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The frequency of constipation and it's causes in Iranian children

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Abstract

Background: Childhood constipation is a common problem, accounting for 3% of visits to pediatric clinics and up to 25% of visits to pediatric gastroenterologists. However, little is known about the prevalence of childhood constipation in developing countries and the frequency of its causes. We proposed to determine the frequency and causes of constipation in children presented to a gastroenterology clinic of a teaching pediatric hospital located in Tehran, Iran.

Methods: All five hundred and fifty six children referred to a pediatric gastroenterology clinic were evaluated for gastrointestinal problems including difficulties in defecation. After the detection of constipated children, a questionnare was completed including baseline characteristics, physical examination, paraclinic laboratory data and determination of the cause of constipation (organic or non-organic).

Results: Out of all 556 children, constipation was diagnosed in 87 individuals (15.64%). Among children with constipation, 53% were girls and 47% were boys and only in 13% organ problems was the main cause. Urinary incontinence and encopresis were detected in 16.2% and 27% of constipated children, respectively. The prevalence of urinary tract infection in children with constipation was significantly higher in girls than boys ($P<0.05$).

Conclusion: The results of our study show that the prevalence of constipation among Iranian children is high enough to emphasize it's importance

Keywords: constipation, children, eiology

Introduction

Constipation, a delay or difficulty in defecation, for two or more weeks, can causes significant distress to the patient [1]. It presents a management problem for general practitioners, and parental concern is often high. This condition is responsible for an estimated 3 to 5 percent of physician visits by children [2]. Constipation accounts for about 25% of a paediatric gastroenterologist's work and is one of the 10 most common problems seen by general paediatricians [3]. Up to one third of children ages six to 12 years report constipation during any given year [4]. Peak incidence occurs at the time of toilet training, between the ages of 2 and 4 years [5]. Encopresis is reported by 35 percent of girls and 55 percent of boys who have constipation [6]. In toddlers (18 months to 3 years), the dis-

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tribution of constipation and soiling is equal in boys and girls. However, by school age (five years), encopresis is three times more common in boys than in girls. At the age of 10 years, approximately 1.6 percent of children still have some encopresis [7].

In more than 90% of the children with constipation and encopresis, no organic or anatomical cause can be found and, therefore, these patients are considered as having a functional defecation disorder. These patients have been later classified by the Paediatric Rome Criteria as having functional constipation, functional fecal retention, or functional nonretentive fecal soiling [8]. Furthermore, it was recommend to include encopresis and rectal digital examination and exclude arbitrary age limits and retentive behavior in the revision of the Rome criteria [9]. The key features of pediatric constipation are a defecation frequency fewer than 3 times per week in combination with the involuntary loss of stool in the underwear [2]. Other important clinical parameters are stool consistency, large-caliber stools, pain at defecation, and abdominal discomfort [10].

On the other hand, in children it is well known that encopresis sometimes leads to social withdrawal, low self-esteem, and even depression [11]. Longer duration of symptoms before diagnosis has been associated with poorer long-term outcome [5]. Therefore, it is of great importance to detect constipation and it's complications in children as soon as possible.

Despite the possible contribution of diet and psychosocial factors in the epidemiology of constipation little is known about the prevalence of childhood constipation in developing countries and the frequency of its causes and data on the prevalence of constipation among children in Iran is limited. Our aim was to determine the frequency of constipation and it's associated causes in children reffered to a pediatric gastroenterology clinic in Iran.

Methods

Patients

This retrospective cross-sectional study was conducted at a pediatric gastroenterology clinic of Ali-Asghar University Hospital in Tehran, Iran during 2003-2004.

All five hundred and fifty six children with the complaints of gastrointestinal symptoms were evaluated by the investigator for gastrointestinal problems including difficulties in defecation because of underlying constipation. Patients who had disease states that placed limitations on the act of defecation such as hypotonia, cerebral palsy, and sever mental retardation were excluded from the study. The results of these evaluations were found from the medical records of the patients.

Nevertheless, this study was approved by the Institutional Human Research Review Committee and all the Helsinki declaration eriteria were considered.

All patients were evaluated by the investigator. Histories were obtained and a complete physical examination was performed including an anal and rectal examination in the left lateral position.

Definitions

Children were considered to be constipated when they had either <3 bowel movements per week or painful bowel movements, or a rectal impaction, or an abdominal faecal mass on physical examination, or all four.

Stool withholding was thought to be present if the child exhibited a certain behaviour at the time of defecation, often termed 'the duty dance'. Infants tended to extend the body and contract the anal and gluteal muscles.

Also fecal incontinence, also known as encopresis or soiling, refers to the repetitive, voluntary or involuntary, passage of stool in inappropriate places by children 4 years of age and older, at which time a child may be reasonably expected to have completed toilet training and to

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Fig. 1. Prevalence of different causes of constipation in children

exercise bowel control. Additionally, urinary incontinence was defined as uncontrolled urination at least two times a week lasting for at least three months or urination in the way that decreased quality of personal and social life in a child after the age of 5 years old. Urinary tract infection was also diagnosed on basis of clinical symptoms and positive urine culture.

After the detection of children with constipation, a questionnare was completed including baseline and demographic characteristics, physical examination, paraclinic laboratory data and determination of the cause of constipation (organic or non-organic).

Statistical Analysis

The data was analyzed using SPSS v.11 software for windows. In descriptive analysis the parameters such as frequency, mean and standard deviation (SD) were reported. The analytical procedures were performed using statistical tests. To test the differences between parametric and non-parametric variable means in two groups of study, Independent T-test and Mann-Whitney U-test were used, respectively. Chi2 and Fisher's exact statistical test were also used to compare the distribution of qualitative variables in different groups of study.

