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Original Research Article

Clinico-etiological spectrum of constipation in children

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ABSTRACT

Background: Childhood constipation is a common problem that has been difficult to define because it may comprise of diverse symptoms, from delay or difficulty in defecation sufficient to cause significant distress, to symptoms of faecal incontinence, displaying of retentive posturing and withholding behaviour to painful defecation and passing of stools so large that they may obstruct the toilet. Knowledge of common etiology of constipation and characteristic presentation may help us in initial management of patient without subjecting them to armour of investigation.
Methods: The prospective interventional analytical study conducted in the Department of Surgery and Department of Pediatrics Pt. J.N.M. Medical College and Dr. B.R.A.M Hospital, Raipur (Chhattisgarh), India. Consecutive 81 children with constipation presenting to OPD of pediatrics and pediatric surgery at Dr B.R.A.M Hospital, Raipur (Chhattisgarh), India between January 2010 to January 2011 were included in the study.
Results: Mean age at presentation was found overall to be 54.49±10.85 months. Presentation of constipation in boys and girls (44% vs 56% in functional and 54% vs 46% in organic). Of the organic causes Hirschsprung's disease was the commonest diagnosis made (63%). Other organic causes were Rectal stenosis with anteriorly placed anal canal (1.2%), rectal prolapsed (1.2%), anal fissure (1.2%) and associated with dysgerminoma in pelvic cavity in one case.
Conclusions: Assessment and management of pediatric constipation poses many challenges for the practitioner including deciphering whether the problem is organic or non-organic in nature.

Keywords: Constipation, Children, Functional, Organic

INTRODUCTION

Constipation in children is a common condition especially in Western World.[1-4] Its incidence is increasing in developing world may be because of westernizing of dietary habits.

Childhood constipation is a common problem that has been difficult to define because it may comprise of diverse symptoms, from delay or difficulty in defecation sufficient to cause significant distress, to symptoms of fecal incontinence, displaying of retentive posturing and withholding behavior to painful defecation and passing of stools so large that they may obstruct the toilet.

In a systemic review in epidemiology of functional constipation the prevalence of childhood constipation in general population varies widely from 0.7 to 29.6%.[4] It accounts for 3% visits to general pediatric clinic and as many as 30% of visits to pediatric gastroenterologists.[5]

Although clinical profile of such children is well documented in West the same is not described from developing countries.[1,3,4,6] Pediatrics and Pediatric Surgeons of this continent believed that the functional constipation is uncommon in developing countries as diet of this world is rich in fibers, hence many cases of constipation are subjected to detailed investigation to rule out Hirschsprung's disease.[5]

Knowledge of common etiology of constipation and characteristic presentation may help us in initial management of patient without subjecting them to armor of investigation.

As there are few published studies on constipation in children from India, author studied clinico-etiological profile in children presenting with constipation.[5]

METHODS

Type of study

This was a prospective interventional analytical study.

Study setting

Deptartment of Surgery and Department of Pediatrics Pt. J.N.M. Medical College and Dr. B.R.A.M Hospital, Raipur.

Inclusion criteria

- All children between two month to fourteen years of age presenting to OPD or admitted to ward in Dept of Pediatrics and Pediatric surgery of Dr. B.R.A.M Hospital, Raipur with constipation as defined by Paris consensus on childhood constipation terminology PACCT (2004) Group as occurrence of two or more of the six criteria in the previous eight weeks: (1) frequency of movement fewer than three a week (2) more than one episode of fecal incontinence a week (3) large stools in the rectum or palpable on abdominal examination (4) passing of stools so large that they may obstruct the toilet(5) retentive posturing and withholding behavior and (6) painful defecation (11) PACCT 2004.
- Patient not undergone surgical intervention outside Dr. B.R.A.M. Hospital, Raipur.
- Patient having no other co-morbid condition which can contribute to mortality.

Exclusion criteria

- Patients which are operated outside Dr. B.R.A.M Hospital, Raipur (Chhattisgarh).
- Not fulfilling the PACCT 2004 definition of constipation.

