wake cystometry (CMG) was performed, nociceptive behavior such as licking (urethral pain) and freezing (bladder pain) induced by intravesical instillation of resiniferatoxin (RTX; 3μM for 1 min) was observed.

**Results**

GFP expression was seen in L6/S1 DRG and in the bladder after HSV-GFP vector injection into the bladder wall. In CMG, the GFP + TNBS (GFP/TNBS) group showed a significant decrease in intercontraction intervals (ICIs) compared to the GFP + ethanol (GFP/EtOH) group (p<0.01). Then, the reduced ICIs in the GFP/TNBS group were significantly prolonged by 43.6% and 49.0% in poreless TRPV1 + TNBS (PL/TNBS) and PP1α + TNBS (PP1α/TNBS) groups (p<0.01), respectively (Figure 1). The number of freezing behavior was significantly higher in GFP/TNBS group compared to GFP/EtOH group (p<0.01). It was then significantly reduced in both PL/TNBS and PP1α/TNBS groups by 87.3% and 87.2%, respectively, compared to the GFP/TNBS group (Figure 2). In contrast, the number of licking behavior was not significantly different among these four groups.

**Interpretation of results**

Rats with TNBS-induced colitis exhibited bladder overactivity shown by reduced ICIs, which was ameliorated in colitis rats treated with HSV-poreless TRV1 or PP1α vectors. Freezing behavior representing bladder pain was significantly increased in TNBS colitis rats, which was significantly reduced by both poreless TRPV1 and PP1α vector treatments. These results indicate that experimental colitis induced by TNBS demonstrated both bladder overactivity and bladder pain symptoms, and those symptoms were significantly reduced by HSV vectors-mediated gene delivery of poreless TRPV1 or PP1α. The results of the present study also suggest that the activation of TRPV1 receptors in the bladder could be an underlying mechanism of bladder overactivity and enhanced bladder pain sensitivity, which are induced by colon-to-bladder cross organ sensitization in CPPS.

**Concluding message**

HSV-mediated TRPV1-targeting gene therapy could be a novel and effective modality for the treatment of bladder pain and urinary frequency symptoms in CPPS patients who have overlapped symptoms of IC/BPS and IBS.
Figure 1: Intercontraction intervals in CMG

![Bar chart showing intercontraction intervals in CMG with P-values for comparisons between groups.]

Figure 2: Freezing behavior in pain assessment

![Bar chart showing the number of freezing events with P-values for comparisons between groups.]

References
1. Neuroscience. 2015 Jan 22;284:422-9

Disclosures
Funding: DOD W81XWH-12-1-0565; NIH DK088836 Clinical Trial: No Subjects: ANIMAL Species: Rat Ethics Committee: University of Pittsburgh Institutional Animal Care and Use Committee (IACUC)