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Educational article

Management of functional nonretentive fecal incontinence in children: Recommendations from the International Children's Continence Society



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Summary

Background

Fecal incontinence (FI) in children is frequently encountered in pediatric practice, and often occurs in combination with urinary incontinence. In most cases, FI is constipation-associated, but in 20% of children presenting with FI, no constipation or other underlying cause can be found – these children suffer from functional nonretentive fecal incontinence (FNRFI).

Objective

To summarize the evidence-based recommendations of the International Children's Continence Society for the evaluation and management of children with FNRFI.

Introduction

Fecal incontinence (FI) is defined as the loss of stools in places inappropriate to the social context at least once per month in children with a developmental age of ≥ 4 years [1]. Fecal incontinence reflects a difficult and distressing problem for children and their parents. It can lead to feelings of guilt and embarrassment, and can cause children to be either the victim of bullying [2,3], or actively involved in bullying [4]. Fecal incontinence significantly impacts quality of life [3], and may lead to issues with social functioning and lower self-esteem [5].

In approximately 95% of children with FI, no organic cause can be identified, and it is regarded as a functional defecation disorder [1,6]. In 80% of children with functional FI, this symptom is associated with functional constipation (FC) with fecal impaction causing overflow incontinence; this is characterized by the involuntary loss of soft stools that pass an obstructing fecal mass [7,8]. In the remaining

Recommendations

Functional nonretentive fecal incontinence is a clinical diagnosis based on medical history and physical examination. Except for determining colonic transit time, additional investigations are seldom indicated in the workup of FNRFI. Treatment should consist of education, a nonaccusatory approach, and a toileting program encompassing a daily bowel diary and a reward system. Special attention should be paid to psychosocial or behavioral problems, since these frequently occur in affected children. Functional nonretentive fecal incontinence is often difficult to treat, requiring prolonged therapies with incremental improvement on treatment and frequent relapses.

20% of children with functional FI, there are no signs of fecal retention; this is classified as functional nonretentive fecal incontinence (FNRFI) [1,8]. This report summarizes the current recommendations of the International Children's Continence Society for the evaluation and management of children with FNRFI.

Definition

For many years, a comprehensive definition of the disorder that is now classified as FNRFI has been lacking and FI has been described in many different ways. First, the term *encopresis* was used to describe the loss of a normal quantity of feces [9]. Later the term *soiling* was introduced, referring to passage of small amounts of stool, which stain the underwear [9,10]. This was seen as a characteristic sign of fecal overflow incontinence. However, these terms have been used interchangeably in medical literature.

Currently, the Rome III criteria are used to define functional gastrointestinal disorders. These criteria have adopted the more neutral term *fecal incontinence* rather than the terms *encopresis* and *soiling* (Table 1) [1]. Throughout this report, the terms relating to FI, FNRFI and FC are consistently used in accordance with the definitions provided by the Rome pediatric committee (Table 1).

Epidemiology

Studies on the prevalence of FNRFI in children are scarce, and many studies investigating functional FI do not differentiate between FNRFI and constipation-associated FI. To date, only an epidemiological survey performed in Sri Lanka has assessed the true prevalence of FNRFI in the pediatric population. They reported that 2.0% of children (10–16 years) experienced FI, of whom 18% were considered to have FNRFI [11]. The prevalence of FNRFI is higher among younger children [7,12], and it is significantly more common among boys, with a male to female ratio ranging from 3:1 to 6:1 [10–13].

Pathophysiology

The exact pathophysiology of FNRFI is unknown, its etiology is considered to be multifactorial. The presence of FI in general is associated with younger age, a positive family history, non-Caucasian race, male gender, important life events such as the birth of a younger sibling, parental discord, a change in living conditions, and other psychological factors [14–19].

Urinary incontinence (UI) is commonly found in children with FNRFI [20–22]. Prevalence rates of daytime and nighttime UI in FNRFI patients range between 14–50% and 20–47%, respectively [8,20,23]. Vice versa, 11% of children with dysfunctional voiding, urge incontinence or bladder overactivity fulfill the Rome III criteria for FNRFI [21]. It is hypothesized that the concurrence of both UI and FI in otherwise healthy children without signs of fecal retention might indicate one combined disorder, termed bladder and bowel dysfunction (BBD) [24,25]. Treatment of UI can have

a positive effect on FNRFI symptoms, and adequate treatment of FNRFI often induces a reduction in number of UI episodes [23,24]. These results endorse the theory of a combined, possibly neurodevelopmental or behavioral, disorder underlying BBD.

Evaluation

In children presenting with FI without an underlying organic cause, the most important objective is to differentiate between constipation-associated FI and FNRFI. Functional nonretentive fecal incontinence and FC are both clinical diagnoses, mainly based on medical history and physical examination (Table 1).

Medical history

The medical history focuses on bowel habits [1], including the frequency of FI (usually defined as number of episodes per week), age of onset, and time/situation of occurrence. In children with FNRFI, loss of stools frequently occurs in the afternoon (after school) and evening, and often during an activity [12,26]. Keeping a stool diary (e.g. for 14 days) can help to obtain reliable information on defecation patterns [27].

Moreover, attention should be paid to urinary tract symptoms, UI, drinking and voiding habits, dietary history (including loss of appetite), abdominal pain, obesity and other comorbidities, family history, use of medication, and growth and development. Information on family composition, psychosocial problems and behavioral problems needs to be elicited. Furthermore, it is important to inquire about important life events (e.g. parental divorce, family loss, and birth of siblings) and physical and/or sexual abuse. Also, all previous treatments and their effects should be listed.

Physical examination

All children presenting with FI need a thorough physical examination, including an abdominal, anorectal, and

Table 1 Rome III criteria for functional defecation disorders in children with a developmental age of at least 4 years [1]. This table summarizes the differences between functional nonretentive fecal incontinence (FNRFI), characterized by fecal incontinence without signs of fecal retention, and functional constipation, a disorder that is often accompanied by fecal incontinence as a consequence of fecal impaction leading to overflow fecal incontinence.

Functional nonretentive fecal incontinence	Functional constipation
Must fulfill all of the following for ≥ 2 months prior to diagnosis:	Must fulfill ≥ 2 criteria at least once per week for ≥ 2 months prior to diagnosis, with insufficient criteria for the diagnosis of irritable bowel syndrome:
<ol style="list-style-type: none"> 1. Defecation into places inappropriate to the social context at least once per month 2. No evidence of an inflammatory, anatomic, metabolic, or neoplastic process that explains the subject's symptoms 3. No evidence of fecal retention 	<ol style="list-style-type: none"> 1. < 3 defecations in the toilet per week 2. ≥ 1 episode of fecal incontinence per week 3. History of retentive posturing or excessive volitional stool retention 4. History of painful or hard bowel movements 5. Presence of a large fecal mass in the rectum 6. History of large-diameter stools, which may obstruct the toilet

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