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Clinical Manifestations among Children with Chronic Functional Constipation

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ABSTRACT

BACKGROUND

Constipation is one of the most frequent cause of patient visits to pediatric gastroenterology clinics. Early diagnosis and treatment is important. There are few studies about clinical manifestations of constipation in children. We aimed to find the relative frequency of gastrointestinal manifestations of constipation among constipated children.

METHODS

This cross-sectional study was carried out on children aged < 18 years old with chronic functional constipation referred to Imam Reza Clinic of Shiraz University of Medical Sciences. Children with organic causes of chronic constipation were excluded from study. Rome III criteria were used for defining constipation. The duration of study was 1 year starting from September 2010. Abdominal pain, fecal mass, rectal bleeding, anorexia, fecal soiling, retentive posture, withholding behavior, anal fissure, and peri-anal erythema were recorded for each case based on history and physical examination. Data were analyzed using SPSS software, version 13.0 (Chicago, IL, USA).

RESULTS

Of 222 children with functional constipation, 124(55.9%) were girls and 98 (44.1%) were boys with a mean $\pm$ SD age of 5 ± 3.12 years. The mean $\pm$ SD duration of constipation was 2.2 ± 1.9 years. Large and hard stool was present in 93.7% of the patients. Painful defecation and withholding behavior were seen in 92.3% and 91.9% of the patients, respectively. Fecal impaction was more frequent among boys compared with girls ($p < 0.01$). Fecal soiling was present in 40.8% of the boys and 28.2% of the girls ($p = 0.04$).

CONCLUSION

Large and hard stool, painful defecation and withholding behavior were the most frequent signs or symptoms among children with chronic functional constipation. Fresh rectal bleeding and anal fissure were the least frequent signs and symptoms in this group.

KEYWORDS

Chronic functional constipation, Fissure, Fecal impaction, Fecal soiling

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INTRODUCTION

Constipation is one of the most common causes of patient visits to pediatric clinics. Constipation is defined as a difficulty in defecation and or infrequent bowel movements.¹ Between 3% and 10% of visits to health centers and up to 25% of referrals to pediatric gastroenterologist are related to constipation.^{2,3} Prevalence of constipation is estimated between 1.9-27.2% in the USA.⁴ In children aged <18 years, its prevalence was about 0.7-29.6%. Untreated constipation may cause fecal impaction and fecal soiling⁵ which are seen in about 1-3% of children.⁶ Constipation may cause gastrointestinal problems such as abdominal pain,⁷ anal pruritus, rectal bleeding,⁸ and anorexia or non-gastrointestinal complications such as urinary problems.⁹ However, few studies¹⁰ were done to find the relative frequency of gastrointestinal presentations among children with functional constipation.

Some patients refer to pediatric gastroenterology clinics with complaints other than typical presentations such as Rome III criteria.^{4,11} We aimed to find the relative frequency of clinical manifestations of functional constipation.

MATERIALS AND METHODS

This cross-sectional study was carried out on all children with chronic constipation aged < 18 years who were visited in our pediatric gastroenterology clinic. The duration of study was one year starting from September 2010. The place of study was the Pediatric Gastroenterology Clinic of Shiraz University of Medical Sciences. Children with organic causes of constipation and history of treatment for constipation were excluded from study. Rome III criteria were used for the evaluation of constipation:

Neonates and Toddlers¹¹

At least 2 of the following symptoms must occur for at least 1 month:

- ≤ 2 defecations per week
- ≥ 1 episode per week of incontinence after the acquisition of toileting skills
- History of excessive stool retention

- History of painful or hard bowel movements
- Presence of a large fecal mass in the rectum, and
- History of large-diameter stools that may obstruct the toilet

Children and adolescents⁴

Symptoms must occur at least once per week for at least 2 months and include 2 or more of the following in a child with a developmental age of > 4 years with insufficient criteria of irritable bowel syndrome:

- Two or fewer defecations in the toilet per week
- At least 1 episode of fecal incontinence per week
- History of retentive posturing or excessive volitional stool retention
- History of painful or hard bowel movements
- Presence of a large fecal mass in the rectum
- History of large diameter stools that may obstruct the toilet

All the children were inspected regarding large feces, painful defecation, withholding behavior, fecal impaction, abdominal pain, anorexia, clot in the feces, perianal erythema, fresh rectal bleeding, and anal fissures. All findings and patients' information were recorded in patient record forms. This study was approved by the Ethics Committee of Shiraz University of Medical Sciences. SPSS software, version 13.0 (Chicago, IL, USA) and Epi info (CDC, WHO) version 6.0 were used for data analysis.

