**MP47-03**  
**CHRONIC EXPOSURE TO PENTOSAN POLYSULFATE SODIUM IS ASSOCIATED WITH RETINAL PIGMENTARY CHANGES AND VISION LOSS**  
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**INTRODUCTION AND OBJECTIVES:** Interstitial cystitis/ bladder pain syndrome (IC/BPS) is a chronic bladder condition in which individuals are symptomatic of bladder or pelvic pain, urinary frequency, urgency and nocturia. For diagnosis, exclusion of other etiologies of these symptoms is necessary. Oral pentosan polysulfate sodium (PPS) is a second line oral medication for the treatment of IC/BPS per AUA Guidelines. We have recently observed vision-threatening retinal changes in a group of patients receiving chronic therapy for IC/BPS with PPS.  

**METHODS:** Subjects were identified by query of a local electronic medical record system for patients seen at the Emory Eye Center with self-reported current or previous use of PPS and retinal degeneration. Medical records were reviewed for patient demographics, medication history, history of visual symptoms, clinical examination results, and retinal imaging from modalities including wide-field fundus photography, fundus autofluorescence imaging (FAF), and optical coherence tomography (OCT).  

**RESULTS:** A total of 10 patients were identified, with a median age of 59 years (range 38-68), and median time since IC diagnosis of 19 years (range 4-40). The most commonly reported visual symptoms described were difficulty reading (7/10) and difficulty adapting to dim lighting (7/10). The median cumulative exposure to PPS was 2062 grams (range 325-2883.5), over a median duration of 186 months (range 27-240). Mean LogMAR best corrected visual acuity in all eyes measured was 0.13 (Snellen equivalent 20/27). Dilated fundus examination revealed symmetric fairly pigmentary changes in the retina. Retinal imaging with FAF and OCT technologies further characterized these pigmentary lesions, demonstrating abnormalities primarily in the retinal pigment epithelium. Of note, 156 patients with a history of IC/BPS without PPS exposure have undergone ophthalmic exam at our institution during the study period. On retrospective review of these medical records, none of them were diagnosed with this unique form of pigmentary maculopathy.  

**CONCLUSIONS:** We describe a potentially avoidable retinal degeneration phenomenon associated with chronic PPS exposure. Structural changes occur at the level of the retinal pigment epithelium, manifesting as characteristic pigmentary changes. While it remains unclear whether drug cessation will alter the course of retinal disease, we encourage affected patients to discontinue use, and patients with suggestive visual symptoms to undergo a comprehensive ophthalmic examination with OCT and FAF imaging.  

**Source of Funding:** None

**MP47-04**  
**CYCLOPHOSPHAMIDE-INDUCED CYSTITIS TRIGGERS NLRP3–DEPENDENT NEUROINFLAMMATION IN THE HIPPOCAMPUS AND DEPRESSION IN RATS**  
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**INTRODUCTION AND OBJECTIVES:** Interstitial Cystitis (IC) is often associated with psychological co-morbidities, in particular depression. Breakthroughs in other fields have shown that peripheral disease can result in inflammation in the brain which is responsible for various mood disorders. Moreover, the NLRP3 inflammasome, which is present in microglia and functions to mature proinflammatory cytokines, appears critical in triggering neuroinflammation. Thus, we sought to explore if NLRP3-induced neuroinflammation is present in a rodent model of IC and if it produces depressive behavior. We have employed the imperfect but best studied model of IC, the cyclophosphamide (CP)-treated rat. Importantly, CP and its metabolites do not cross the blood brain barrier, so that any neuroinflammation is secondary to the peripheral insult.  

**METHODS:** Rats were injected (150 mg/kg, i.p.) with CP while medications (NLRP3 inhibitor gliburide, 2.5 mg/kg, p.o.; antidepressant fluoxetine, 1 mg/ml, i.p.) were administered pre-operatively and throughout the experiment. After 24 h, brains were harvested and caspase-1 activity (cleavage of YVAD-afc), inflammation (Evan’s blue) and histology (H&E) were measured. Depression assays began 24 h after CP injection and finished 24 h later. For forced swim, rats were placed in an inescapable water cylinder for 5 min and the time spent immobile recorded (10 min training period 24 h earlier). For sucrose preference the consumption of plain vs. sucrose-laden water was monitored over 24 h.  

**RESULTS:** CP triggered a significant increase in caspase-1 activity and inflammation in the hippocampus but not in thepons, that was blocked with the NLRP3 inhibitor. Histology indicated breakdown of the blood brain barrier with activated microglia in the dentate gyrus, again dependent on NLRP3 activation. Finally, CP-treated rats displayed depression symptoms in 2 behavioral assays that was prevented by both the NLRP3 inhibitor and an antidepressant (Figure 1).  

**CONCLUSIONS:** The results demonstrate NLRP3-induced hippocampal inflammation, resulting from CP-induced cystitis, is responsible for depression in these rats. This study provides the first-ever causative explanation of the previously anecdotal link between IC and depression.

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**MP47-05**  
**CHARACTERIZATION OF THE “END STAGE BLADDER” IN CHRONIC CYSTITIS**  
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**INTRODUCTION AND OBJECTIVES:** There exists a rare clinical subset of patients, often labelled as “chronic cystitis” who develop refractory symptoms and a severely reduced bladder capacity with loss of compliance and even new vesicoureteral reflux (VUR) with reduced renal function, termed here as “End Stage Bladder.” The purpose of this study is to phenotype these patients and describe their disease process.  

**METHODS:** This retrospective cohort study evaluated patients with cystitis referred to a tertiary care center for refractory symptoms. Interstitial Cystitis (IC), Bladder Pain Syndrome (BPS), eosinophilic cystitis and non-malignant causes of chronic cystitis who demonstrated more than one of: severely reduced bladder capacity; diffuse mucosal loss; new VUR or loss of compliance were included. Patients with history of pelvic radiation, urologic malignancy, neurogenic bladder or neurologic disease were excluded.  

**RESULTS:** From 2008-2018, 75 patients with chronic cystitis were identified and after exclusions, 30 were included in the study. Most patients were female (n=25, 83%) and Caucasian (n=27, 90%) and