmetic appearance and maximum phallic length, with preservation of sexual and urinary function, without compromising oncological control. The objective of this study was to investigate the role of a minimally invasive approach to superficial penile cancer in preserving both function and appearance, and whether this led to inferior oncological control.

Methods: A consecutive series referred for the treatment of penile malignancy were prospectively analyzed over 12 months. After clinical staging and grading, those patients offered glans-preserving surgery were analyzed for oncological and functional outcomes.

Results: 28 patients were referred with penile malignancies over a 24-month period, of which 17 (63%) underwent total glans resurfacing. The median (range) age of the patients at presentation was 54.8 years. There was complete graft take in 94.2% patients. There were no recurrences and only one patient required further surgical intervention. All patients stated that the sensation at the tip of their penis was either no different or better after surgery. 81% felt that their sex life had been improved. Overall patient satisfaction was high, all scoring 5 on the visual analogue scale.

Conclusions: Careful tumour risk assessment and appropriate patient choice is necessary. The need for close observation is also essential, as the long-term recurrence rates for these techniques are still unknown. However, the advances in penile preserving surgery, in conjunction with other techniques, such as dynamic sentinel lymph node biopsy, has transformed the approach to management of penile cancer and reduced the physical and psychological morbidity associated with treatment.

1. Hegarty PK, Shabbir M, Hughes B, et al. Penile-preserving surgery and surgical strategies to maximize penile form and function in penile cancer: Recommendations from the United Kingdom experience. *World J Urol* 2009;27:179-87. <http://dx.doi.org/10.1007/s00345-008-0312-x>
2. Pietrzak P, Corbishley C, Watkin N. Organ-sparing surgery for invasive penile cancer: Early followup data. *BJU Int* 2004;9:1253-7. <http://dx.doi.org/10.1111/j.1464-410X.2004.05153.x>
3. Shabbir M, Muneer A, Kalsi J, et al. Glans resurfacing for the treatment of carcinoma in situ of the penis: Surgical technique and outcomes. *Eur Urol* 2011;59:532-6. <http://dx.doi.org/10.1016/j.eururo.2010.09.039>

MP-11.09

Uretero-ileal anastomotic strictures in patients undergoing cystectomy and urinary diversion for benign and malignant disease

Remondini, Taylor E.¹; Carlson, Kevin V.²; Baverstock, Richard J.²

¹Cumming School of Medicine, University of Calgary, Calgary, AB, Canada; ²Vesia (Alberta Bladder Centre), Division of Urology, University of Calgary, Calgary, AB, Canada

Introduction and Objectives: Cystectomy with urinary diversion is performed for benign (neurogenic bladder, radiation cystitis, interstitial cystitis) or malignant (muscle-invasive bladder cancer) disease. Uretero-ileal anastomotic strictures are an uncommon, but challenging complication

of this surgery. We herein review our stricture rates and our experience with their management.

Methods: We retrospectively identified patients who underwent cystectomy by two urologists (RJB, KVC) in Calgary, Alberta, via an established database. Postoperative complications within hospital, within 90 days of the surgery and beyond 90 days were reviewed. Statistical analysis of nominal data was assessed using Pearson's Chi-square test for association, where $p < 0.05$ was considered significant.

Results: Of 126 patients, 115 (91.3%) received ileal conduits while 11 (8.7%) received ileal neobladders. Of these patients, 14 (11.1%) had past exposure to pelvic radiation: two received brachytherapy for prostate cancer, while 12 received external beam radiotherapy (EBRT). Uretero-ileal anastomotic strictures were observed in 8.7% of patients. Interventions included nephrostomy with antegrade stenting (36.4%), endoscopic laser incision (27.3%), and surgical re-implantation (36.4%). Of patients that had past radiation exposure, 21.4% went on to have strictures, while 7.1% of those with no radiation history had strictures ($p = 0.074$). Patients that had EBRT prior to surgery were more likely to develop uretero-ileal anastomotic strictures than patients that had no exposure (OR 4.42, 95% CI 0.99-19.62; $p = 0.036$).

