

Kidney Cancer: Surgical Therapy IV

Moderated Poster 63

Monday, May 18, 2015

10:30 AM-12:30 PM

MP63-01

MODIFIED FRAILTY INDEX PREDICTS MORTALITY AND ADVERSE OUTCOMES IN PATIENTS UNDERGOING RENAL SURGERY: ANALYSIS OF THE NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM (NSQIP) DATABASE

Jamie S. Pak*, Danny Lascano, Julia B. Finkelstein, Mark V. Silva, G. Joel DeCastro, James M. McKiernan, Mitchell C. Benson, New York, NY

INTRODUCTION AND OBJECTIVES: Frailty, a concept of growing interest in light of the aging population, describes the gradual loss of physical and mental capacity. Practically, an objective measure of frailty can replace the often subjective assessment of a patient's ability to tolerate a surgical intervention. We propose that a modified version (mFI) of the Canadian Study of Health and Aging Frailty Index (CSHA-FI) can predict 30-day mortality and other adverse outcomes in patients undergoing renal surgery.

METHODS: We accessed the NSQIP database for all partial, simple, and radical nephrectomies as well as nephroureterectomies performed from 2005 to 2012. The mFI was calculated as the proportion of the following 11 CHSA-FI risk factors present in each patient: diabetes mellitus; dependent functional status; history of severe COPD or current pneumonia; CHF within 30 days before surgery; history of MI 6 months prior to surgery; previous PCI, cardiac surgery, or history of angina within 1 month before surgery; hypertension requiring medication; peripheral vascular disease or rest pain; impaired sensorium; history of TIA or CVA; history of CVA with neurologic deficit. Primary outcome was 30-day mortality. Chi-square analysis (\pm Fisher's exact test) and Kruskal-Wallis test were performed for statistical analysis.

RESULTS: A total of 8,542 patients were identified. There were 65 deaths, 52 MIs, 41 cardiac arrests requiring CPR, 100 DVT/PEs, 162 SSIs, 145 UTIs, 43 instances of septic shock, 76 instances of ventilator dependence >48 hours, 118 unplanned intubations, and 85 episodes of acute renal failure (ARF) requiring dialysis. Higher mFI was strongly associated with 30-day mortality, septic shock, ventilator dependence, unplanned intubation, Clavien IV complications, and any adverse outcome after renal surgery (all $p < 0.0005$). mFI was also associated with MI, UTI, and ARF ($p < 0.05$). Higher mFI correlated with increasing mean ranks in operative time ($p = 0.032$) and in hospital length of stay ($p < 0.0005$). Odds ratio of 30-day mortality in patients with $mFI \geq 0.27$ was 6.47 (95% CI 1.96-21.30, $p < 0.0021$).

CONCLUSIONS: Patients with $mFI \geq 0.27$ were over 6 times more likely to die within 30 days after renal surgery. mFI was also associated with numerous other significant perioperative outcomes. These findings support the utility of this simple tool as a predictor of adverse outcomes in patients undergoing renal surgery and potentially urologic surgery in general.

Source of Funding: None

MP63-02

HOW A DONOR NEPHRECTOMY POPULATION CAN HELP CLARIFY THE EFFECTS OF WARM RENAL ISCHEMIA DURING PARTIAL NEPHRECTOMY

Roger Li, Herbert C. Ruckle, Muhannad Alsayouf*, Michelle Lightfoot, Jared Schober, David Tryon, Kristene Myklak, David Culpepper, Daniel Faaborg, Phillip Stokes, Javier L. Arenas, D. Duane Baldwin, Loma Linda, CA

INTRODUCTION AND OBJECTIVES: The most important modifiable risk factors for kidney function after partial nephrectomy (PN)

are the quantity of parenchyma removed and the length of warm ischemia time (WIT) although the relative importance of these two factors has been debated. In this study, the effects of WIT on renal function were investigated by comparing PN patients to completely healthy patients undergoing donor nephrectomy (DN).