RESULTS

In this study 222 children with constipation were included with a mean $\pm$ SD age of 5 ± 3.12 years (range: 1-18 years) consisting of 124 (55.9%) girls and 98 (44.1%) boys ($p=0.01$). The mean duration of constipation was 2.2 ± 1.9 years (range: 3 months to 10 years).

Of all patients, 12 (5.4%) had at least 3 signs and 4 (1.8%) had 11 signs of constipation. 156 (70.3%) of the patients used polyethylene glycol (PEG), 1 (0.5%) patient used Senna and 1 (0.5%) patient used milk of magnesia (MOM). Of all the patients,

Table 1: Duration of constipation in children with chronic functional constipation

Duration	Frequency (%)
<6 months	15 (6.8)
6 months-2 years	124 (55.9)
>2 years	83 (37.4)

59 (26.6%) used more than one drug and f (2.3%) patients did not use any drugs.

Anorexia was present in 85 (38.3%) children. Of these cases, 51 (41.1%) were girls and 34 (34.7%) were boys. Perianal erythema was found in 29 (11.2%) of the patients consisting of 11 boys and 18 girls. Fresh rectal bleeding was seen 18 patients including 5 boys and 13 girls. Sixteen patients had anal fissure and most of them were girls (n=12). Fecal impaction and fecal soiling was more frequent among boys compared with girls ($p<0.05$).

Fresh rectal bleeding was found in 18 (8.1%) of patients including 5 boys and 13 girls ($p=0.14$). Perianal erythema was noted in 29 (13.1%) children consisting of 11 boys and 18 girls ($p=0.46$).

The most frequent signs were large and hard stool (93.7%), painful defecation (92.3%), and withholding behavior (91.9%), followed by fecal impaction (59.9%). In general ROME III symptoms were more frequent than non-Rome III symptoms, except for pellet like stool (58.1%), abdominal pain (41.4%), and anorexia (38.3%) which were more frequent than ROME III symptoms such as fecal soiling (33.8%) and fecal mass (9.5%) (table 2).

DISCUSSION

In the current study, number of girls was significantly higher than boys. In the study by Medeiros and co-workers, there was no statistical gender difference.¹⁰ In the systematic review by van der Berg and colleagues, there was no significant difference between males and females.¹²

Hard stool consistency was found in about 93.7% of cases. Chang et al.¹³ reported that 60% of their cases had hard stool consistency which was lower than our study. Fecal impaction was more frequent among boys than girls.

Painful defecation was noted among 92.3% of all

the children. In a study from Spain, painful defecation was found in 60% of cases.¹⁴ Abdominal pain was present in 92 (41.4%) of our patients. Aydogu et al. reported that 29.6% of children had abdominal pain.⁷ Recurrent abdominal pain was seen in 61.1% of children in Maffei et al.'s study.¹⁵ In the study by Gijsbers et al. on 200 children with recurrent abdominal pain, 92 cases had occult constipation.¹⁶ Painful defecation was present in 69% of cases in Boccia et al.'s study.¹⁷ Painful defecation was more frequent in our study than other reports.

Fecal soiling was found in 33.8% of our participants. Martinez-Costa et al. reported 31% of fecal soiling in their study which was similar to our study.¹⁴ The rate of fecal soiling was lower in our study compared with Loening-Baucke which was about 90%.¹⁸ In a large cohort of 418 children with constipation, about 90% of children had fecal soiling.¹⁹ In another study from Switzerland²⁰, of 270 children with constipation, 117 had fecal soiling which was slightly higher than our study. In other studies,^{10,20} fecal soiling was more frequent among boys than girls and was similar to our study. Rectal bleeding was reported in 8.1% of our cases which was lower than 42% in another report.¹⁴ Rectal bleeding was reported to be 4% in a study done in Turkey.⁸ Rectal bleeding was reported in 7% of children by Boccia et al.¹⁷ The frequency of rectal bleeding in our study was similar to Boccia et al.'s study¹⁷ and lower than Martinez-costa et al.'s study.¹⁴

Anorexia was noted in about 38% of cases in our study which was slightly higher than Benninga et al.'s study who reported anorexia in 10-25% of cases.²¹