Consecutive children with constipation presenting to OPD of pediatrics and pediatric surgery at Dr B.R.A.M Hospital, Raipur (Chhattisgarh), India between January 2010 to January 2011 were included in the study. There complete case records were reviewed in detail for an evaluation of their presenting complain, associated symptoms, age at presentation duration of constipation and analysis was done of their full clinical and etiological profile. Digital rectal examination was carried out in all children on their first visit. Secondary or organic causes of constipation were assessed in appropriate clinical setting with appropriate investigation. Patients were considered to having functional or idiopathic constipation if there is no objective evidence of a pathologic condition. Disimpaction of fecal matter is done by one of the following methods:

- Glycerin suppository thrice daily.
- Polyethylene glycol reconstituted solution per oral at the dose of 20 ml/kg/hr or 25 ml/kg/hr (maximum 1000 ml/hr) through Ryles tube till complete disimpaction.[7]
- Proctoclysis enema one to three times.
- Manual removal of fecaloma under general anesthesia.

All the procedures were done as per convenience and affordability of patient.

Then lactulose was started first at 15 ml once in a day (OD) at 4:00 pm. If defecation occurred on three consecutive days, then the dose is reduced to half i.e. 8 ml OD if defecation did not occur for 48hr of first dose then the dose is doubled i.e. 30 ml OD if defecation does not occur then another laxative is added. The dose of lactulose was adjusted to achieve the goal of one to two soft stools per day without any discomfort glycerin suppository is administered at fixed time in the morning as per age or requirement. Diet was modified with respect to intake of fiber (Age+5) gram and fluids calculated according to weight.[8] Parents were explained about constipation, causes and regarding toilet training.[9] They were asked to maintain Toilet Diary. After the child achieved regular bowel habits on a particular dose of laxative, he was maintained on the same dose for next three months and then gradually tapered off. After the initial evaluation patients will be followed up after one month and then after 3 months. On follow up laxative dose was adjusted as per response and rescue disimpaction was done if there was a recurrence of fecal impaction. The clinical outcome was assessed only after three months of laxative, the sample size was calculated using the WHO software for determination of sample size in health studies. A sample size of 50 patient was determined considering that the anticipated success rate with said intervention is less than 95% and it was determined with level of significance 5% with power of 90% to detect a difference of at least 15% from the previous success rate of 95%, keeping in mind a dropout rate of 10% including noncompliance and inadequate follow up (<3 months).[5] Analysis was made comparing proportion by using Chi-square test and Odds ratio and calculation of confidence interval.

RESULTS

In the present study, mean age at presentation was found overall to be 54.49±10.85 months (range 2 months to14 years), 50±11.71 month for functional and 74 months in other causes of organic constipation. In this study, presentation of constipation in boys and girls (44% vs

56% in functional and 54% vs 46% in organic). The causes of pediatric constipation can be divided into two categories: organic and functional (Table 1).

It was found that functional constipation in 86.4% of cases and organic causes to be responsible for 13.6% of cases. Of the organic causes Hirschsprung's disease was the commonest diagnosis made (63%). Other organic causes were Rectal stenosis with anteriorly placed anal canal (1.2%), rectal prolapsed (1.2%), anal fissure (1.2%) and associated with dysgerminoma in pelvic cavity in one case (Table 2).

The most common presentation was decreased in frequency of bowel movement both in functional (64.2±5.73%) as well as organic (63.63±14.50%) cause. Decreased frequency of passing motion (6428±5.73%), fecal impaction (50±5.98%), history of straining (44±5.49 %) at stools associated with hard stools (44±5.49%), and abdominal distension (30±5.48%) were more commonly associated with functional constipation in our study (Table 3).

Table 1: Background characteristics of study subjects in relation to types of constipation.

Background characteristics	Functional	Organic
Categories of constipation (%)	70 (86.4%)	11 (13.6%)
Age		
Mean age (month)	50.7±11.71	74±25.92
Sex (%)		
Male	44	54
Female	56	46

Table 2: Etiology of constipation in the study subjects.

Etiology	N (%)
Functional constipation	70 (86.4)
Organic constipation	11 (13.6)
Hirschsprung's disease	07 (8.0)
Rectal stenosis with anteriorly placed anal canal	01 (1.2)
Anal fissure	01 (1.2)
Rectal prolapsed	01 (1.2)
Dysgerminoma	01 (1.2)

Table 3: Frequency of symptoms in functional and organic constipation.

