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Session: P-73. UTIs

Background. Nitrofurantoin has been used to treat cystitis in women; however, data supporting its use in men is lacking. In addition, recent retrospective studies have challenged the manufacturer's recommendation to avoid nitrofurantoin with creatinine clearances (CrCl) less than 60 mL/min. The purpose of this study is to compare the efficacy and safety of nitrofurantoin for the treatment of acute cystitis in male and female veterans with variable degrees of renal dysfunction.

Methods. A retrospective chart review was conducted in adult patients who received nitrofurantoin for acute cystitis in the outpatient setting between May 1, 2018 and May 1, 2019. The primary outcomes were rates of clinical cure as compared between males and females, and across various renal function groups (CrCl greater than 60 mL/min, 30 to 60 mL/min, and less than 30 mL/min) following treatment with nitrofurantoin. The secondary outcome was adverse event rates.

Results. A total of 446 patients were included with 278 females and 168 males. Overall clinical cure rate was 86.5% (n=386). Clinical cure rate did not vary between genders (p=0.0851) or CrCl ranges (p=1.0) as shown in the tables. Benign prostatic hyperplasia (BPH) was associated with decreased odds of clinical cure (OR 0.50 [95% CI 0.26-0.97], p=0.0404) in addition to cirrhosis (OR 0.22 [95% CI 0.06-0.91], p=0.0357). Adverse events occurred in 2% of patients and did not vary based on gender or renal function.

RATES OF CLINICAL CURE

TABLE 1: RATE OF CLINICAL CURE BY GENDER

	Clinical cure [# clinical cure/total (%)]		OR (95% CI)	p value
	Male	Female		
TOTAL	139/168 (82.74%)	247/278 (88.85%)	1.66 (0.96-2.87)	0.0851
CRCL > 60 ML/MIN	113/139 (81.29%)	234/262 (89.29%)	1.92 (1.08-3.43)	0.0311
CRCL 30-60 ML/MIN	25/28 (89.29%)	13/16 (81.25%)	1.92 (0.34-10.90)	0.6519
	CrCl = creatinine clearance; OR = odds ratio; CI = confidence interval			

TABLE 2: RATE OF CLINICAL CURE BY RENAL FUNCTION

	Clinical cure [# clinical cure/total (%)]		OR (95% CI)	p value
	CrCl > 60 mL/min	CrCl 30-60 mL/min		
TOTAL	347/401 (86.53%)	38/44 (86.36%)	0.99 (0.40-2.44)	1.0000
MALE	113/139 (81.29%)	25/28 (89.29%)	0.52 (0.15-1.85)	0.4172
FEMALE	234/262 (89.31%)	13/16 (81.25%)	1.93 (0.52-7.19)	0.4010
	CrCl = creatinine clearance; OR = odds ratio; CI = confidence interval			

Conclusion. There was no statistically significant difference in clinical cure with nitrofurantoin between genders and various renal impairments. However, history of BPH and cirrhosis were associated with decreased efficacy. Subgroup analysis also revealed lower efficacy in males with CrCl greater than 60 mL/min versus females with similar renal function. This study adds to the growing body of literature suggesting that renal dysfunction with CrCl of 30 to 60 mL/min may not carry the risk of treatment failure and adverse effects previously associated with nitrofurantoin, but large randomized trials are needed to confirm these results.

Disclosures. **All Authors**: No reported disclosures

1693. Risk Factors and Outcomes of Histologic Acute Graft Pyelonephritis following Kidney Transplantation

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Background. Histologic acute graft pyelonephritis (HAGPN) is a complication of kidney transplantation (KT) diagnosed serendipitously by renal biopsy. A retrospective review of 1391 patients who underwent KT at our institution between 2008 and 2017 identified 46 cases (cumulative incidence 5%). Rejection was present in 50% of biopsies demonstrating HAGPN, complicating management. The aims of this study were to identify risk factors and outcomes of HAGPN.

Methods. Recipient, donor, operative and post-transplant characteristics of 46 cases of HAGPN and 138 controls randomly selected from the 1345 patients who underwent KT between 2008 and 2017 were assessed in univariable and multivariable Cox regression models. Associations of HAGPN with death or graft failure were assessed in univariable models.

