



FUNCTIONAL CONSTIPATION IN CHILDREN: A CROSS-SECTIONAL STUDY

Paediatrics

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ABSTRACT

Aim: To identify the prevalence of functional constipation in pediatric population and study the epidemiological data.

Material & Methods: All patients presenting in the Pediatrics OPD of a public teaching hospital were screened for functional constipation as per the international criteria. Various epidemiological data were recorded. Treatment was instituted as a defined protocol. Patients were followed up for minimum six months.

Results: Functional constipation was found in 8.6% population. Most patients belonged to lower and lower middle socio-economic strata. Majority had a history of faulty dietary habits, and almost none of them were toilet trained.

Conclusion: Functional constipation is a seemingly benign disorder and often not taken as a disease entity in the society. Apart from the treatment directed at the disease as such, awareness and life-style changes are crucial to the success of therapy.

KEYWORDS

constipation; functional; children; toilet-training; weaning.

Introduction

Functional constipation (FC) in children is not an uncommon disorder. It is typically characterized by infrequent passage of stools, large stools and/or difficulty in passing stools (1). The incidence and prevalence differs widely among various societies and ethnic groups depending on many factors, mostly related to prevalent socio-cultural practices and dietary habits. Worldwide, the prevalence rates vary from 0.7% to 29.6% (1). Even though not life-threatening, it poses many health-related risks and causes significant morbidity. In a study (2, 3), more than 80% children with FC were found to have encopresis and more than one third had some or the other behavioral issue. Many a times, patients present with symptoms which mimic other serious conditions. Constipation has been unequivocally associated with several other conditions as well such as urinary tract infection, neurogenic bladder and many more. Timely diagnosis, aggressive therapy, and above all, sensitizing the parents can avert the associated morbidity.

Material & Methods

The study was conducted in the Pediatric OPD of a teaching public hospital in North India. Children up to 15 years of age presenting with non-acute conditions were included in the study. Infants with anatomical anorectal malformations and children with obvious cause for constipation (hypothyroidism, neuromuscular disorders including Hirschsprung's disease etc) were excluded from the study. A detailed inquiry was made into the bowel habits. Dietary history and family history were also obtained. FC was diagnosed using standard ROME III criteria.

A detailed history was obtained. This included weaning and detailed dietary history, history pertaining to defecation, frequency of defecation, stools' consistency, symptoms associated with defecation like pain, bleeding etc., soiling, and any urinary symptoms. Any secondary cause for the constipation was excluded with history and appropriate investigation(s). Once FC was confirmed, therapy was started. This was targeted at the dietary habits, bowel management, and parents' awareness. In cases with fecal impaction, manual evacuation under sedation or short anesthesia was done, followed by high bowel washes with warm saline to cleanse the large bowel. Patients with a long history were put on regular rectal washes to bring down the size of dilated bowel. They were then put on polyethylene glycol (PEG) orally in a dose of 1 g/kg/day for 2-3 days. This was effective in cleansing the entire bowel. To prevent the recurrence, maintenance dose of 0.3-0.4 g/kg/day was continued. Children with complications like fissure were managed appropriately with Sitz bath, local anesthetic jelly, and analgesics. Depending on the age, toilet training was instituted accordingly. Dietary advice was provided for toddlers and bigger children. This essentially included stopping bottle-feeds, and institution of solid foods to the diet. In case of older children, junk food items were discouraged and healthy food options were provided.

Parents were educated about weaning and use of home-based diet, rather than going for marketed weaning products. Other nutritional supplementations were added as and when required. Parents were counseled regarding the necessity for long-term therapy and not to expect any overnight results.

Results

A total of 861 patients were enrolled in the study over a period of three months starting April 2017. ROME III criteria were used for the diagnosis of constipation. 51 male children and 23 female (total 74) were found to fulfil the criteria for constipation. Sex- and age-wise distribution is shown in table-1.

Table-1

Age (in years) → Gender ↓	< 1	1-5	5-10	>10	Total
Male	5	28	14	4	51
Female	3	11	6	3	23
Grand total	8	39	20	7	74

Maximum children (> 79%) belonged to the age groups 1-5 and 5-10 years, 52% and 27% respectively. Males were affected more than female children. 31 children (41% of all) in 1-5 years age group were on bottle feeds which almost always comprised of diluted cow's milk. They were consuming anywhere between 500 ml to more than a liter daily. They were not started on solid foods. None of these children were toilet trained.

At 3-months follow-up, out of 74 patients, 63 patients were attending the OPD regularly, and were showing consistent improvement. This included regular and almost daily passage of formed stools, and increased appetite. Bottle-fed children showed satisfactory weight gain as well. Dose of stool softeners was titrated appropriately to avoid diarrhea-like situation.

