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- **Title: Bladder Capacity is a Biomarker for Bladder-Centric Versus Systemic Phenotypes in IC/BPS**
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Objective: This study represents an analysis of an expanded cohort to evaluate the previously reported relationship of urological and non-urological clinical findings to anesthetic bladder capacity (BC) in Interstitial Cystitis/Bladder Pain Syndrome (IC/BPS) patients who had undergone therapeutic bladder hydrodistention (HOD). Our primary aim in this study was to determine if the relationships described in the original cohort would be confirmed in a much larger group of consecutively consented patients and/or if any new correlations were apparent.

Methods: Data from IC/BPS patients, collected between October 2011 and March 2018, included complete history and physical exams, IC/BPS questionnaires (ICSI [Interstitial Cystitis Symptom Index] and ICPI [Interstitial Cystitis Problem Index]), and anesthetic BC. Preliminary individual linear regressions were performed to assess the correlation of demographic data, pain/psychiatric/auto-immune conditions, and lower urinary tract symptoms with BC. Variables demonstrating correlation with $p<0.1$ were included in a final multi-linear regression with a p-value cut-off of 0.05 for statistical significance.

Results: 243 unique female patient encounters were assessed in this study. Our prior analysis included 110 subjects; this analysis included the original 110 plus an additional 133 subjects. The mean (+/- standard deviation) BC under anesthesia was 815.16mL (+/- 320.06mL). Preliminary analysis showed positive correlations between BC and dyspareunia, depression, endometriosis, and the overall number of pain/psychiatric/auto-immune conditions. Inverse correlations were observed between BC and ICPI score, ICSI score, and age. Final multilinear regression confirmed statistically significant positive correlations between BC and both depression ($p=<0.001$) and endometriosis ($p=0.032$) as well as an inverse correlation between BC and both ICSI score ($p=0.041$) and age ($p<0.001$).

Conclusions: Higher symptom scores (ICSI) and higher age were significantly correlated with low BC while a diagnosis of depression and endometriosis were significantly correlated with higher BC in women carrying a diagnosis of IC/BPS. These data support the conclusions drawn from our initial analysis that women diagnosed with IC/BPS fall into two distinct subtypes: a bladder-centric phenotype with bladder specific symptoms versus a systemic pain syndrome phenotype. Additional studies are needed to determine if differences in treatment response exist between these two groups.