Results. In univariable analysis, characteristics associated with increased risk of HAGPN in order of decreasing hazard ratio (HR) were rejection (HR 10.82, 5.66-20.72), urinary tract infections (UTI) or asymptomatic bacteriuria (ASB) (HR 6.28, 3.43-11.50), urologic malfunction (UM) within 30 days of KT, (HR 5.34, 2.85-10.02), less than 4 matches at HLA A/B/DR loci (HR 3.74, 1.19-11.76), delayed graft function (DGF) (HR 2.1, 1.47-3.00), basiliximab induction (HR 1.59, 1.05-2.42), diabetes mellitus (DM) at KT (HR 1.52, 1.07-2.16), operative time (HR 1.11, 1.03-1.19) and cold ischemic time (CIT) (HR 1.05, 1.02-1.06). UM, rejection and UTI or ASB were the most significant risk factors based on clinical and statistical importance, and after adjusting for them, DM, transplant type, CIT, ureteral stent placement and DGF remained significant risk factors. In univariable analysis, ureteral stent placement at transplant (HR 0.60, 0.43-0.88) and living-related donor (HR 0.18, 0.04-0.78) were each associated with reduced risk of HAGPN which persisted after multivariable analysis. In univariable analysis, HAGPN was associated with death (HR 17.04, 7.93-39.31) and graft failure (HR 3.77, 1.73, 8.20).

Conclusion. HAGPN is an infrequent, unanticipated, clinically significant complication of renal transplantation. Post-transplant dysfunction of the allograft collection system may be a modifiable risk factor.

Disclosures. **All Authors**: No reported disclosures

1694. Successful Gut Decolonization of Extended-Spectrum β-lactamase Producing *Klebsiella pneumoniae* Using Oral Lyophilized Fecal Microbiota Transplant (FMT) in a Woman with Recurrent Urinary Tract Infections

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Background. In patients with anatomic disruption or long-term indwelling catheters of the urinary tract, recurrent infections can be a problematic complication. Exposure to multiple antibiotics can set the stage for the acquisition of resistant organisms. Restoration of a healthy gut microbiota may help such patients develop colonization resistance and eliminate multi-drug resistant organisms. We report the successful use of an oral FMT to decolonize an ESBL-producing *K. pneumoniae* (*Kpn*) from a woman with an ileal conduit with urostomy and recurrent urinary tract infections (UTI).

Methods. FMT was performed using PRIM-DJ2727, an oral encapsulated lyophilized stool product under investigation for treatment of *Clostridioides difficile* infection. Three doses of PRIM-DJ2727 (60 g total fecal matter lyophilized to 1g/dose) were given weekly under an Expanded Access Investigational New Drug Application protocol approved by the US Food and Drug Administration and the local Institutional Review Board. Urine and stool samples were collected prior to treatment, 1 week after the final FMT dose, at transplant day +70, and transplant day +180. Samples underwent nucleic acid extraction using the Qiagen DNeasy PowerSoli Kit and 16S rRNA sequencing on an Illumina MiSeq.

Results. A 50 year old woman with von Willebrand disease presented with recurrent UTIs after complications from a hysterectomy decades prior. She had an ileal conduit with urostomy, and for the prior 2 years had been colonized with an ESBL *Kpn* with recurrent episodes of pyelonephritis. In the preceding 6 months, she had 5 symptomatic UTIs (**Fig 1**). FMT was given 1 week after stopping antibiotics from the most recent UTI. In the 6 months subsequent to the FMT, she developed two symptomatic UTIs, with cultures positive for *Achromobacter* (*Axyl*), *Stenotrophomonas* (*Steno*), and *Enterococcus spp*. *Axyl* and *Steno* were not identified in the FMT product (**Fig 2A**). Stool α-diversity increased after the transplant, and recovered by 6 months despite oral fluoroquinolone therapy (**Fig 2B**). Interestingly, there was an inverse relationship between stool and urine α-diversity. ESBL *Kpn* was not recovered subsequent to the FMT.

Figure 1

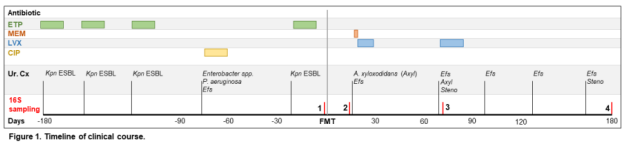

Figure 1. Timeline of clinical course.

Figure 2

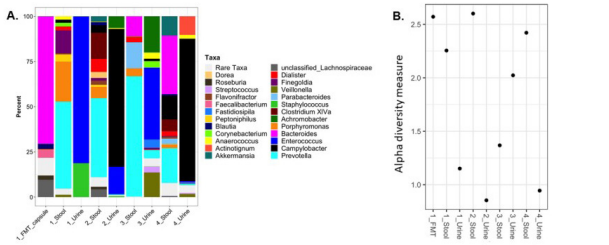

Figure 2. A) Relative abundance of taxa identified in urine and stool samples. Composition of the fecal microbiota transplant (FMT) capsule is shown in the first column. Numbers correspond to the sampling time as indicated in **Figure 1**. **B)** Alpha diversity by Shannon index. Numbers correspond to the sampling time as indicated in **Figure 1**.

Conclusion. Oral FMT was used to successfully decolonize a woman with recurrent UTIs due to ESBL *Kpn*.

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