Conclusions: We report an uretero-ileal anastomotic stricture rate of 8.7%. These patients may require multimodal management, including open surgical re-implantation. Our data confirms a relationship between pelvic EBRT exposure and stricture incidence.

MP-11.10

How a single educational intervention can increase the referral for and usage of neoadjuvant chemotherapy in bladder cancer cases

Remondini, Taylor E.¹; Carlson, Kevin V.²; Baverstock, Richard J.²

¹Cumming School of Medicine, University of Calgary, Calgary, AB, Canada; ²Vesia (Alberta Bladder Centre), Division of Urology, University of Calgary, Calgary, AB, Canada

Introduction and Objectives: Following a multidisciplinary round in May 2013, we advanced our efforts to ensure patients were provided the option of neoadjuvant chemotherapy (NAC) for its potential survival advantage in muscle-invasive bladder cancer (MIBC) cases. We, herein, review our use of NAC and experience with complications of its use and effect on early surgical outcomes.

Methods: We retrospectively identified MIBC patients who received cystectomy by two urologists (RJB, KVC) in Calgary, Alberta. Referral rates to medical oncology, NAC use, reasons for refusal or denial of NAC, complications during its administration, pathological outcomes, and postoperative complications within 90 days of surgery were reviewed. Statistical analysis of nominal data was assessed using Pearson's Chi-square test for association, where $p < 0.05$ was considered significant.

Results: Since May 2013, 30 of 35 patients (85.7%) were referred for NAC and 15 (42.9%) received it. Prior to this date, only eight of 56 (14.3%) had been referred and three (5.4%) received it. Of those patients with recorded reasons for not receiving NAC after referral, 17 patients were denied or declined NAC because of renal dysfunction (35.3%), patient concerns about side effects (17.6%), need for immediate surgery (17.6%), and patient perception of no benefit (11.8%). Of the 18 patients who received NAC, 83.3% received four full cycles. Eight NAC patients (44.4%) experienced 12 unique complications during treatment, including neutropenia (16.7%), thrombocytopenia (16.7%), electrolyte abnormalities (16.7%), hyperglycemia (11.1%), deep vein thrombosis (DVT) (11.1%), pulmonary embolism (PE) (11.1%), need for blood transfusions (5.6%), new onset atrial fibrillation (5.6%), ischemic bowel (5.6%), and reversible encephalopathy syndrome (5.6%). Positive lymph nodes were seen in 27.8% of NAC patients vs. 32.9% who did not receive it ($p = 0.68$). No difference was seen in the surgical margin status between these groups: NAC (16.7%) vs. no NAC (17.8%) ($p = 0.909$). There was no significant difference between groups in postoperative complications within 90 days, such as blood transfusion use ($p = 0.805$), ileus ($p = 0.569$), TPN use ($p = 0.957$), sepsis ($p = 0.900$), DVT ($p = 0.717$), PE ($p = 0.982$), myocardial infarction and stroke ($p = 0.245$), wound dehiscence ($p = 0.515$), wound infection ($p = 0.396$), and stoma dehiscence or herniation ($p = 0.370$).

Conclusions: We, herein, demonstrate that a single, multidisciplinary educational intervention dramatically increased both referral for and usage of NAC for MIBC. However, our data suggest that these patients are put at risk of significant complications during NAC administration without apparent early oncologic benefit. Long-term followup will be required to determine if a survival advantage is realized.

MP-11.11

Complications, predictors and outcomes of percutaneous renal biopsies

Patel, Premal¹; Kaler, Kamaljit S.²; Pruthi, Deepak¹; Kirkpatrick, Iain³; Rampersad, Christie⁴; Radulovic, Dejana³; McGregor, Thomas B.¹

¹Section of Urology, University of Manitoba, Winnipeg, MB, Canada; ²Department of Urology, University of California Irvine, Orange, CA, United States; ³Division of Diagnostic Imaging, University of Manitoba, Winnipeg, MB, Canada; ⁴College of Medicine, University of Manitoba, Winnipeg, MB, Canada

Introduction and Objectives: There has been a renaissance of percutaneous renal biopsies (PRBs) in the management of patients with renal masses. Our study looks at our initial experience with PRBs and looks to define predictors of complications and outcomes.

