Clinical Manifestations among Children with Chronic Functional Constipation

Seyed Mohsen Dehghani¹, Niloofar Kulouee², Naser Honar³, Mohammad-Hadi Imanieh¹, Mahmood Haghighat¹, Hazhir Javaherizadeh⁴

ABSTRACT

BACKGROUND

Constipation is one of the most frequent causes 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 the study. Rome III criteria were used for defining constipation. The duration of the 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 ± SD age of 5±3.12 years. The mean ± 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

Please cite this paper as: Dehghani SM, Kulouee N, Honar N, Imanieh MH, Haghighat M, Javaherizadeh H. Clinical manifestations among Children with Chronic Functional Constipation. Middle East J Dig Dis 2015;7:31-5.
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. Between 3% and 10% of visits to health centers and up to 25% of referrals to pediatric gastroenterologist are related to constipation. Prevalence of constipation is estimated between 1.9-27.2% in the USA. In children aged <18 years, its prevalence was about 0.7-29.6%. Untreated constipation may cause fecal impaction and fecal soiling which are seen in about 1-3% of children. Constipation may cause gastrointestinal problems such as abdominal pain, anal pruritus, rectal bleeding, and anorexia or non-gastrointestinal complications such as urinary problems. However, few studies 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. 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 Toddlers

At least 2 of the following symptoms must occur for at least 1 month:
- \( \geq 2 \) defecations per week
- \( \geq 1 \) 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 adolescents

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 ± 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)(table 1).

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,
59 (26.6%) used more than one drug and 5 (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).

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 or 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 Switzerland,\[^{20}\] 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 study\[^{17}\] 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 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)     |
Withholding behavior was reported in 32.3% children with functional constipation in Sudan. Retentive behavior was reported among 35-45% of children with constipation by Benninga et al. 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. In the study from South Korea, lactulose was the most frequent drug used for treatment of constipation. Candy et al, found that PEG had less adverse effects than lactulose. Some studies showed inferiority of lactulose compared to PEG or lack of benefit. There were weak evidence which supporting Senna prescription.

As mentioned above, clinical manifestation of chronic functional constipation varies among different studies. This difference may be due to difference in diet, weather, 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. 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

**ACKNOWLEDGEMENT**

The source of data used in this paper was from general physician thesis of Niloofar Kulouee (No: 89-01-01-2142) and this study was supported by research affairs of Shiraz University of Medical Sciences.

**CONFLICT OF INTEREST**

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

**REFERENCES**

1. Talley NJ, Jones M, Nuyts G, Dubois D. Risk factors for chronic constipation based on a general practice sample.
functional chronic constipation and its possible complica-
tions'. J Pediatr(Rio J) 1994;70:280-6.
16. Gijsbers CM, Kneepkens CMF, Vergouwe Y, Büller H. Oc-
cult constipation: faecal retention as a cause of recurrent
abdominal pain in children. Eur J Pediatr 2014;473:784-5
17. Boccia G, Manguso F, Coccorullo P, Masi P, Pensabene
L, Staiano A. Functional defecation disorders in chil-
dren: PACCT criteria versus Rome II criteria. J Pediatr
2007;151:394-8.
18. Loening-Bauke V. Prevalence rates for constipation and
faecal and urinary incontinence. Arch Dis Child
2007;92:486-9.
19. van Ginkel R, Reitsma JB, Buller HA, van Wijk MP, Tam-
miau JA, Benninja MA. Childhood constipation: lon-
gitudinal follow-up beyond puberty. Gastroenterology
2003;125:357-63.
20. Guerreiro MK, Bettinville A, Herzog D. Fecal Overflow
Often Affects Children With Chronic Constipation That
Appears After the Age of 2 Years. Clin Pediatr (Phila)
2014;53:885-9.
21. Voskuil J, de Lorijn F, Verwijs W, Hogeman P, Heijmans
J, Makel W, et al. PEG 3350 (Transipeg) versus lactulose
in the treatment of childhood functional constipation: a
double blind, randomised, controlled, multicentre trial. Gut
2004;53:1590-4.
22. Loening-Bauke V, Pashankar DS. A randomized, prospec-
tive, comparison study of polyethylene glycol 3350 without
electrolytes and milk of magnesia for children with consti-
patie and fecal incontinence. Pediatrics 2006;118:528-35.
23. Ali MW, Sabir OM, ElHassanGadour MO. Pattern and
clinical presentation of constipation in children in Sudan.
Sudan J Med Sci 2013;7:229-31.
24. Afzal NA, Tighe MP, Thomson MA. Constipation in chil-
dren. Ital J Pediatr 2011;37:28.
25. Candy DC, Edwards D, Geraint M. Treatment of faecal im-
pact with polyethylene glycol plus electrolytes (PGE+)
followed by a double-blind comparison of PGE+ versus
lactulose as maintenance therapy. J Pediatr Gastroenter-
ology Nutr 2006;43:65-70.
26. Gremse DA, Hixon J, Crutchfield A. Comparison of poly-
ethylene glycol 3350 and lactulose for treatment of chronic
constipation in children. Clin Pediatr 2002;41:225-9.
27. Perkin JM. Constipation in childhood: a controlled com-
parison between lactulose and standardized senna. Curr
Med Res Opin 1977;4:540-3.
28. Sondheimer JM, Gervaise EP. Lubricant versus laxative
in the treatment of chronic functional constipation of chil-
dren: a comparative study. J Pediatr Gastroenterol Nutr
1982;1:223-6.
29. Maughan RJ. Hydration, morbidity, and mortality in vul-
nerable populations. Nutr Rev 2012;70 Suppl 2:S152-5.
30. Auth MK, Vora R, Farrelly P, Baillie C. Childhood consti-
pation. BMJ 2012;345:e7309.