Symptoms	Functional (Mean±95%CI)	Organic (Mean±95%CI)
Decreased frequency of passing stools	64.29±5.73	63.64±14.50
Delayed passage of meconium	14.29±4.18	63.64±14.50
Straining	44.29±5.94	27.27±13.43
Hard stools	44.29±5.94	27.27±13.43
Painful defecation	22.86±5.02	27.27±13.43
Withholding	08.57±3.35	09.09±08.67
Fecal incontinence	21.43±4.90	09.09±08.67
Fecal soiling	17.14±4.50	18.18±11.63
Rectal bleeding	05.71±2.77	09.09±08.67
Pain in abdomen	12.86±4.00	09.09±08.67
Fecal impaction	50.00±5.98	27.27±13.43
Abdominal distension	30.00±5.48	72.7313.43
Urinary symptom	00.000.0	09.09±08.67

DISCUSSION

In the present study, mean age at presentation was found overall to be 54.49±10.85 months (range 2 months-14 year), 50±11.71 months for functional, 30 months in case of Hirschsprung's disease and 74 months in other causes of organic constipation. Poenaru et al, in their study of functional constipation found average age of presentation to be 5.4±3.8 years, with a range of 4 months to 19 years.8 In a similar study in India the overall mean (SD) age at presentation was 59.2 (42.1) month (range, 8 months to 14 years) and found it to be 60.8 months in case of functional and 50.3 months in case of organic.[5]

Poenaru et al, found similar numbers of boys and girls (51.4% boys), and this ratio was maintained both in the younger and the older children.[8] Khanna et al, found higher percentage of boys in both functional (64%) and organic 70%.[5] In this study results were similar to Poenaru et al, with similar presentation in boys and girls (44% vs 56% in functional and 54% vs 46% in organic).[8]

The causes of pediatric constipation can be divided into two categories as organic and functional, also known as idiopathic. Author in his study found functional constipation in 86.4±8.12% of cases and organic causes to be responsible for 13.6±7.32% of cases. Organic causes Hirschsprung's disease was the commonest diagnosis made (63%). Other organic causes were Rectal stenosis with anteriorly placed anal canal (1.2%), rectal prolapsed (1.2%), anal fissure (1.2%) and associated with dysgerminoma in pelvic cavity in one case, Khanna et al, in their study found 85.4% functional and 14.6% of organic constipation.[5] Studies from the West have shown that only around 5-10% of children with constipation are due to organic causes.[10,11]

Non-organic or functional constipation, which accounts for a majority (95%) of cases of constipation in children, has varied etiology.[12] Khanna et al, in their study on constipation in Indian children found majority (85%) had functional constipation and while the remaining (15%) had an associated organic disorder.[5]

The most common presentation of childhood constipation is infrequence bowel movements. In our study also the most common presentation was decreased in frequency of bowel movement both in functional (64.2±5.73%) as well as organic (63.63±14.50%) cause.

Infants have a mean of 4 stools per day, decreasing to 1 per day by 3 to 4 years of age.[13] By 3 to 4 years of age, more than 95% of children will have between 3 stools per day to 3 times per week.[14] Thus, by this age, constipation is defined as less than 3 bowel movements per week. In our study the mean bowel movement per week was 2.9 per week in functional group and 2.6 per week in organic group Khanna V et al, found mean bowel action/week to be 2.8 in both functional and organic.[5]

Between 68% and 86% of children with constipation experience pain before or during defecation.[3,6] Pain in abdomen was present in 22% of functional and 20% of organic constipation in a study done on Indian children.[5] Same was found to be 12.8±4.00% and 9±8.67% respectively. This low percentage may be due to retrospective nature of the study or hiding of symptoms by the children pain was often associated with significant abdominal distention.

One of the commonly seen clinical characteristic in functional constipation is withholding behavior and is reported in 50-60% cases of functional constipation.[1,4,10,15-20] The problem of stool withholding associated with constipation occurs only in 13% of healthy children.[21] In our study, this feature was present in 8.5±3.35% cases only 27% of patients exhibited this type of retentive posturing in the study done in Indian children by Khanna et al.[5] This low frequency in our study could be due to poor data retrieval or retrospective design or it could be due to misinterpretation of symptoms. As symptoms being noted verbatim, if the parents were not able to differentiate between the concept of retentive posturing and what they perceived as straining (reported in 31% of our cases but not reported by others), it is likely that many cases with withholding maneuvers have been misinterpreted by the parents as attempts at straining for defecation.[10,15]

Decreased frequency of passing motion (6428±5.73%), fecal impaction (50±5.98%), history of straining (44±5.49%) at stools associated with hard stools (44±5.49%), and abdominal distension (30±5.48%) were more commonly associated with functional constipation in authors study.

CONCLUSION

Assessment and management of pediatric constipation poses many challenges for the practitioner including deciphering whether the problem is organic or non-organic in nature; determining appropriate pharmacological, dietary, and behavioral treatment; and educating parents so as to what constitutes and may precipitate constipation.

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