Methods: A prospective database of patients undergoing PRBs at St. Boniface General Hospital was developed in September 2013. Patient age, gender, tumour laterality and size, R.E.N.A.L. nephrometry score, biopsy complications, biopsy pathology results, and if applicable, final surgical pathology was extracted from patient charts. For our analysis, we included patients with masses less than 10 cm in size, as well as masses that were amenable to R.E.N.A.L. nephrometry scoring. From January 2012 to October 2015, 105 patients underwent percutaneous renal biopsies and 72 met our inclusion criteria.

Results: Mean patient age was 66.1 (range 45-89) with 43 males and 29 females. 61 (85%) patients had no complications with the remaining complications being Clavien-Dindo Grade 1. Of the 72 biopsies, 43 (60%) were malignant, 19 (26%) were insufficient for diagnosis, and 10 (14%) were found to be benign. With regard to predictors of adequate tissue for a diagnostic biopsy, we found no association with age, gender, laterality, tumour size, skin-to-tumour distance, and R.E.N.A.L. nephrometry score (subscore and total score analysis). Within our followup period, 25 patients underwent surgery. 22 (88%) of these patients had adequate tissue on initial biopsy for a diagnosis, which were all found to be congruent with final surgical pathology.

Conclusions: PRBs are safe, as demonstrated by our centre's minimal complication rate. Our study highlights the utility of a preoperative biopsy in patient management, as 11 (15%) of our cohort avoided unnecessary surgical intervention for a benign tumour.

MP-11.12

Catamnestic followup of renal cell carcinomas among atomic bomb survivors according to radiation exposure status

Ikeda, Kenichiro¹; Teishima, Jun¹; Hayashi, Tetsutaro¹; Goto, Keisuke¹; Matsubara, Akio¹

¹Urology, Hiroshima University, Hiroshima, Japan

Introduction and Objectives: More than 65 years have passed since exposure to the atomic bomb (A-bomb) in Hiroshima. There are many reports on radiation carcinogenesis in many carcinomas and several prospective cohort studies were conducted. So far, however, there have been few reports on the prognosis of A-bomb survivors vs. patients not exposed to A-bomb radiation (non-exposed). In this study, we evaluated differences in the prognosis of primary renal malignancies in A-bomb survivors and the non-exposed.

Methods: Of 479 patients who underwent nephrectomy at our hospital from March 1991 to December 2011, with renal cell carcinoma diagnosed in the resected specimen, 255 patients with evaluable cases in the postoperative course and birth month before June 1946, which included prenatal exposure to A-bomb radiation, were included. We retrospectively evaluated overall survival (OS), cancer-specific survival (CSS), and disease-free survival (DFS) rates. Patient clinicopathological findings were also analyzed.

Results: Of these 255 patients, 35 (13.7%) patients were A-bomb survivors. Mean age, sex, stage groupings, and histological classification and grade were similar between the A-bomb survivors and the non-exposed. Clinical T1 (cT1) patients were observed significantly more frequently among A-bomb survivors (32/35, 91.4%) than among the non-exposed (125/220, 56.8%; $p < 0.001$). At a median followup of 47 months, OS rates at five and 10 years were 92.8% and 87.7%, respectively, in the A-bomb survivors and 74.6% and 69.3%, respectively, in the non-exposed ($p = 0.053$). CSS rates at five and 10 years were 92.8% and 92.8%, respectively, in A-bomb survivors and 81.9% and 80.3%, respectively, in the non-exposed ($p = 0.137$). DFS rates at five and 10 years were 92.7% and 92.7%, respectively, in A-bomb survivors and 86.7% and 83.7%, respectively, in the non-exposed ($p = 0.192$). OS rates was also compared in cT1, there was no significant difference in A-bomb survivors and non-exposed