METHODS: A retrospective review was performed of 119 PN and 250 DN patients at a single academic institution. Baseline characteristics, WIT, and follow-up serum creatinine (sCr) at discharge, 1-7 months and at last follow-up were compared. Estimated GFR (eGFR) was calculated using sCr and the Modification of Diet on Renal Disease (MDRD) formula. Data was analyzed using the Mann-Whitney U and Chi-square tests as appropriate.

RESULTS: The DN patients were younger (37.5 vs. 60.8; $p < 0.01$), had lower BMI (26.6 vs. 30.9; $p < 0.01$), lower ASA scores ($p < 0.01$) and higher preoperative eGFR (101.7 vs. 78.4; $p < 0.01$). In the PN cohort, the median tumor size was 3.6 cm and mean WIT was 27.8 minutes. DN patients were found to have greater eGFR decline upon discharge (-42.7% vs. -1.5%, $p < 0.01$), at 1-7 mos postoperatively (-36.9% vs. -6.4%; $p < 0.01$) and at the latest follow-up (-36.3% vs. -2.4%; $p < 0.01$). The percentage decrease in eGFR was also significantly greater in donor nephrectomy patients than partial nephrectomy patients with WIT > 30 minutes at all time points including discharge (-42.7% vs. -4.1%; $p < 0.01$) at 1-7 mos (-36.9% vs. -3.8%; $p < 0.01$) and at latest follow-up (-36.3% vs. -6.9%; $p < 0.01$).

CONCLUSIONS: Despite being younger and healthier, the donors had a much greater decrease in GFR than all PN patients including those with > 30 min WIT. This dramatic benefit of partial nephrectomy compared with radical nephrectomy in all patients emphasizes the benefit to GFR derived from renal parenchymal preservation. Surgeons should utilize warm renal ischemia when indicated if it facilitates the preservation of renal parenchyma.

Source of Funding: none

MP63-03

END STAGE RENAL DISEASE AFTER SURGERY IN PATIENTS WITH NORMAL PREOPERATIVE KIDNEY FUNCTION: THE EFFECT OF NEPHRON-SPARING SURGERY IN DELAYING THE ONSET OF THE DISEASE

Umberto Capitanio*, Milan, Italy; Carlo Terrone, Novara, Italy; Alessandro Antonelli, Brescia, Italy; Andrea Minervini, Florence, Italy; Francesco Porpiglia, Turin, Italy; Alessadro Volpe, Novara, Italy; Maria Furlan, Brescia, Italy; Alberto Briganti, Paolo Capogrosso, Milan, Italy; Sergio Serni, Florence, Italy; Claudio Simeone, Brescia, Italy; Roberto Bertini, Francesco Montorsi, Milan, Italy

INTRODUCTION AND OBJECTIVES: In a recent subanalysis of 514 patients included in the EORTC randomized trial 30904, the incidence of End Stage Renal Disease (ESRD) was nearly identical between patients treated with nephron sparing surgery (NSS) or radical nephrectomy (RN). In the current paper, we aimed to report the rate and the predictors of ESRD after NSS vs. RN after accounting for clinical characteristics, comorbidities and individual patients' cardiovascular risk.

METHODS: A multi-institutional collaboration among five Tertiary Care Centers allowed collecting 2029 patients with a clinical T1a-T1b renal mass. Patients underwent RN ($n = 693$, 34.2%) or NSS ($n = 1336$, 65.8%) and showed normal estimated glomerular filtration rates (eGFR) before surgery (defined as a pre-operative $eGFR \geq 60$ ml/min/1.73m²). Descriptive, univariable and multivariable Cox regression analyses were used to predict the risk of ESRD (defined as post-operative $eGFR < 15$ ml/min/1.73m²). To adjust for inherent baseline differences among patients, we included as covariates: age, pre-operative GFR, clinical tumor size, hypertension (none vs. yes vs. controlled by medical therapy), diabetes, baseline Charlson comorbidity index (CCI), body mass index and smoker status.

