Nutcracker Syndrome: A Rare Cause of Gross Hematuria
Vimal Master sankar raj. Division of Pediatric Nephrology University of Illinois Chicago College of Medicine at Peoria, Peoria, IL.

Introduction: Nutcracker syndrome (NCS) is a unique vascular compression disorder, where the left renal vein (LRV) is trapped between the aorta and superior mesenteric artery (SMA). We present here a pediatric patient with solitary kidney and this rare presentation.

Case Description: 12-year-old boy with prior H/o R multicystic dysplastic kidney, surgically removed, presented with bright red hematuria and abdominal pain for a day. His evaluation showed normal vitals and renal function. U/A with 2+ protein and 3+ blood. Further workup for GN was normal. A renal visceral duplex exam was done which showed an adequately enlarged solitary L kidney at 14.5 cm with duplex studies showing, a narrowed LRV as it crosses between SMA and aorta. The renal vein ratio was elevated at 5.8 confirming the diagnosis. He was conservatively treated with fluids and resolution of hematuria in 24 hrs.

Discussion: The term Nutcracker syndrome (NCS) refers to LRV compression between SMA and aorta. Prevalence remains unknown due to the variability of symptomatology. Clinical features are non-specific presenting as varying degrees of abdominal pain, flank pain, hematuria, proteinuria, varicocele, chronic pelvic pain, dyspareunia and dysmenorrhea. Affected individuals tend to be tall and thin contributing to an acute angle between aorta and SMA. Although gold standard for diagnosis is venography, CT scan and renal duplex are also useful tools to establish diagnosis. Ultrasound being noninvasive and radiation-free should be the preferred initial modality of imaging in pediatrics. Diagnosis can be made successfully when the rate of systolic peak velocity between the site of compression and vein at renal hilum is > 4.7. Treatment varies based on the severity of presentation and age at presentation. Conservative management is the norm in children as they may outgrow the condition. In patients with recurrent severe presentations and those who have failed conservative management, IR techniques such as stent placement or conventional surgical procedures may be indicated.

Background: We have developed and validated the Renal Activity Index for Lupus (RAIL), a composite score of six urinary biomarkers including neutrophil gelatinase–associated lipocalin (NGAL), monocyte chemoattractant protein-1 (MCP-1/CCL2), kidney injury molecule-1 (KIM-1), ceruloplasmin, adiponectin, and hemopexin) to monitor disease activity. It is critical to establish optimal sample handling conditions and storage prior to widespread clinical deployment and meaningful use in clinical trials. We have previously demonstrated the excellent short-term storage stability of NGAL and KIM-1; here we expand testing to include the other 4 RAIL biomarkers.

Methods: Urine was collected from 10 patients enrolled in the SLE Clinical and Research Database (IRB 2008-0635). The urine was then aliquoted and tested under shipping conditions, including freeze/thaw, ambient and longer-term storage (Figure 1). MCP-1, Ceruloplasmin, Adiponectin and Hemopexin were assayed by single-plex ELISA assay via commercially available kits. We performed Pearson Correlation Coefficient, Deming regression and Bland-Altman analysis.

Results: There was no statistical difference in biomarker concentrations in any of the four biomarkers in any of the experimental conditions. Urinary MCP-1, Adiponectin, Hemopexin and Ceruloplasmin are stable following storage at -80°C for up to 3 months, and at 4° or 25°C up to 48 hours followed by -80° C. In addition, shipping on dry ice or with refrigeration leads to no significant loss of signal. The addition of 1 or 2 additional freeze thaw cycles also did not change mean biomarker levels.

Conclusions: RAIL biomarkers are stable following short-term storage at clinically relevant conditions, including shipping on ice.

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PUB281

Pediatric Kidney Transplant Recipients’ Emergency Room Visit Alert

Amal G. Ezzaiyani, Arwa Nada, Rima S. Zahr. The University of Tennessee Health Science Center, Memphis, TN.

Background: Pediatric kidney transplant recipients are a unique patient population who have a complicated medical history requiring multidisciplinary care. Improve care between different teams involved in kidney transplant (KTx) patients, including emergency room (ER) physicians, is imperative. Aim: Quality Improvement project to improve timely communication between different teams involved in kidney transplant (KTx) patients, including emergency room (ER) physicians, is imperative.

Methods: Key Drivers: using electronic medical record (EMR) to alert ED team of patients’ transplant status. (Figure 1)

Results: As shown in Figure 2, over time the EMR alert improved communication between the ED team and the KTx team to 100% by June 30th 2021.

Conclusions: EMR alert significantly improved communication to 100% between ED staff and KTx team. The alert allowed for improved communication between the ER team members and the nephrology service, further allowing for a timely managed visit for this vulnerable population.

Key: TH - Thursday; FR - Friday; SA - Saturday; OR - Oral; PO - Poster; PUB - Publication Only
Underline represents presenting author.

PUB282

Content Analysis of Online Birth Club Forums in Relation to Antenatal Kidney Defects

Katie Sullivan, Davy Weissenbacher. University of Pennsylvania, Philadelphia, PA.

Background: Despite being one of the most common congenital abnormalities, we know little about women’s experiences and what kinds of information they may seek when receiving diagnoses of Antenatal kidney defects. Objective: With the large adoption of Social Media by pregnant women as sources of information during their pregnancy, we propose to apply machine learning methods to analyze online pregnancy forums to better understand how women seek information from a community of online peers regarding renal defects. This will help us to address gaps in knowledge and ultimately provide more personalized, effective prenatal care.

Methods: We collected posts from seven “birth club” forums (March-November 2021) from WhatToExpect.com and analyzed the initial posts from each thread (n ~ 15,000). We computed the topics discussed with the Latent Dirichlet Allocation statistical model, and, after manual review of the topics, we grouped them categorically.

Results: Largest topic categories included worry about the abnormality detected on anatomy scan (33 percent) followed by posts offering reassurance of a normal life with the kidney anomaly (31 percent). Women do use online forums to discuss antenatal kidney defects, but these posts are relatively rare compared with the frequency of kidney defects (6.8 percent). This suggests potentially that women diagnosed with antenatal kidney anomalies talk about these less commonly online than women diagnosed with other antenatal defects. Amongst the relevant posts, the most common anomalies mentioned are also the most common antenatal renal anomalies, hydronephrosis and unilateral renal agenesis.

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PUB283

Transition Readiness in Kidney Disease

Isabelle Lopez, Sarah K. Coufal, Taryn Shappell, Elaine Ku. University of California San Francisco, San Francisco, CA.

Background: To mitigate the challenges faced by patients transferring into adult care, we established a Transition Clinic to support adolescents with kidney disease during the transition to adult care. The clinic focused on improving self-efficacy including educating patients about their baseline kidney function, laboratory values, and concrete health care management skills necessary for post-kidney transplant care. The clinic also performed assessments of mental health.

Methods: 40 participants >18 years of age were asked to complete a survey on their transition experience, quality of health (using the PROMIS survey), and transition readiness. Subjects were asked to self-report hospitalizations and emergency room visits over the prior 12 months. Chi square tests were used to relate knowledge about kidney disease and quality of mental health with use of emergency room or hospitalizations.

Results: The mean age of participants was 23 and 52% had a functional kidney. Overall, knowledge regarding kidney disease (Figure 1) and participants’ self-reported mental health varied (Figure 2). We found that 60% of patients who did not know their baseline serum creatinine had at least 1 emergency room visit in the past year.