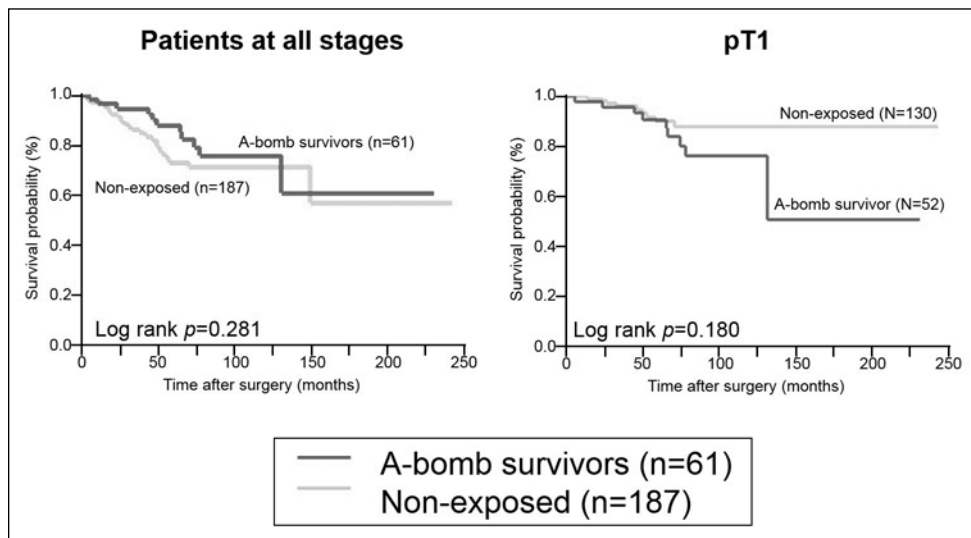


Fig. 1. MP-11.12.

Table 2. MP-11.12. Univariate and multivariate Cox regression analyses of clinicopathological factors for the prediction of cancer-specific survival in 248 RCC patients

Parameter		Univariate analysis		Multivariate analysis	
		p value	HR	95% CI	p value
A-bomb exposure	Not exposed vs. exposed	0.072	0.821	0.209–2.718	0.755
Sex	Female vs. male	0.028	1.189	0.383–4.519	0.776
Age	≤71 vs. >71 years old	0.964			
Symptoms	None vs. present	<0.001	1.510	0.596–4.234	0.395
Screening	None vs. present	0.008	2.179	0.344–42.60	0.449
Other overlapping cancer	None vs. present	0.005	0.552	0.113–1.992	0.383
Laterality	Right vs. left	0.312			
Histological classification	CCRCC vs. NCCRCC	0.134			
Histological grade	G1/2 vs. G3	0.001	1.92	0.756–4.504	0.162
Venous invasion	v0 vs. v1	<0.001	1.893	0.328–11.60	0.490
pT stage	pT1/2 vs. pT3/4	<0.001	6.718	1.265–44.37	0.023
pN stage	pN0 vs. pN1/2	<0.001	4.667	1.880–11.95	0.001
M stage	M0 vs. M1	<0.001	3.748	1.562–9.571	0.003

CCRCC: clear-cell renal cell carcinoma; NCCRCC: non-clear-cell renal cell carcinoma.

(p=0.690). Multivariate analysis of prognosis showed that female and cT1 among A-bomb survivors were significantly different from non-exposed. **Conclusions:** Renal cell carcinoma in A-bomb survivors, cT1 is the time of diagnosis was significantly higher than non-exposed. However, OS was no difference between the two.