At 6-month follow-up, 59 patients were on roll. Out of these, 48 patients were following the treatment properly and showed good response. They were on maintenance doses of stool softeners. Remaining 11 patients had stopped the treatment on their own and had to be restarted all over again after extensive counseling of parents.

Discussion

Constipation is a fairly common childhood condition accounting for almost one-fourth of all pediatric gastroenterology referrals worldwide (4).

ROME III criteria (5-7) are the most widely used benchmark for

constipation: A diagnosis of chronic childhood constipation is established when 2 or more of these are present for at least one month for infants and children up to 4 years. For children more than 4 yrs, symptoms should last for at least two months.

- Two or less bowel movements per week.
- At least one episode of fecal incontinence per week after child has acquired complete bowel control
- History of extensive fecal retention or withholding behaviour by the child
- Having hard and painful stools
- Large fecal mass on digital rectal examination
- Large in diameter stools that cause rectal outlet obstruction

Highest incidence of constipation is observed in toddlers and early childhood (2-4 years) (8). This is also the time for toilet training. The commonest cause for FC has been found to be dietary and lack of toilet training. Most children are continued on milk and milk-based diet. There are many studies demonstrating lower than recommended fiber intake in children with constipation (9-12). In some cases, especially in bigger children, there can be psychological factors too playing a role in the genesis of FC (13). These can be family discord, bullying by classmates, or other stressful conditions. Sometimes the school-going children avoid going to toilet because latter is not clean. This can be a starting point in the development of constipation.

In the pathophysiology of constipation, gradually the stools become hard due to water absorption. Passage of these hard stools becomes painful, sometimes leading to anal fissure and bleeding. Child tries to hold the next urge to avoid pain and there sets in a vicious cycle. Later, there develops rectal dilatation due to accumulation of large fecal masses. Megarectum is not uncommon in chronically constipated children. This further leads to delayed and incomplete evacuation due to low pressures generated by this massively dilated rectum.

Presentation varies depending on the age, severity of the constipation and presence of any of its complications. Thus, while an infant may just cry, toddlers strain at defecation and the process may be painful leading to the development of fissure and bleeding. In later cases, there can be encopresis. In chronic cases, the frequency of defecation becomes still less, and fecalomas may be palpable per abdomen. There may be pain and discomfort. Rarely there can be acute pain and it may at times be really difficult to differentiate from acute abdominal conditions, most commonly acute appendicitis. Occasionally, there are urinary symptoms including UTI and rarely urinary obstruction (1).

A detailed history is crucial for the diagnosis. Physical examination is done mainly to assess the severity (palpable fecalomas, per abdomen or per rectum) or complications and sequelae (anal fissure, anemia). Appropriate investigation(s) may be needed in special cases to rule out certain conditions like hypothyroidism. At this juncture, it is crucial to differentiate slow-transit constipation (STC), which is due to low colonic motility because of altered neurotransmitters in enteric nervous system, from functional fecal retention (FFR). Latter is characterized by hold-up in rectosigmoid with a normal colonic transit (14).

Treatment of FC is usually tri-pronged, aimed at dietary modifications, management of bowel movement and defecation, and toilet training. Dietary modifications vary depending on the age. Thus while infants can be given sorbitol-containing fruit juices, diluted with water, older children are given more fiber-based diets. Low-residue items are to be avoided like finely grinded wheat flour. Increased liquids' intake is encouraged and this can be achieved by using local home-based preparations. In cases of fecal impaction, glycerin suppositories can be given in infants (15), while in older children, manual disimpaction may be needed under mild sedation (16). PEG is very effective and safe (17). This osmotic laxative agent increases the amount of water in the feces thus producing softer stools which can easily be passed. In low doses, PEG can be given as maintenance for long term to prevent reimpaction (18).

Toilet training is an important part of management of constipation, and should be clubbed with other behavioral practices.

Rarely, when correctly instituted medical management does not give desired results, an Antegrade continent enema (ACE) procedure can be surgically created. This helps wash out the entire large bowel and an old child can do it himself as well. (14).

Conclusion

FC in children is a common medical problem. Undiagnosed and untreated, this can lead to a variety of medical and psycho-social problems in children. Most cases can be diagnosed by a careful history and physical examination alone. Secondary causes should be ruled out by proper investigations before labeling FC. Treatment has to be multi-pronged, intensive, and long-term in order to be successful. Dietary modifications, bowel management, and toilet training are successful in the majority. Parental counseling is crucial inasmuch as the treatment is slow and it takes anywhere between six months to a year for the chronically constipated child to resume to normal bowel habits.

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