RESULTS: Median preoperative GFR was 90 ml/min/1.73m² (interquartile range, IQR 79-99). Median age was 61 yrs (IQR 52-69)

and median clinical tumor size 3.5 cm (IQR 2.5-5). Overall, 10.0% vs. 18.2% vs. 21.3% of the patients had diabetes, uncontrolled or hypertension controlled by medical therapy, respectively.

The 5 yr, 10 yr and 15 yr ESRD rates after surgery were 1.6%, 2.6% and 2.6% for NSS vs. 2.1%, 2.7% and 5.1% for RN, respectively ($p=0.5$). At multivariable analyses, after accounting for clinical characteristics, comorbidities and individual cardiovascular risk, patients with hypertension not controlled by medical therapy (HR 4.2, $p=0.02$) and those with more than 2 comorbidities (HR 8.5, $p=0.009$) showed significantly higher risk to develop ESRD. Patients who underwent NSS showed virtually the same risk to develop ESRD relative to their RN-treated counterparts (HR 1.04, $p=0.9$). However, mean time to ESRD was significantly higher in patients treated with NSS relative to RN (85 vs. 43 months, bootstrapped p -value=0.04).

CONCLUSIONS: Roughly 2% of the patients with normal GFR before kidney surgery will develop ESRD, with virtually no difference between those treated with NSS or RN. Interestingly, NSS showed a statistically significant effect in delaying the onset of ESRD relative to RN.

Source of Funding: None

MP63-04

CLINICAL AND PATHOLOGICAL LYMPH NODE PROGRESSION IN PATIENTS WITH A CT1-T2 N0 M0 RENAL MASS: SHALL WE FOREVER DISCARD THE USE OF LYMPH NODE DISSECTION IN LOW RISK PATIENTS?

Umberto Capitanio, Ettore Di Trapani, Rayan Matloob, Paolo Capogrosso, Massimo Freschi, Cristina Carezzi, Andrea Salonia, Andrea Russo, Andrea Gallina, Roberto Bertini, Alberto Briganti, Francesco Montorsi, Milan, Italy*

INTRODUCTION AND OBJECTIVES: The EORTC randomized trial has demonstrated a low rate of lymph node invasion (LNI) and no benefit in terms of survival in patients with low risk renal cell carcinoma (RCC). Although clinically at low risk, it is plausible that even a subgroup of those patients may harbour a disease with a predilection for LNI that may deserve a standard lymph node dissection at the time of surgery.

METHODS: In 2010 patients with a clinical T1-T2N0M0 renal mass treated with nephrectomy, we considered as a mutual endpoint the presence of lymph node invasion (LNI) and/or lymph node (LN) progression during the follow-up. Nodal progression was defined as the onset of a new clinically detected lymphadenopathy (>10 mm) in the retroperitoneal lymphatic area with associated systemic progression and/or histological confirmation. Cubic spline and regression analyses were used to describe clinical and pathological characteristics of patients who developed LNI and/or LN progression (age, body mass index, tumor size, T stage, albumin, LDH, lymphocytes, monocytes, calcium, creatinine, haemoglobin, and platelets levels).

RESULTS: Clinical T stage resulted cT1a, cT1b, cT2a and cT2b in 1010 (50.2%), 686 (34.1%), 233 (11.6%) and 81 (4.0%) patients, respectively. In 640 patients (36.3%), LND was performed. As regards pathological characteristics, upstaging to pT3a or higher was found in 228 patients (11.3%). Fuhrman grade resulted 1 vs. 2 vs. 3 vs. 4 in 245 (12.2%) vs. 1151 (57.3%) vs. 306 (15.2%) vs. 24 (1.2%), respectively. In only 14 cases (0.8%), patients showed LNI at surgery. During the follow-up, 23 (1.1%) of the patients experienced LN progression. Combining the two endpoints, 36 (1.8%) of the patients showed predilection for lymph node invasion (LNI and/or LN progression during the follow-up). LNI and/or LN progression was found in 0.6% vs. 1.9% vs. 3.9% vs. 9.9% cases of cT1a vs. cT1b vs. cT2a vs. cT2b, respectively ($p<0.001$). Clinical tumor size showed a linear correlation with the risk of LNI and/or LN progression (OR 1.27 95%CI 1.16-1.38, $p<0.001$). LNI and/or LN progression was evident in 0% vs. 0.4% vs. 1.6% vs. 4.2% vs. 16.7% cases of benign vs. G1 vs. G2 vs. G3 vs. G4, respectively ($p<0.001$).