MP-11.13

Accuracy of kidney cancer diagnosis and histological subtype within cancer registry data

Himmelman, Jeffrey G.^{1,2,3}; Merrimen, Jennifer^{2,3,4}; Thompson, Kara^{2,3}; Theriault, Chris^{2,3}; Wood, Lori A.^{2,3,5}

¹Urology, Dalhousie, Halifax, NS, Canada; ²Dalhousie, Halifax, NS, Canada; ³Queen Elizabeth II Health Sciences Centre, Halifax, NS, Canada; ⁴Pathology, Dalhousie, Halifax, NS, Canada; ⁵Medicine, Dalhousie, Halifax, NS, Canada

Introduction and Objectives: Cancer registries are the mainstay for Canadian population-based cancer statistics. Each province captures this data in provincial registries, including the Nova Scotia Cancer Registry (NSCR). The goal of this study was to describe data from the NSCR about method of diagnosis and kidney cancer (KC) pathology and compare it to the actual pathology reports to determine the accuracy of diagnosis and histological subtype assignment.

Methods: This retrospective analysis included patients with KC in the NSCR with an ICD-10-CM code C64.9 seen or treated in the largest provincial district from 2006-2010. From the NSCR, method of diagnosis and pathological diagnosis was recorded. From pathology reports, pathological diagnosis based on World Health Organization (WHO) classification was recorded.¹ All non-clear cell KC (non-ccKC) diagnosis from NSCR were compared to the actual pathology report for descriptive comparison and reasons for discordance.

Results: 723 patients make up the study cohort. 81.3% of patients were diagnosed on nephrectomy, 11.1% on radiography, 6.9% biopsy, and 0.7% autopsy. By NSCR data, 52.8% had clear cell, 20.5% KC not otherwise specified (NOS), 12.7% papillary, 4% chromophobe, and many other non-ccKC. By pathology reports, 69.6% had clear cell, 15% papillary, 5% chromophobe, only 2.7% KC NOS. The large number of other non-ccKC will be presented. There was a discordance rate of 15.4% between NSCR data and diagnosis from pathology report.

Conclusions: Registry data may not be accurate for the true incidence of KC, since 11.1% were based on radiology alone. Clear cell KC made up 52.8% of registry diagnosis, but 69.6% on pathology report review. Although papillary and chromophobe incidence did not vary a lot, other types of non-ccKC did. This registry data did not differentiate

between papillary type I and II. Non-ccKC should not be considered one entity. One must be aware of the gaps in registry data for KC statistics.

1. Eble JN, Sauter G, Epstein JI, and Sesterhenn IA. 2004. Pathology and genetics of tumours of the urinary system and male genital organs. IARC Press.

MP-11.14

Factors affecting surgical wait times for renal masses

Ouellet, Simon¹; Sabbagh, Robert¹; Jeldres, Claudio¹

¹Urology, Université de Sherbrooke, Sherbrooke, QC, Canada

Introduction and Objectives: Surgical wait times (SWT) can result in distress for both the patient and the clinician. We assessed the factors predicting a longer SWT defined by the time from diagnosis of a renal mass to nephrectomy.

Methods: We retrospectively reviewed all surgically managed cases of renal masses at our institution between 2006 and 2012. Patients were classified into two groups; SWT <3 and ≥3 months based on the median SWT for the whole cohort. We compared clinicopathologic data between the groups. A multivariate analysis was performed to determine the variables associated with SWT ≥3 months. Statistics relied on Student-t test, Chi-square, and multivariate analysis on logistic regression model. Significance level was set at 0.05.