A 5 percent probability of a type I error (two-tailed), and a power of 80 percent were considered in the analysis. All reported p-values with two-tailed and a p-value of <0.05 were considered significant.

Results

All children who referred to this pediatric gastroenterology clinic were evaluated. all 556 children, aged between 36 days to 15 years, constipation was diagnosed in 87 individuals (15.64%).

Among children with constipation, 46 (53%) were girls and 41 (47%) were boys. Regarding the possible causes of constipation, only in 11 (13%) children organic problems was the main cause including: anatomical anomalies and disorders of bowel in 8 (6 cases of anal stenosis, 1 case of displaced anus and 1 case of acquired colon stenosis following infantile necrotizing entrocolitis), neural defect including Hirschsprung's disease in 3, spinal anomalies including myelomeningocele in one and systemic diseases including hypothyroidism in one child (Fig. 1).

Among patients with constipation, encopresis was presented in 23 (27%) patients which accounts for 4.8% of all referred children. Out of these children with encopresis, 10 (44.4%) were girl and 13 (55.6%) were boy. The results of Chi2 test showed that this difference is not statistically significant ($P>0.05$).

Of 37 children with constipation and the age of more than 5 years old, urinary incontinence

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was detected in 6 patients (16.2%). Of these children with urinary incontinence, 5 were girls and one was boy. However, the results of Fisher's exact test showed that this difference is not statistically significant (P>0.05).

Among children with constipation, urinary tract infection was seen in 15 patients confirmed with positive urine cultures. Out of these 15 children with both constipation and urinary tract infection, 13 (87%) were girls while only 2 (13%) were boys. The results of Fisher's exact test showed that the prevalence of urinary tract infection in children with constipation is significantly higher in girls than boys (P<0.05). Moreover, the coexistence of encopresis and urinary tract infection was observed in 6 patients and the coexistence of urinary incontinence and urinary tract infection was seen in 4 constipated children.

Nevertheless, anal fissure was presented in 9 constipated children with non-organic etiology (10.34%).

Disscusion

The prevalence of constipated children was estimated as high as 15 percent among children referred to a pediatric gastroenterology clinic in our study. As shown, this prevalence was approximately similar among girls and boys (53% vs. 47%) and in most cases functional disorders and non-organic etiology were detected as possible causes of constipation.

Estimates of the true prevalence of constipation vary between 1 and 30 percent, even when uniform criteria are used [12].

A systematic review by van den Berg et al [12] shows that the prevalence of constipation defined as defecation frequency of <3/wk varied from 0.7% to 29.6% (median 10.4; inter quartile range 1.3-21.3). Identified studies originated from North America (N = 4), South America (N = 2), Europe (N = 9), the Middle-East (N = 1), and Asia (N = 2). There is no consistent effect of gender on the prevalence of childhood constipation. Variance of gender specific prevalence was reported in seven studies and five of seven studies reported no significant difference between boys and girls similar to our study.

The peak prevalence is during the pre-school years in most reports and their complaints range from infrequent bowel evacuation, hard small feces, difficult or painful evacuation of large-diameter stools, and fecal incontinence (voluntary or involuntary evacuation of feces into the underwear, also known as encopresis) [2, 13].

In our study, 59.2% of the cases with encopresis were aged between 3 to 7 years. Similarly, in studies from western countries the most common age group of encopresis was 3 to 7 years of age [14].

The etiology of constipation in children, could be due to multiple organ and non-organ causes; but their relative frequency among constipated infants and children is not completely well defined. In our patients, functional disorder was detected as the major cause of constipation in almost 87% of the patients. Similarly, most studies show that organic causes for constipation are uncommon and are most likely to become apparent in the first month of life and for 90-95% of children with constipation the problem is functional [15]. Moreover, a family history of constipation may be present [16]. Case-control studies have shown an association between low dietary fibre and constipation (odds ratio 4.1, 95% confidence interval 1.64 to 10.32) [17] and with lower energy and nutrient intake in cases than controls [16].

In our study, urinary incontinence and encopresis were detected in 16.2% and 27% of constipated children, respectively. Anorectal and lower urinary tract function are interrelated. This relationship between abnormal bowel and bladder function is referred to as the dysfunctional elimination syndrome (DES). Enuresis is commonly associated with functional constipation, but neurogenic disorders must also be excluded [18]. As a result, constipation is often associated with voiding dysfunction with a re-

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ported frequency that ranges from 30 to 88 percent of children with voiding dysfunction [19, 20]. The results of a recent study also showed that the prevalence of constipation was as high as 36.1% among children with nocturnal enuresis as assessed by clinicians despite poor identification by parents [21]. Encopresis is also reported by 35 percent of girls and 55 percent of boys who have constipation [6]. In toddlers (18 months to 3 years), the distribution of constipation and soiling is equal in boys and girls. However, by school age (five years), encopresis is three times more common in boys than in girls. At the age of 10 years, approximately 1.6 percent of children still have some encopresis [7].

Finally, it is noted that some limitations exist in this study that need to be considered. Retrospective recruiting of the patients from a single center clinic and also a hospital-based selection method with possible referral bias are our major limitations in this study.

Conclusion

Although most frequencies and prevalence rates of our study were similar to recent studies done in other countries, but there are some important differences too. It seems that ethnical and cultural factors may play a considerable role in constipated children. The results of our study show that the prevalence of constipation among Iranian children is high enough to emphasize it's importance. In addition, as recent studies show childhood constipation could affect his or her quality of life even during adulthood [22], therefore, detecting this high prevalent disorder is of great value.

However, large epidemiologic studies with the use of generally accepted diagnostic criteria are needed to define the precise prevalence of constipation in Iranian children.

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