Anal fissure was found in 16 (7.2%) of case in our study. In Aydogu et al. study, 26.9% of cases had anal fissure that was higher than our study.⁷ Benninga et al. reported fissures or hemorrhoids in 5-25% of cases.²¹

Withholding behavior was noted in 92.3% of our patients. Retentive posturing was reported among 37 of children in South Korea.¹³ In the study by Loening-Baucke et al., 79% of the children with functional constipation and fecal incontinence had a history of retentive posturing which was lower

Table 2: Clinical manifestations among children with chronic functional constipation

Sign	N	Male(%)	Female(%)	p-value	Duration of constipation		
					<6mo	6mo-2yr	>2yr
Large and hard stool	208(93.7%)	91(92.9%)	117(94.4%)	0.64	15(100%)	116(93.5%)	77(92.8%)
Painful defecation	205(92.3%)	92(93.9%)	113(91.1%)	0.44	12(80%)	117(94.4%)	76(91.6%)
Withholding behavior	204(91.9%)	87(88.8%)	117(94.4%)	0.13	12(80%)	117(94.4%)	76(91.6%)
Fecal impaction	133(59.9%)	68(69.4%)	65(52.4%)	0.01	7(46.7%)	73(58.9%)	53(63.9%)
Fecal soiling	75(33.8%)	40(40.8%)	35(28.2%)	0.04	2(13.3%)	28(22.6%)	45(54.2%)
Fecal mass	21(9.5%)	13(13.3%)	8(6.5%)	0.08	2(13.3%)	6(4.8%)	13(15.7%)
*Pellet-Like Stool	129(58.1%)	52(53.1%)	77(62.1%)	0.17	8(53.3%)	79(63.7%)	42(50.6%)
*Abdominal pain	92(41.4%)	39(39.8%)	53(42.7%)	0.65	5(33.3%)	49(39.5%)	38(45.8%)
*Anorexia	85(38.3%)	34(34.7%)	51(41.1%)	0.32	6(40%)	44(35.5%)	35(42.2%)
*Bloody clot in feces	72(32.4%)	32(32.7%)	40(32.3%)	0.95	3(20%)	39(31.5%)	30(36.1%)
*Anal pruritus	55(24.8%)	29(29.6%)	26(21%)	0.13	3(20%)	34(27.4%)	18(21.7%)
*Perianal erythema	29(13.1%)	11(11.2%)	18(14.5%)	0.46	3(20%)	15(12.1%)	11(13.3%)
*Fresh rectal bleeding	18(8.1%)	5(5.1%)	13(10.5%)	0.14	1(6.7%)	6(4.8%)	11(13.3%)
*Anal fissure	16(7.2%)	4(4.1%)	12(9.7%)	0.10	3(20%)	8(6.5%)	5(6%)

* This manifestation is different from ROME III criteria.

than our study.²² Withholding behavior was reported in 32.3% children with functional constipation in Sudan.²³ Retentive behavior was reported among 35-45% of children with constipation by Benninga et al.²¹

In our study, PEG was the most frequently used prescription for the treatment of constipation. PEG is now considered as a first line and safe treatment for constipation.²⁴ In the study from South Korea, lactulose was the most frequent drug used for treatment of constipation.¹³ Candy et al, found that PEG had less adverse effects than lactulose.²⁵ Some studies showed inferiority of lactulose compared to PEG²¹ or lack of benefit.²⁶ There were weak evidence which supporting Senna prescription.^{27,28}

As mentioned above, clinical manifestation of chronic functional constipation varies among different studies. This difference may be due to difference in diet, weather,²⁹ and life style. Low fiber diet was considered as a risk factor for constipation. Severity of constipation or fecal impaction was not discussed in above mentioned studies. There was no classification regarding consistency of fecal impaction.³⁰ So, some difference in the results may be due to lack of standard classification for consistency of fecal material or impaction that causes some clinical manifestation of chronic fecal impaction.

Large and hard stool, painful defecation and withholding behavior were the most frequent sign or symptoms among children with chronic functional constipation. Fresh rectal bleeding and anal fissure were the least frequent sign and symptom among children with chronic functional constipation. Multicenter studies are recommended for better evaluation of the children with different presentations of chronic functional constipation.

Limitation: Single center study

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CONFLICT OF INTEREST

The authors declare no conflict of interest related to this work.

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