Abstract# B898

Secular Trends in Cardiovascular Disease Among Kidney Transplant Recipients. N. Lam,[1,2] K. Naylor,[2] S. Shariff,[2,3] E. McArthur,[2,3] G. Knoll,[4] S. Kim,[5] A. Garg.[1,2,3] *[1]Nephrology, Western University, London, ON, Canada; [2]Epidemiology & Biostatistics, Western University, London, ON, Canada; [3]Institute for Clinical Evaluative Sciences, London, ON, Canada; [4]Nephrology, University of Ottawa, Ottawa, ON, Canada; [5]Nephrology, University of Toronto, Toronto, ON, Canada.*

Background: Cardiovascular death remains the number one cause of mortality in kidney transplant recipients. Cardiovascular events alone are associated with significant morbidity. Unfortunately, current trends in cardiovascular events after kidney transplantation are poorly understood.

Methods: We conducted a retrospective observational study using Ontario's linked healthcare databases to follow all first-time kidney-only transplant recipients between 1994 to 2009. Our primary outcome was a composite of death or first major cardiovascular event defined as one of myocardial infarction, coronary angioplasty, coronary bypass surgery, or stroke within three years of the transplant date.

Results: There were 4954 first-time kidney-only transplant recipients during the study period, of which 63% were male. The median age steadily increased from 43 years (interquartile range [IQR] 33-54) in 1994 to 53 years (IQR 42-62) in 2009 as did the proportion of recipients aged 65 years old older (3.8% in 1994 to 20.4% in 2009). There was also an increase in the proportion of recipients with diabetes (19.2% in 1994 to 29.9% in 2009) and coronary artery disease (23.7% in 1994 to 37.7% in 2009). A total of 444 recipients (8.8%) died or experienced a major cardiovascular event within three years of transplantation and this incidence remained stable throughout the study period.

Conclusion: Despite transplant centres accepting recipients who are older with more co-morbidities, the three-year incidence of death or major cardiovascular event has remained stable from 1994 to 2009. These results are reassuring for transplant programs.

Abstract# B899

Renal Allograft Failure Due to Cardiorenal Syndrome. F. Halleck,[1] F. Knebel,[2] B. Rudolph,[3] K. Wu,[3] W. Sanad,[2] H. Neumayer,[1] K. Budde,[1] J. Waiser.[1] *[1]Nephrology, Charite University, Berlin, Germany; [2]Cardiology, Charite University, Berlin, Germany; [3]Pathology, Charite University, Berlin, Germany.*

Purpose: No relevant literature exists on cardiorenal syndrome (CRS) following renal transplantation. Methods: We investigated the incidence of renal allograft failure (RAF) due to CRS between 2006-2011 at our centre. We describe clinical course, pathophysiology and observed renal pathology in patients with graft loss due to CRS. Results: We found 7 cases of graft loss due to CRS (4.6% of all graft losses). CRS was diagnosed 25 (2-73) months after transplantation. Graft loss occurred 5 (1-62) months after diagnosis. 4/7 patients died. There was one case of CRS type I and 6 cases of CRS type II.

Histology revealed tubular injury as the most prominent pathology. Pathophysiology in CRS type II patients was heterogeneous, but left heart failure with subsequent right heart failure was predominant (4/6 patients). Pulmonary hypertension and moderate-to-severe tricuspid regurgitation were found in 5/6 patients. Conclusion: CRS may account for RAF. Thorough pre-/post-transplant cardiac investigation is necessary to identify patients at risk.

Abstract# B900

Time-Varying Proteinuria and the Risk of Cardiovascular Disease and Graft Failure in Kidney Transplant Recipients. T. Kuper, O. Famure, Y. Li, S. Kim. *Division of Nephrology and the Kidney Transplant Program, Toronto General Hospital, University Health Network, Toronto, ON, Canada.*

Purpose: The primary objective of this study was to determine the association between post-transplant proteinuria and the risk of cardiovascular events in a cohort of kidney transplant recipients using a time-dependent analysis.

Methods: All eligible patients who received a kidney transplant at our center from 1 Jan 2000 to 31 Dec 2011 were followed from one-month post-transplant to the date of first cardiac event, graft failure, death, lost to follow-up, or 31 Dec 2012. Urine protein concentration, measured by dipstick on a random spot urine sample (trace = 0.15 to 0.30 g/d, 1+ = 0.3 to 1.0 g/d, 2+= 1.0 to 3.0 g/d or 3+ = ≥ 3.0 g/d), was assessed quarterly during the first year post-transplant, biannually during years 2 and 3, and annually thereafter. The primary endpoint was a major adverse cardiac event (MACE) defined as (i) acute myocardial infarction, (ii) cerebrovascular accident, (iii) revascularization, or (iv) all-cause mortality.To account for changing levels of urine protein over follow-up, time-dependent, multivariable Cox proportional hazards models were used to analyze the data.

