

Bladder and Bowel Dysfunction: Evidence for Multidisciplinary Care

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Abbreviations and Acronyms

BSFS = Bristol Stool Form Scale

DVSS = Dysfunctional Voiding Scoring System

GI = gastroenterology

PSC = Pediatric Symptom Checklist

PSI-SF = Parenting Stress Index-Short Form

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Purpose: We examined the symptoms of bladder-bowel dysfunction (ie severity of voiding dysfunction and stool consistency) and psychosocial difficulties in children presenting to the pediatric urology clinic for voiding dysfunction and to the pediatric gastroenterology clinic for functional constipation.

Materials and Methods: Parents of children seen at the gastroenterology clinic were recruited during the outpatient clinic appointment, and parents of children seen at the urology clinic were randomly selected from the research database and matched to the gastroenterology sample based on age and gender of the child. All parents completed the Dysfunctional Voiding Scoring System, Bristol Stool Form Scale, Pediatric Symptom Checklist and Parenting Stress Index™-Short Form, which assessed severity of voiding dysfunction, stool consistency, level of psychosocial difficulties and level of parenting stress, respectively.

Results: Children seen at the urology and gastroenterology clinics did not differ significantly on any of the measures, indicating that the severity of their bladder-bowel dysfunction is similar. However, they had significantly more severe voiding dysfunction, more constipated stool and more psychosocial difficulties than historical healthy controls. Additionally, level of parenting stress was significantly correlated with patient level of psychosocial difficulties and severity of voiding dysfunction.

Conclusions: Patients with bladder and bowel dysfunction represent a homogeneous group that would potentially benefit from a multidisciplinary treatment approach involving urology, gastroenterology and psychology professionals.

Key Words: combined modality therapy, constipation, urinary incontinence

VOIDING dysfunction comprises almost 40% of referrals to pediatric urologists,¹ while bowel dysfunction leading to functional constipation accounts for approximately 25% to 30% of referrals to pediatric gastroenterologists.² While previous reports have indicated a significant overlap in these conditions in primary care settings, with 24% of children with functional fecal retention also reporting daytime incontinence,³ the prevalence of these

comorbid conditions is higher at tertiary care centers. It was recently reported that 47% of patients seen at a pediatric urology clinic for lower urinary tract symptoms also met criteria for functional constipation.⁴ Children presenting with a combination of bladder and bowel disturbances are now classified as having bladder-bowel dysfunction. Acknowledging the importance of assessing bowel habits in children presenting with lower

urinary tract symptoms, the Standardization Committee of the International Children's Continence Society recently published guidelines for the management of functional constipation in children with urinary symptoms.⁵

In addition to an overlap in symptoms of bladder and bowel dysfunction, children seen for conditions such as voiding dysfunction and functional constipation are at increased risk for psychosocial problems. For example children with daytime incontinence have been rated by their parents as having higher levels of attentional problems and more oppositional behavior than those without daytime wetting.⁶ Recently we reported that children seen at a pediatric urology clinic for voiding dysfunction were 1.53 times more likely than children seen in primary care settings to exhibit clinically significant levels of psychosocial difficulties.⁷ Among children presenting to an outpatient GI clinic for functional constipation behavioral problems were identified in 37%, with significant numbers exhibiting internalizing and externalizing behaviors.⁸

We examined the similarities and differences between groups of children referred to our pediatric urology clinic for voiding dysfunction and children referred to our pediatric GI clinic for functional constipation. We compared the groups in terms of severity of voiding symptoms, stool consistency and level of psychosocial difficulties to determine whether the groups are sufficiently similar to warrant multidisciplinary care from a urologist, gastroenterologist and psychologist.

METHODS

After obtaining institutional review board approval parents of children seen for functional constipation at the GI clinic were recruited during regular outpatient clinic appointments. After data collection at the GI clinic was completed a comparison group from the urology clinic was obtained from the research database. Parents of urology patients were selected randomly based on their child with voiding dysfunction being an age and gender match to the children seen at the GI clinic. Additionally, historical control data were obtained from studies using the PSC, DVSS and BSFS in healthy children.^{1,9,10}

Parents completed the PSC, a brief 35-item screening tool for psychosocial difficulties in children. The parent rates each item on a 3-point scale ranging from "never" to "often." Examples of items include "fidgety, unable to sit still" and "feels sad, unhappy." Items are summed to create a total score, with higher scores being indicative of more problems. Previous research has identified total cutoff scores of 24 for children 4 to 5 years old,¹¹ and 28 for children 6 to 16 years old.¹² It is recommended that patients with a positive score (at or above the cutoff) be referred for further evaluation by a mental health professional. The PSC is valid and reliable,⁹ and has been

validated for use in samples of children with GI disorders,¹³ and those with voiding dysfunction and/or enuresis.¹⁴

The DVSS is a 10-item standardized measure that objectively assesses the severity of dysfunctional voiding symptoms.¹ This measure is completed by the child and his/her caregiver. Symptoms are rated on a 4-point scale ranging from "almost never" to "almost every time," and then "yes" or "no" for the presence of a significant life stressor (eg new baby, abuse, home problems, etc). Examples of the items include "When I have to pee, I cannot wait" and "I have had wet clothes or underwear during the day." The items are summed to create a total score, with higher scores indicative of more severe voiding dysfunction.

The BSFS is a standardized and validated measure of stool consistency originally developed for use in adults, although it has been validated for use in children as well.¹⁰ The BSFS is a 7-item scale that includes images and descriptions of stool ranging from "type 1: separate hard lumps, like nuts (hard to pass)" to "type 7: watery, no solid pieces, entirely liquid." The BSFS is significantly correlated with whole gut transit time in children, and it has been approved for use in research to differentiate between functional defecation disorders.¹⁰ Lower BSFS scores are indicative of more constipated stool.

The PSI-SF is a 36-item standardized measure of parenting stress that uses a 5-point scale ranging from "strongly agree" to "strongly disagree."¹⁵ Examples of items include "my child is not able to do as much as I expected" and "I feel trapped by my responsibilities as a parent." Higher PSI-SF scores indicate greater parenting stress, with a clinical cutoff score of 91. The PSI-SF shows high internal consistency ($\alpha = 0.92$), and its validity has been established in parents of children with chronic medical conditions such as diabetes and asthma.¹⁵⁻¹⁷

Descriptive statistics were calculated to characterize the sample. Chi-square analyses and independent t-tests were calculated to examine potential differences between the groups regarding parent gender and race/ethnicity, and to confirm that the sample was successfully matched for child age and gender. To determine whether the urology and GI groups differed from each other on level of voiding dysfunction, stool consistency or level of psychosocial difficulties, 1-way ANCOVAs (urology vs GI, while controlling for race and laxative use) were conducted with the total scores from the DVSS and PSC, and the BSFS score as the dependent variables in separate analyses. Since there were no significant differences between the urology and GI groups, they were collapsed into 1 group and single sample t-tests were conducted to compare the urology/GI group to historical controls on the DVSS total score, BSFS and PSC total score. Finally, the percentages of children who met the cutoff score on the PSC were compared between the urology and GI groups, and between the combined urology and GI group and the historical controls using chi-square analysis. Exploratory analyses were conducted to examine the relationship between level of parenting stress and patient symptoms of voiding dysfunction and psychosocial difficulties in a subset of parents who completed the PSI-SF. All analyses were conducted with SPSS,[®] version 20.

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