Unmoderated Posters: Infections and Inflammatory Disease

UP-08

The Sharklet Micro-pattern Limits Bacterial Migration and Colonization

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Introduction and Objectives: Catheter-associated urinary tract infections (CAUTI) are the most common nosocomial infections that occur in the US annually. Antimicrobial coated catheters have not been effective for CAUTI prevention. Catheters allow migration of bacteria extra-lumenally along the catheter surface to the bladder. The novel use of micro-topography, the Sharklet micro-pattern (MP), to control bacterial colonization and migration offers an elegant method to reduce nosocomial infections without the use of antimicrobial agents.

Methods: Catheter prototype silicone rods (16 French) with and without the Sharklet MP around the external surface were made in a lab-scale prototyping process. Bacterial migration was studied with channels cut into agar-filled Petri dishes and 106 CFU/mL of uropathogenic Escherichia coli (UPEC), Pseudomonas aeruginosa, or Serratia marcescens was inoculated on one agar island near 1 cm rods inserted into the channels. Visual bacterial growth around the rod-agar interface opposite the inoculation site indicated migration. Colonization was assessed by submerging longitudinally-split rods in a 107 CFU/mL saline suspension of UPEC. The surface of the rods were sampled and bacterial load was enumerated using dilution plating.

Results: Sharklet MP rods demonstrated 99.9% ($p<0.01$), 99.7% ($p<0.01$), and 99.9% ($p<0.05$) reductions in migration of UPEC, P. aeruginosa, and S. marcescens, respectively compared to smooth rods. UPEC migration across Sharklet MP rods was approximately twice as long as migration across smooth rods. Sharklet MP rods reduced UPEC colonization by 94.9% ($p<0.01$) compared to smooth control rods.

Conclusions: This in vitro trial shows Sharklet MP rods are able to significantly reduce both bacterial migration and colonization compared to smooth rods. Upcoming clinical testing will expectantly confirm these findings that the Sharklet MP urinary catheter has the ability to reduce the frequency and delay the onset of CAUTI.

UP-09

Bladder Pain Syndrome/Interstitial Cystitis in Males: Clinical Presentation and Correlation Between Symptoms, Cystoscopic and Urodynamic Findings

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Introduction: Recent studies suggest that Bladder Pain Syndrome/Interstitial Cystitis BPS/IC is more common in men than expected, and often misdiagnosed as chronic nonbacterial prostatitis. The aim of this study was to review clinical presentation of BPS/IC in men and analyze correlations between the symptoms, cystoscopic and urodynamic findings.

Methods: A retrospective chart review for male patients diagnosed with BPS/IC between 1995 and 2012 was conducted. The diagnosis was based on ESSIC criteria. Univariate Analysis of Variance was used to analyze patient's age and the severity of the presenting lower urinary tract symptoms (LUTS) and their correlation to the severity of the cystoscopic findings. The Spearman coefficient was used to define correlation between the urodynamic parameters, LUTS and the cystoscopic findings.

Results: The study included 75 male patients. The mean age was 45.5 years (SD12.3) (range 22-78). Suprapubic pain/discomfort (SPP/D) was the only symptom that is significantly associated with the cystoscopic grade of BPS/IC ($p=0.030$). There was a significant negative correlation between the maximal cystoscopic capacity and the severity of the incomplete emptying ($p=0.047$), and between the maximal cystometric capacity and nocturia (Spearman's rho = -0.482, $p=0.000$). No significant correlations were found between the urodynamic parameters and the cystoscopic findings.

Conclusions: Suprapubic pain/discomfort is the most important LUTS for making the diagnosis of BPS/IC in men. Severity of the SPP/D is significantly associated with degree of glomerulations on cystoscopy. Inverse association was found between the severity of incomplete emptying and the maximal cystoscopic capacity and severity of nocturia and the maximal cystometric capacity.

UP-10

Daily versus Postcoital Antibiotic Prophylaxis in Women with Recurrent Urinary Tract Infections: Choice of Antibiotic from a Cost-effectiveness Perspective

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Introduction and Objectives: Daily and postcoital antibiotic prophylaxis are effective strategies in the management of women with recurrent urinary tract infections (UTIs). The purpose of our study is to compare the cost-effectiveness of different antibiotics used for daily and postcoital prophylaxis.

Methods: A decision tree was developed to estimate the costs of daily and postcoital antibiotic prophylaxis in the reduction of UTIs per patient year. Prophylaxis success was defined as less than one microbacterial recurrence per patient year (MRPY). Daily antibiotics included: trimethoprim, nitrofurantoin, cephalexin and ciprofloxacin. Postcoital antibiotics included trimethoprim-sulfamethoxazole (TMP-SMZ) and ciprofloxacin. Data was derived from the EAU systematic review and the Cochrane Review on UTIs. Costs were obtained from the Ontario Drug Benefit formulary.

Results: Postcoital antibiotics were more cost-effective than daily antibiotics at reducing MRPY. When the frequency of sexual intercourse (FSI) was once per week, postcoital TMP-SMZ was the most cost-effective agent, reducing MRPY to less than one at a cost of 1.3 Canadian dollars per patient year (CAD/py). This was followed by postcoital ciprofloxacin at a cost of 15.2 CAD/py. The cost of daily cephalexin was 22.5 CAD/py. Sensitivity analysis demonstrated that as the FSI increased beyond 1.4 times per week, daily cephalexin became more cost-effective than postcoital ciprofloxacin. However, postcoital TMP-SMZ still remained the most cost-effective agent.

Conclusions: Our study suggests that postcoital antibiotics are the most cost-effective strategy in preventing recurrent UTIs, with postcoital TMP-SMZ as the initial antibiotic. This is followed by postcoital ciprofloxacin if the FSI is less than once per week, and daily cephalexin if the FSI is greater than twice per week. Decisions for antibiotic choice should also be made in conjunction with local resistance patterns and clinical judgement.

UP-11

Prevalence and Treatment of Chronic Prostatitis in Infertile Men and Pyospermia

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Introduction: The role and origin of Pyospermia (PS) in male infertility and the indications for treatment remain controversial. We seek to evaluate the prevalence and effect of treatment of chronic prostatitis (CP) in the setting of leukocytospermia in infertility patients.

Methods: Retrospective chart analysis of patients who were found to have Immunoperoxidase confirmed leukocytospermia on their semen analysis and were subsequently treated at our clinic from 2009-2013, was done. Standardized antibiotic protocol was used: patients with history of STIs or atypical infections were given Doxycycline or Tetracycline; patients with history of urinary infections or genitourinary (GU) instrumentation were given Ciprofloxacin or Bactrim. If repeat semen analysis was positive for PS, then repeat antibiotic treatment from a different group was administered.

Results: In total, 70 infertility patients fit our search criteria. 15 patients (21%) reported orchalgia, 47 (67%) had clinical CP, 20 (29%) reported LUTS, 18 (26%) reported a history of GU infection. 6-weeks antibiotic course was given in 54 (77%) patients Doxycycline or Tetracycline, Ciprofloxacin 9 (13%), Bactrim 7 (10%). After a single course of antibiotic treatment, 58 patients (83%) had full resolution of PS; 12 (17%) required multiple treatments. Patients with clinical CP had higher resolution of their GU symptoms, Pyospermia and improvement in sperm parameters.

Conclusions: There is a high prevalence of unidentified CP in male infertility patients with PS. Using standardized antibiotic treatment improved symptoms related to CP as well as PS. Resolution of PS is more pronounced in men with clinical CP as compared to those without.