Results: The final study cohort included 1,107 patients followed for 5,704.8 person-years with 142 MACE. Any proteinuria detected by dipstick (i.e., ≥ trace) resulted in a two-fold increase in the risk of MACE vs. no proteinuria (hazard ratio [HR] = 2.11 [95% CI: 1.51, 2.95]). Trace urine protein was associated with the greatest risk of MACE (HR = 2.68 [95% CI: 1.62, 4.45]), while 1+, 2+, and 3+ showed relative hazards of 1.37 (95% CI: 0.82, 2.30), 1.49 (95% CI: 0.82, 2.71), and 1.29 (95% CI: 0.57, 2.92), respectively. Of note, the risk of graft failure significantly and monotonically increased with increasing levels of urine protein concentration (HR = 2.44 [95% CI: 0.89, 6.67], 2.69 [95% CI: 1.27, 5.68], 6.34 [95% CI: 3.30, 12.18], and 18.86 [95% CI: 10.11, 35.18] for trace, 1+, 2+ and 3+ compared to negative, respectively).

Conclusion: Any level of proteinuria detected by dipstick is associated with a greater risk of MACE in kidney transplant recipients. The lack of dose-response may have resulted from decreased follow-up time in patients with severe proteinuria (due to an increased risk of graft failure) and a relatively low event rate. The role of interventions to reduce proteinuria on decreasing the risk of adverse cardiovascular and graft outcomes in kidney transplant recipients requires further study.

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Abstract# B901

Cardiac Improvement in Kidney Transplant Patients Are Associated With the Ameloriation of Left Ventricular Wall Movement Abnormalities. U. Cakir, E. Gurluler, O. Cavdaroglu, A. Gurkan, I. Berber. *Transplant Center, Acibadem University, Istanbul, Turkey.*

Left ventricular dysfunction regarding myocardial stunning and regional wall motion abnormalities (WMAs) are very common in individuals with chronic kidney disease and are associated with high morbidity and mortality. The purpose of this study was to evaluate the impact of successful kidney transplantation on WMAs of left ventricule in patients with end-stage renal disease (ESRD).

We prospectively evaluated 400 patients with ESRD, immediately before and one year after kidney transplantation, using tissue Doppler echocardiographic study. The left ventricular ejection fraction, systolic and diastolic function parameters were analyzed. Myocardial segments were graded 1-4, representing the severity of the WMA, and the segmental scores were summed for each echocardiogram.

The mean age was 44.6 years. We observed a reduction in left ventricular diastolic diameter (52.3 to 49.4 mm, $p = 0.021$) after kidney transplantation. The ejection fraction increased compared to basal assessment (67.7% vs. 43.8%, $p < 0.01$). The prevalence of diastolic dysfunction decreased 49% during the evaluated period. A significant decrease in WMAs was observed in the posttransplant period (32 vs.21, $p < 0.01$).

Kidney transplantation is known to lead a considerable improvement in left ventricular systolic and diastolic function of patients with ESRD, and the results seem associated with the ameloriation of WMAs.

Abstract# B902

Sagittal Abdominal Diameter as the Anthropometric Measure of Cardiovascular and Graft Loss Risk in Renal Transplant Recipients. Z. Bal,[1] M. Erkmen Uyar,[1] O. Guliyev,[1] B. Sayin,[1] T. Colak,[1] S. Sezer,[1] M. Haberal.[2] *[1]Nephrology, Faculty of Medicine, Baskent University, Ankara, Turkey; [2]General and Transplantation Surgery, Faculty of Medicine, Baskent University, Ankara, Turkey.*

Purpose: Cardiovascular disease is the most common cause of death in renal transplant recipients. Arterial stiffness plays an important role in cardiovascular diseases and is an independent predictor for cardiovascular mortality in renal transplant recipients. Studies have demonstrated sagittal abdominal diameter (SAD) presented stronger prognostic value for all-cause and cardiovascular mortality in the general population. The aim of this study is to evaluate the association between the arterial stiffness and novel anthropometric indices in renal transplant recipients.

Methods: One hundred eighty one renal transplant recipients from our renal transplant outpatient clinic were enrolled into the study. All patients were evaluated for their standard clinical (age, gender, duration of hemodialysis, post-transplant time), biochemical parameters. Anthropometric measurements (waist and hip circumference, abdominal sagittal diameter) were performed for all patients. PWv was determined from pressure tracing over carotid and femoral arteries using the SphygmoCor system. We calculated the estimated GFR (eGFR) using the MDRD4 equation.

Results: Patients were divided into two group according to SAD measurements. Group 1 (n:127) was defined as the patients SAD < 24.3 cm and group 2 (n:54) was defined as the patients SAD ≥ 24.3 cm. Patients in group 2 had significantly higher triglyceride, C-reactive protein, uric acid, systolic blood pressure, PWv and body mass index measurements compared to Group 1 ($p<0.05$ for all). In group 2 eGFR was significantly lower than group 1 ($p<0.022$). SAD had positive correlation with PWv, Systolic and diastolic blood pressure, body mass index, triglyceride, fasting glucose, C-reactive protein and uric acid ($p<0.05$ for all).