Results: A total of 350 patients were identified (180 with SWT <3 months and 170 with ≥3 months). No significant differences were recorded between the groups for age, gender, distance from hospital to home, body mass index (BMI), diabetes, hypertension, and smoking status. For SWT <3 months vs. ≥3 months, radiologic tumour size was 6.9 vs. 4.1 cm; p<0.01; T2-stage tumour or higher was 54 vs. 16%; p<0.01; and use of laparoscopic partial nephrectomy was 12 vs. 51%; p<0.01. For SWT <3 months vs. ≥3 months, additional abdominal investigations after the initial diagnosis were performed with ultrasound (6 vs. 9%; p=0.42), computed tomography (CT) scan (65 vs. 81%; p=0.01), magnetic resonance imaging (MRI) (5 vs. 13%; p=0.01), positron emission tomography (PET) scan (3 vs. 4%; p=0.78), and renal biopsy (2 vs. 8%; p=0.01). In multivariate analysis, factors associated with having a SWT ≥3 months were presence of diabetes (OR 2.9 (1.1-7.9)), smaller tumour size (OR 10.5 (10.3-10.7)), the use of additional investigations with MRI (OR 6.6 (1.4- 33.3)), or renal biopsy (OR 11.0 (1.3-100.0)).

Conclusions: Tumour size is the most important factor influencing the SWT; smaller tumours resulted in longer SWT. Other factors associated with having a SWT ≥3 months were presence of diabetes, and the use of additional investigation with MRI or renal biopsy.

MP-11.15

Epidural use in cystectomy is not associated with improved short- or long-term outcomes in routine clinical practice

Doiron, R. Christopher¹; Booth, Christopher M.^{2,3,4}; Jaeger, Melanie⁵; Wei, Xuejiao⁴; Siemens, D. Robert^{1,2,4}

¹Department of Urology, Queen's University, Kingston, ON, Canada;

²Department of Oncology, Queen's University, Kingston, ON, Canada;

³Department of Public Health Sciences, Queen's University, Kingston, ON, Canada; ⁴Division of Cancer Care and Epidemiology, Queen's University, Kingston, ON, Canada; ⁵Department of Anesthesia, Queen's University, Kingston, ON, Canada;

Introduction and Objectives: Use of perioperative thoracic epidural is a core component of surgical care pathways in cystectomy and ERAS protocols. Furthermore, there is evidence that use of neuraxial analgesia attenuates cancer recurrence in patients undergoing surgical resection of their malignancy. In this contemporary, population-based study, we report epidural use in patients undergoing cystectomy in routine clinical practice. We evaluate factors associated with use of regional anesthesia and the effect on short- and long-term outcomes.

Methods: All patients undergoing cystectomy in the province of Ontario between 2000 and 2008 were identified using the Ontario Cancer Registry (OCR) and were linked to treatment and pathology records. OHIP billing codes were used to identify all patients who received a perioperative epidural. Multivariate logistic regression analysis was used to describe factors associated with epidural use, while a Cox proportional hazards model describes associations with survival.

Results: Over the eight-year study period, 1628 patients underwent cystectomy — 54% (n=887) received an epidural, while 46% (n=741) did not. Higher surgeon, anesthesiologist, and hospital volume were all associated with increased epidural use ($p < 0.001$). There was no difference between the groups in length of stay, 30- and 90-day readmission rates, or 30- and 90-day mortality. In multivariate Cox proportional hazards analysis, epidural was not associated with improved five-year cancer-specific survival (HR 1.02, 95% CI 0.87-1.19; $p = 0.804$) or five-year overall survival (HR 0.91, 95% CI 0.80-1.03; $p = 0.136$).

Conclusions: Only 54% of cystectomy patients received an epidural in routine clinical practice. Those treated at higher-volume centres were more likely to receive an epidural. There was no difference in short- or long-term outcomes between the groups.

MP-11.16

Diabetes and kidney cancer outcomes: A propensity score analysis

Nayan, Madhuri¹; Finelli, Antonio¹; Juurlink, David N.²; Austin, Peter C.³; Kulkarni, Girish S.¹; Hamilton, Robert J.¹

¹Division of Urology, Departments of Surgery and Surgical Oncology, Princess Margaret Cancer Centre, University Health Network and the University of Toronto, Toronto, ON, Canada; ²Department of Internal Medicine, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, ON, Canada; ³Department of Biostatistics, Institute for Clinical Evaluative Sciences, Toronto, ON, Canada

Introduction and Objectives: Pre-existing diabetes has been associated with poor outcomes in various malignancies. However, there have been conflicting findings regarding the association between diabetes and outcomes in renal cell carcinoma.

