

Original Article

Clinical Profile of Constipation in Children Under 5 Years of Age in Dr. Soetomo General Academic Hospital, Indonesia

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Abstract:

Background: Childhood constipation is still common among children under 5 years of age. This study was conducted to determine the clinical profile of childhood constipation under 5 years of age at dr. Soetomo General Hospital, Indonesia.

Methods: This retrospective cross-sectional study was performed by reviewing medical record of constipated children under 5 years of age at dr. Soetomo General Hospital Surabaya from January to December 2021. Data regarding age, gender, living place, body anthropometric (weight, height and nutritional status), sign and symptoms, and physical examination were collected for each patient. Nutritional status was determined by using WHO 2006 growth chart. We also assessed the presence of concomitant disease among those children and presented the data on the table.

Results: A total of 35 subjects with constipation were included in this study. Mean (\pm SD) for age, body weight, length/height of these subjects were 27.09 \pm 17.71 months, 10.93 \pm 6.11 kg, 82.34 \pm 18.52 cm, respectively, with the male and female ratio of 1,67: 1. Around 18.2% of subjects presented with wasted, 18.2% with severely wasted, and 18.2% with severely stunted. Hardened stool (80%) was the most prevalent symptom, followed by straining (37.1%) and fecal impaction (22.9%). The most common concomitant diseases of childhood constipation were Hirschsprung's disease (17.1%), congenital heart disease (11.4%), and hypothyroidism (11.4%).

Conclusion: The results of this study showed that boys had a higher prevalence of constipation in children under 5 years of age, with the most prevalent clinical features being hardened stool, straining, and fecal impaction. Meanwhile, Hirschsprung's disease, hypothyroidism, and congenital heart disease were the most concomitant disease.

Keywords: child health, children under five, constipation, clinical profile

Introduction

Childhood constipation is still the main reason for parents to bring their children to seek for medical advices. Functional constipation in children has a negative impact, both for the child physically and psychologically, as well as for the family.¹⁻³ The prevalence of this disease varies in different countries, which is around 0.7% to 29.6%.⁴⁻⁶ The prevalence of constipation in Indonesia is 18.3%, slightly higher than the US (12.9%), Greece (13.9%), and much higher than China (3.1 to 12.2%).^{7,8,9-11}

North American Society for Pediatric Gastroenterology, Hepatology and Nutrition defined constipation as a delay or difficulty in defecation, which persists for 2 or more weeks and sufficient enough to cause significant distress to the patient.¹² Constipation significantly affects children behaviour, from withholding behaviour, stiffening body, to hiding in a corner or fidgeting with the urge to defecate.¹³ Childhood constipation has great impact on children's nutritional status or growth status, quality of life, and may lead to various complication if left with inadequate treatment.^{14,15} However, clinical profile of childhood constipation in developing countries, particularly Indonesia, has not been recorded completely. Hence, this study was conducted to determine the clinical profile of childhood constipation in children under 5 years old in dr. Soteomo General Hospital Surabaya, Indonesia.

Methods

This was a cross-sectional study by retrospectively reviewing medical records of children under 5 years old with constipation who visited the outpatient gastroenterology clinic of dr. Soetomo General Academic Hospital, Surabaya between January to December 2021. The study was approved by the dr. Soetomo General Hospital Health Research Ethical Committee with Ref No. 0776/LOE/301.4.2/I/2022. Data of the patients were documented during the first visit in the clinic by interviewing the parent or caregiver thoroughly. Constipation was diagnosed if there were less than three bowel movements per week which persisted for 2 or more weeks and caused significant distress to the patient.¹⁶ Exclusion criteria were patients with incomplete data and constipation that occur for less than 2 weeks. The complete data were obtained from medical records which included age, sex, living place, comorbidities and body anthropometric (height, weight, nutritional status). We also collected data regarding the patient's clinical symptoms and signs such as hardened stool, straining, abdominal pain, occult blood in stool, fecal incontinence, fecal impaction, flatulence and vomiting. The nutritional status was categorized based on WHO 2006 growth chart for weight for length/height. Severely wasted was defined when z-score under -3SD, wasted if z-score between -2 to -3 SD, normal if z-score between -2 to +2 SD, overweight if z-score between +2 to +3 SD and obese if z-score above +3SD. For this study, wasted and severely wasted were defined as malnutrition.

Severely stunted was defined as height/length for age z-score under -3SD, stunted if z-score between -2 to -3SD, and normal if z-score above -2SD based on WHO growth chart for length/height for age.¹⁷

Fecal incontinence was defined as the presence of involuntary bowel movements. Occult blood in the stool was indicated by blood on tissue paper or hands after cleaning. Data from physical examination were also obtained such as vital sign, general clinical evaluation (history and physical examination) for all patients which was performed by pediatric gastroenterologist.

The presence of concomitant disease along with constipation was also recorded, which included Hirschsprung's disease, neurologic disorder, congenital heart disease, hypothyroidism, and others. The data was analyzed using SPSS version 20.0 for windows and described in mean with standard deviation.

Results

Of the 124 pediatric patients under the age of 5 years at the gastroenterology outpatient clinic dr. Soetomo General Academic Hospital Surabaya, 35 children were diagnosed with constipation and included in this study. The mean age, body weight, length/height of these subjects were 27.09 ± 17.71 months, 10.93 ± 6.11 kg, 82.34 ± 18.52 cm, respectively, with a male and female ratio of 1.67:1. Hardened stool was the most common symptom, followed by straining and fecal impaction (**Table 1**). The most prevalent concomitant diseases were Hirschsprung's disease (17.1%), congenital heart disease (11.4%) and congenital hypothyroidism (11.4%) (**Table 2**).

