



CHAPTER I

RATIONALE AND BACKGROUNDS

Constipation, defined as a delay or difficulty in defecation, present for 2 or more weeks, is a common pediatric problem, encountered by both primary and specialty medical providers. It occurred in approximately 3% of general pediatric outpatient visits and 25% of pediatric gastroenterology consultations (1).

Chronic constipation is a source of anxiety for parents who worry that a serious disease may be causing symptom.

Beyond the neonatal period, the most common cause is functional constipation and has been called idiopathic constipation, functional fecal retention, and fecal withholding. In most cases, the parents are worried that the child's stools are too large, too hard, painful, or too infrequent.

The normal frequency of bowel movements at different ages has been defined. Infants have a mean of 4 stools per day during the first week of life. This frequency gradually declines to a mean average of 1.7 stools per day at 2 years of age and 1.2 stools per day at 4 years of age (2,3). After 4 years, the frequency of bowel movements remains unchanged.

Functional constipation is the constipation without objective evidence of a pathological condition. It is most commonly caused by painful bowel movements with resultant voluntary withholding of feces by a child who wants to avoid unpleasant defecation (4).

Withholding feces can lead to prolonged fecal stasis in the colon, with reabsorption of fluids and an increase in the size and consistency of the stools. The passage of large, hard stools that painfully stretch the anus may frighten the child, resulting in a fearful determination to avoid all defecation. With time, such retentive behavior becomes an automatic reaction. As the rectal wall stretches, fecal soiling or incontinence may occur, angering the parents and frightening the child (5).

Furthermore, functional constipation may be a leading causes of irritability, abdominal distension, chronic abdominal pain, decreased oral intake and failure to thrive in childhood.

Diagnostic criteria for functional constipation (According to Rome III criteria for childhood functional gastrointestinal disorders: Neonate/Toddler) (6)

Must include 1 month of *at least* 2 of the following in infants up to 4 years of age:

1. Two or fewer defecations per week
2. At least 1 episode per week of incontinence after the acquisition of toileting skills
3. History of excessive 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 that may obstruct the toilet

Accompanying symptoms may include irritability, decreased appetite and/ or early satiety. The accompanying symptoms disappear immediately following passage of a large stool.

The general approach in management of children with functional constipation includes the following steps (4).

The first step is determining whether there is fecal impaction. If present, disimpaction should be performed. In the child who has no impaction or after successful disimpaction, initiate treatment is with oral medication (laxative), provide parental education, follow up closely with adjustment of medication as necessary.

Parental education, including an explanation of the pathogenesis of constipation, are the first steps in treatment. If fecal soiling is present, an important goal for both the child and the parent is to remove negative attributions. It is especially important for parent to understand that soiling from overflow incontinence is not a willful and defiant maneuver. Parents are encouraged to maintain a consistent, positive and supportive attitude in all aspects of treatment.

Once the impaction has been removed, the treatment focus on the prevention of recurrence, the maintenance therapy is begun.

Maintenance therapy consists of dietary interventions, behavioral modification, and laxatives (4) .

Dietary changes consist of an increase intake of dietary fiber such as vegetables, fruits and other absorbable or nonabsorbable carbohydrates that soften stools.

An important component of treatment includes behavior modification and regular toilet habits. Unhurried time on the toilet after meals is recommended.

The goal of treatment is to promote daily, soft painless stools preventing re-accumulation of feces. A bowel diary is used to quantify therapeutic progress and to enhance motivation (7).

It is often necessary to use medication as the laxatives to help functional constipated children achieve regular bowel movements.

A prospective, randomized trial showed that the addition of medications to behavior management in children with constipation was beneficial. Children who received medications achieved remission significantly sooner than children who did not. The use of laxatives was most advantageous for children until they were able to maintain regular toilet habits (8).

The laxatives recommended by the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN, 2006) in the maintenance therapy of childhood constipation are lubricant, such as mineral oil or osmotic agents, such as magnesium hydroxide (MOM), lactulose, sorbitol and polyethylene glycol (PEG). The combination of lubricant and osmotic laxative is also recommended (4). At this stage of treatment, the prolonged use of stimulant laxatives is not recommended. Extensive experience with long term use of mineral oil (9), magnesium hydroxide (10), and lactulose or sorbitol (11) has been reported. Long-term studies showed that these laxatives are effective and safe (10,11,12).

Despite the availability of different laxatives, there are very few published studies in children comparing different laxatives with respect to efficacy or adverse effects (13-17).

There was a paucity of quality data regarding many commonly used agents including milk of magnesia, senna, bisacodyl, and stool softeners.

Also, there is little information concerning the maximum dose, duration or long term side effects of any laxative used in the treatment of childhood constipation.

Polyethylene glycol (PEG) without electrolytes, a new type of osmotic laxative that has already been used successfully in adults, appears to be superior to other osmotic agents in palatability and acceptance by children (13-14,18-24). Preliminary clinical data suggest that administration of PEG to infants is effective with no adverse effects noted (25).