Methods: We performed a retrospective review of 893 patients undergoing nephrectomy for unilateral, M0, renal cell carcinoma between 2000 and 2014 at a tertiary academic centre. Inverse probability of treatment weights (IPTW) were derived from a propensity score model based on

various clinical, surgical, and pathological characteristics. We used Cox proportional hazard models to evaluate the association between diabetes and disease-free survival (DFS), cancer-specific survival (CSS), and overall survival (OS) in the sample weighted by the IPTW. Furthermore, to evaluate whether severity of diabetes was associated with survival outcomes, we performed separate analyses where IPTW were computed based on the probability of having diabetes that was controlled by medication.

Results: Of the 893 patients, 158 (18%) had diabetes. Of these, 122 (77%) patients required medications for diabetes control while the remaining 36 (23%) had diet-controlled diabetes. Median followup was 47 months (interquartile range (IQR) 21-80). Diabetes at the time of surgery was not significantly associated with DFS (HR 1.12, 95% CI 0.62-2.00), CSS (HR 0.63, 95% CI 0.27-1.50), or OS (HR 1.23, 95% CI 0.79-1.91). We found similar results when we compared diabetics controlled with medication vs. non-diabetics or diet-controlled diabetics.

Conclusions: We found no significant association between diabetes and survival outcomes in patients undergoing nephrectomy for M0 renal cell carcinoma.

MP-11.17

Assessing an intravesical administered second-generation antisense oligonucleotide targeting Heat Shock Protein 27 in bladder: A phase 1 clinical trial

So, Alan I.¹; Frees, Sebastian¹; Beraldi, Eliana¹; Fazli, Ladan¹; Chi, Kim¹; Black, Peter C.¹; Gleave, Martin E.¹

¹Urologic Sciences, University of British Columbia, Vancouver, BC, Canada

Introduction and Objectives: Treatment options for patients with non-muscle invasive bladder cancer (NMIBC) are limited. Heat Shock Protein 27 (Hsp27) is a cytoprotective protein that has been linked to therapeutic resistance and disease progression in many malignancies, including bladder cancer (BCa). OGX-427, a second generation (2'-MOE) antisense oligonucleotide has been shown to inhibit Hsp27 expression in vitro and in vivo. A phase 1 clinical study was performed to assess the safety and pharmacodynamic (Pd) and biologic effects of intravesical treatments of OGX-427 using a presurgical dose-escalating design for patients with BCa.

Methods: Eligible patients include patients with Ta, T1, or CIS and candidates for transurethral resection of the bladder tumour (TURBT), or patients with muscle invasive BCa and candidates for radical cystectomy (RC). Patients were treated with intravesical OGX-427 on Days 1, 3, 5, and 8 and then underwent surgery on Day 9-12. Dose was escalated after tolerability and safety assessment for each cohort from 20 to 750 μ M. Dose-limiting toxicities (DLT) and adverse events (AE) were assessed. Pd properties of OGX-427 were determined through assessment of knock-down of Hsp27 by IHC. Anti-tumour activity was measured by response after OGX-427 by a secondary surgery compared to baseline histology.

Results: 24 patients were enrolled. 23 patients with NMIBC and one had cT2 disease treated by TURBT and RC, respectively. OGX-427 decreased expression of Hsp27 in tumours after treatment. Pathological staging of surgical specimens revealed that eight patients had initial complete responses. The remaining NMIBC patients had pTa tumours that ranged from G1-G2; the sole patient undergoing RC had pT2aG3 BCa. No significant drug-related AE were reported; no DLTs were observed.

Conclusions: OGX-427 was well-tolerated intravesically with minimal toxicity. Our results indicate early evidence for activity of OGX-427 treatment in NMIBC that requires confirmation in phase 2/3 studies.