Table 1. Baseline characteristics of the subjects

Characteristics	Total (n=35)
Age (month)	27.09 ± 17.71
Anthropometric status*	
- Weight (kg) (mean\pmSD)	10.93 ± 6.11
- Length/ Height (cm) (mean\pmSD)	82.34 ± 18.52
- Nutritional status, n (%)	
Obese	1 (4.5)
Overweight	1 (4.5)
Wasted	4 (18.2)
Severely Wasted	4 (18.2)
Normal Nutrition	12 (54.6)
- Stunted	
Stunted	1 (4.5)
Severely stunted	4 (18.2)
Normal	17 (77.3)

Gender	
Male: Female	1.67:1
Living place	
Surabaya	20 (57.1%)
Clinical features of Constipated Children	
- Hardened stool	28 (80%)
- Straining	13 (37.1%)
- Fecal impaction	8 (22.9%)
- Abdominal pain	7 (20%)
- Occult blood in stool	6 (17.1%)
- Urinary complaint	6 (17.1%)
- Bloating	4 (11.4%)
- Fecal incontinence	1 (2.9%)

*missing anthropometric data for 13 subjects.

Table 2. Concomitant disease of constipated children

Concomitant disease	Number (n=35)
Hirschsprung's disease	6 (17.1%)
Congenital heart disease	4 (11.4%)
- Patent ductus arteriosus	2 (5.7%)
- Arterial septal defect	1 (2.9%)
- Ventricular septal defect	1 (2.9%)
Hypothyroidism	4 (11.4%)
Atresia Ani	2 (5.7%)
Hypospadias	2 (5.7%)
Hydronephrosis	2 (5.7%)
Spina bifida	1 (2.9%)
Down syndrome	1 (2.9%)
Cerebral palsy	1 (2.9%)

Discussion

This study described the clinical profile of childhood constipation in children under 5 years old. We observed a higher prevalence of constipation in boys compared to girls. Previous studies using different age subjects showed varying results. However, some studies reported that there was no difference between boys and girls in term of the prevalence of constipation.¹⁸⁻²⁰ In contrast to studies from other Asian subcontinent, which reported that obesity and stunting were strongly associated with childhood constipation, our study did not observe such occurrence. However, it was important to be noted that our study was conducted in tertiary hospital which had more complex diseases and may interfere with the result of our study.^{21,22}

Hardened stool was the most common clinical features of constipated children under 5 years old, followed by straining and fecal impaction. Similar to study conducted by Altamimi et al., which stated that the most prevalent symptoms were reduced stool frequency and hardened stool in 92.9% of total constipated children, followed by occult blood in stool 37.2%, abdominal pain 16.3%, urinary complaints 2.3% and no complaints of fecal incontinence.²³ Abdominal pain was reported only in 20% children in our study and may be underreported due to the fact that parents or caregiver often difficult to distinguish between complaints of abdominal pain and the interpretation of child's reaction towards abdominal upset.²⁴ The rectum was associated with the bladder in which both organs share similar innervation. Urinary symptoms, particularly lower urinary tract symptoms may arise from the pressure of the stool mass towards the bladder in addition to spasm of the pelvic floor muscle.²⁵

Occult blood in the stool has always been a red flag sign of an organic cause of constipation in children, such as Hirschsprung's disease or allergy.²⁶ Another study by Khanna et al., reported that straining (35%) and fecal impaction (69%) were more commonly presented in functional constipation compared to organic constipation. This finding was consistent with our study in which showed higher frequency of straining.²⁷ Straining often occurs in children under 1 year of age and characterized by reddened face, which often misinterpreted by parents or caregiver with withholding behaviours. Meanwhile, fecal impaction is defined as a large hard stool in the abdomen or rectum due to chronic constipation and becomes the mandatory target of constipation therapy to achieve the decompaction of hard stools and restore regular bowel habits.²⁰

Several concomitant diseases were observed in constipated patients with the most being Hirschsprung's disease, hypothyroidism, and congenital heart disease (ventricular septal defect and patent ductus arteriosus). Hirschsprung's disease is a colonic motility disorder, resulting from segmental colonic aganglionosis. This disease is the major cause of defecation problems among infants during the first few weeks of life.²⁸ In this study, constipation was reported to be more common in children with congenital heart disease and congenital hypothyroidism. One of the most common feature of congenital hypothyroidism is constipation, which may be explained by reduction of gut motility and altered anorectal function.²⁹ Similar study by Hasserijs et al. also stated that constipation was more frequently reported in children with congenital heart disease compared to those without congenital heart disease in patients with Hirschsprung's disease.³⁰

Conclusion

Our study on constipation in children under five years of age in dr. Soetomo General Academic Hospital Surabaya showed that boys have a higher prevalence than girls and the most clinical features were hardened stools, straining, fecal impaction, occult blood in the stool, and urinary complaint. Meanwhile, the most common concomitant diseases were Hirschsprung's disease, congenital hypothyroidism, and congenital heart disease. This study provides new insights into clinical symptoms of constipation in children. However, further research is needed to investigate the outcome of the treatment and changes in the features.

Conflict of Interest

None declared.

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