IDENTIFYING THE RATE AND RISKS OF CHRONIC KIDNEY DISEASE DEVELOPMENT AFTER CYTOREDUCTIVE NEPHRECTOMY

Christopher Martin BS1, Eric Mayer MD2, Robert Uzzo MD3, Brian Lane MD, PHD4, Alexander Kutikov MD3, Marc Smaldone MD3, Jason Gee MD5, Larry Karsh MD6, Thomas Gardner MD7, Viraj Master MD8, William Huang MD9, Jeffrey Holzbeierlein MD10, Neal Shore MD11 and William Lowrance MD, MPH12

1Division of Urology, Department of Surgery, University of Utah, Salt Lake City, UT; 2David Geffen School of Medicine at UCLA, Los Angeles, CA; 3Fox Chase Cancer Center, Philadelphia, PA; 4Spectrum Health Urology Group, Grand Rapids, MI; 5Lahey Clinic, Burlington, MA; 6Urology center of Colorado, Denver, CO; 7Indiana University, Indianapolis, IN; 8Emory University, Atlanta, GA; 9New York University Medical Center, New York, NY; 10Kansas University Medical Center, Kansas City, KS; 11Carolina Urologic Research Center, Mt Pleasant, SC; 12Huntsman Cancer Institute, Salt Lake City, UT

Introduction and Objectives:
Radical cytoreductive nephrectomy has been shown to improve overall survival in patients with metastatic renal cell carcinoma (mRCC). While radical nephrectomy in localized tumors has been estimated on recent meta-analysis to have a 32% risk of chronic kidney disease (CKD) development, treatment outcomes in patients with more advanced disease have not been adequately assessed. Using patients enrolled in The Autologous Dendritic Cell Immunotherapy (AGS-003) Plus Standard Treatment of Advanced Renal Cell Carcinoma (ADAPT) trial that received cytoreductive nephrectomy in the metastatic setting, we intend to study the effect of this procedure on renal function in patients with mRCC.

Methods:
Patients were identified based on screening for the ADAPT trial undertaken from 2012−2015. Of the initial 1148 screened patients, 450 were enrolled in the trial. However, preoperative creatinine was unavailable for 5 of these patients. Our study also excluded patients with an abnormal estimated glomerular filtration rate (<60ml/min/1.73 m2) prior to nephrectomy. Univariate logistic regression analysis was used to evaluate the impact of patient and disease specific factors on post-operative renal function.

Results Obtained:
Our cohort included 371 patients; 15 underwent partial nephrectomy and 354 underwent radical nephrectomy (surgical approach was unknown for 2 patients). 169 patients (45.5%) developed chronic kidney disease stage 3 or worse (<60ml/min/1.73 m2) with short−term follow up. Factors associated with post−operative glomerular filtration rate <60ml/min/1.73 m2 were: age (p=<0.001), hypertension (p=0.005), Charleson Comorbidity Index score (p=<0.001), prior history of nephrolithiasis (p=0.021), and presence of liver metastasis (p=0.004).

Conclusions:
Our findings indicate that nearly half of patients with mRCC develop new CKD after cytoreductive nephrectomy. This risk appears more pronounced than treatment in lower stage tumors. Older patients and those with a history of hypertension and a higher comorbidity index appear to be at an increased risk of post−operative CKD. This has important implications as renal replacement therapy could be a competing factor for morbidity and mortality in these patients. More follow−up is needed to better understand the long−term impact of these findings.

Funding: ARGOS Industry Funding for the ADAPT trial