CONCLUSIONS: LNI and/or LN progression risk is a rare entity (<2%) when patients with a low risk renal mass (T1-T2 N0 M0) undergo surgery. Clinical tumor size is the most informative clinical (preoperative) predictor of LNI and/or LN progression although more accurate biomarkers are desirable to better identify low risk patients who may benefit from LND.

Source of Funding: None

MP63-05

ROBOTIC INFERIOR VENA CAVA THROMBECTOMY AND RADICAL NEPHRECTOMY FOR LEVEL II AND III THROMBI: THE USC EXPERIENCE

Charles Metcalfe, Andre Abreu, Raj Satkunasivam, Raed Azhar, Kelvin Wong, Los Angeles, CA; Yi Sun, Shanghai, China, People's Republic of; Andre Berger, Monish Aron, Mihir Desai, Inderbir Gill, Los Angeles, CA*

INTRODUCTION AND OBJECTIVES: Renal cell carcinoma (RCC) with tumor thrombus with extension into the inferior vena cava (IVC) is present in 4-10% of cases. Level II and III tumor thrombus inferior vena cava (IVC) extension have been previously viewed as a contradiction to the minimally invasive approach. With advances in robotic renal surgery and surgical techniques these challenging cases are now being explored. We report our initial experience with level II and III tumor thrombi for renal cell carcinomas with IVC involvement.

METHODS: An Institutional review board approved renal database was used to prospectively accrue data on those patients with RCC with level II and III thrombi. Patient demographics, tumor and thrombi characteristics, perioperative, postoperative and oncologic follow up data were retrospectively analyzed.

RESULTS: A total of 11 patients, 6 with level II and 5 with level III are included in the study. Mean age and body mass index were 67.8 yrs and 31.3 kg/m². Seven renal masses were right sided and 4 were left sided tumors. Median tumor size and thrombi length were 8 cm and 4.5 cm. Median size of the level II thrombi and level III thrombi were 3.3 and 5.4 cm respectively. Eight cases underwent preoperative embolization. There was a mean of 2.3 and 1.6 lumbar veins taken within the two groups and those that were level III thrombi had a mean of 2.6 hepatic veins taken for proximal control of the IVC. Suprarenal caval control was utilized in all 11 cases. Median operative time and estimated blood loss was 280 minutes and 300 ml. Four patients required blood transfusions during the perioperative course. Median length of hospital stay was 4 days. Mean follow-up is 15.3 months. One patient has metastatic disease currently being treated on a clinical trial and another patient has a single stable lung metastatic deposit. The remaining 9 patients show no evidence of disease.

CONCLUSIONS: Robotic IVC thrombectomy and radical nephrectomy for renal cell carcinoma with tumor thrombus is a very challenging and demanding surgery with high risks to perform. With appropriate surgical planning and technical expertise these procedures can be performed safely as well as gain from the benefits of the minimally invasive approach. Longer follow-up is necessary to confirm oncologic outcomes.

Source of Funding: NONE

MP63-06

TRIFECTA OUTCOMES OF ROBOTIC PARTIAL NEPHRECTOMY FOR T1B RENAL MASSES: A MULTI-INSTITUTIONAL ANALYSIS

Homayoun Zargar, Cleveland, OH; Craig Rogers, Detroit, MI; Sam Bhayani, St Louis, MO; Mohamad Allaf, Baltimore, MD; Jeffrey A. Larson, St Louis, MO; Ravi Barod, Detroit, MI; Alon Mass, New York, NY; Michael H. Johnson, Baltimore, MD; Michael Stifelman, New York, NY; Jihad H. Kaouk, Cleveland, OH*

INTRODUCTION AND OBJECTIVES: The trifecta of oncology, complications and functional outcome has been proposed as a