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Constipation in children with isolated overactive bladders

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Abstract Objective: To evaluate the prevalence of constipation in children with isolated overactive bladder (IOAB) and no micturition complaints.

Materials and methods: A questionnaire was used to evaluate constipation in 51 children with IOAB, as well as in a control group of 74 children between the ages of 4 and 14 years. The Rome III criteria for children were used to assess constipation. IOAB was defined as the presence of symptoms such as urgency with or without daytime incontinence or frequency, a bell-shaped uroflow, and no post-residual urine.

Results: Mean patient ages were 7.94 (± 2.8) and 8.28 (± 3.4) years in the OAB and control group, respectively ($p = 0.54$). Twenty-eight (54.9%) of the OAB group were girls, and 34 (45.9%) were girls in the control group ($p = 0.32$). More of the children with IOAB had constipation than those without urinary symptoms (54.9% vs. 29.7%, $p = 0.005$; or 2.87, 95% CI: 1.3–6.0). The results were statistically significant regarding the following Rome III criteria: "history of stool retention", "presence of painful or hard bowel movements", "the presence of a large fecal mass in the rectum" and "large diameter stools which may obstruct the toilet". Within the group with OAB, constipation was more common among males ($p = 0.05$). There was no association between the type of OAB symptoms and constipation. The average dysfunctional voiding symptom score was 9.76 (± 4.1). Eleven children (21.6%) presented alterations on ultrasound. Girls with OAB presented more frequently with UTI than boys (18 vs. 10, $p = 0.13$).

Conclusion: This was the first comparative study with respect to constipation in children with IOAB and without urinary symptoms. Children with IOAB have a greater risk of having constipation compared to those with no urinary symptoms.

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Introduction

Intestinal constipation is not considered a disorder as such, but a complex symptom which is the most common intestinal problem among children [1]. Initially, it is a matter of little concern for parents. This delay in treatment aggravates the symptoms and makes treatment difficult. Currently, constipation is considered a public health problem because of its impact on health networks, mainly because of its increased prevalence in the general population. Constipation accounts for 25% of visits to the pediatric gastroenterologist [2].

Constipation can be classified as organic when it arises from a known cause such as an anatomical, neurological, or metabolic abnormality. Functional constipation corresponds to 95% of infant constipation [3]. It is believed that this constipation occurs because of badly adapted behavior, as it can be improved through behavioral training.

Many children tend to develop functional constipation by inhibiting their desire and refusing to defecate. It can be a result of trauma or distress, a way to receive attention from parents or fight with siblings, or because of the memory or anticipation of pain while defecating, anxiety or fear of using the toilet, or a low intake of fiber and incoordination of the puborectalis muscle [1,3,4].

Constipation has been linked to dysfunctional voiding and subsequently termed dysfunctional elimination syndrome (DES), defining children who abnormally evacuate urine and feces [5]. Although the reason for this association lacks better clarification, it is reasonable that both disorders be treated together, under the penalty of the treatment not being successful. OAB is an abnormality commonly found in girls and boys. Children with OAB may experience more constipation because of a common neurophysiological immaturity in bladder and bowel function, by successive contractions of the pelvic floor muscles, or by the children's personal habits [6]. To our knowledge, no study has yet addressed the frequency of constipation in children with OAB without dysfunctional voiding (IOAB). The objective of this study was to test the hypothesis that children with IOAB have a higher rate of constipation than the general population.

Methodology

Patients with and without (control group) IOAB, and between the age of 4 and 14 years, were interviewed. For the patient group, data were collected prior to treatment from the reference center for Children's Urinary Disorders, and for the control group data were collected in the waiting room of the general pediatric outpatient clinic.

Patients were defined as having IOAB if there was urgency with or without daytime incontinence or frequency [7], uroflowmetry with a bell-shaped curve, electromyography demonstrating perineal relaxation during urination, the presence of less than 10% post-void residual urine of the capacity expected for age (using the formula $(\text{age} + 2) \times 30$) and a negative urine culture [8]. Children with neurological or anatomical abnormalities were excluded. In the IOAB group the presence of symptoms was investigated by the following questions:

- 1) When your child needs to urinate, does he/she have to rush to the bathroom in order to prevent wetting his/her clothing?
- 2) Does your child urinate on clothing (pants or shorts) during the day?
- 3) Does your child void at a higher than normal frequency?

The control group included children with no urinary complaints. They were questioned using the dysfunctional voiding symptom score (DVSS) [9,10] to exclude children with symptoms such as urinary urgency, incontinence and holding maneuvers. Only patients with zero points for these questions were included in the study. The DVSS questions related to constipation were not performed.

The Rome III [11] criteria for children were used to diagnose constipation; constipation was considered present when the child presented at least two of the six symptoms for longer than two months. The questions and the way in which they were presented to the child can be seen in Table 1.

The urinary symptoms evaluated in the patients with OAB were urge incontinence, frequency, enuresis, nocturia and holding maneuvers. History of urinary tract infection (UTI) was also noted.

The questionnaire was administered by two previously trained interviewers (one for each group).

The statistical analysis was done using mean and standard deviation, the *t*-test for numeric variables, the chi-squared test for categorical variables, and relative risk with 80% power and a significance level of 95%. The analysis of the data was done using SPSS version 14.0 for Windows.

This study was approved by the institution's ethics committee under protocol 107/2008. All legal guardians signed consent forms.

Results

The study included 51 children in the group with IOAB and 74 children in the control group. The mean age was 7.94

Table 1 Rome III criteria for children and the adapted questions.

1. Two or fewer defecations in the toilet per week (the child poops two or fewer times per week)	Yes () No ()
2. At least one episode of fecal incontinence per week (the child poops in his/her underwear at least once a week)	Yes () No ()
1. History of retentive posturing or voluntary retention (the child holds his/her legs or squeezes his/her butt to avoid going to the bathroom to poop)	Yes () No ()
2. History of painful or hard bowel movements (the child experiences pain or needs to use force to poop)	Yes () No ()
3. Presence of a large fecal mass in the rectum (the child feels or complains that he/she feels stool stored in the butt)	Yes () No ()
4. Large diameter stools which obstruct the toilet (the child's poop is large and clogs the toilet)	Yes () No ()

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