

Is there a relationship between constipation and time of enuresis: single center study in Referral Hospital, Tehran

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Abstract

Introduction: Constipation is one of the multiple factors that cause enuresis. The correlation between enuresis and constipation is well established. But there is limited research on the correlation of time of voiding and constipation.

Aim: To find a correlation between time of enuresis and constipation.

Material and methods: This cross sectional study was carried out in Mofid Children's Hospital, from January 2010 to June 2011. All patients with constipation or enuresis were included in this study and evaluated for both conditions. We classified cases according to time of enuresis in 3 categories. Data were analyzed by SPSS and Epi-info with χ^2 and *t*-test. Value of *p* below 0.05 was considered significant.

Results: In this study, 560 patients who visited a physician with constipation (*n* = 400) or enuresis (*n* = 160) were included. We investigated children with constipation for enuresis, and children with enuresis for constipation. Finally, constipation was present in 480 cases and enuresis in 289 cases. Duration of constipation was 9.60 ± 7.1 (1-42) weeks and duration of enuresis was 6.17 ± 4.74 (1-25) weeks. Of 160 patients with enuresis, 80 (50%) had constipation. Of 400 patients with constipation, 129 had enuresis (32.25%). There was a significant correlation between duration of constipation and duration of enuresis (*p* < 0.001, Pearson test). Of 318 constipated boys, 148 (61.46) had enuresis. Of 162 girls with constipation, 61 (37.65%) had enuresis. The rate of enuresis among constipated boys was significantly higher than girls (*p* = 0.0001, χ^2). Of 560 patients, constipation and enuresis; only constipation; and only enuresis were found in 209 (37.32%), 271 (48.40%), and 80 (14.28%) cases respectively.

Conclusions: Duration of constipation was correlated with duration of enuresis. The rate of enuresis in constipated boys was significantly higher than in constipated females. We strongly recommend careful inspection of both conditions in each patient who presents with one of them.

Introduction

Constipation was defined as defecations occurring less than 3 times a week or at intervals longer than 3 days or any defecations with difficulties requiring increased effort during stool passage [1, 2]. Constipation is one of the multiple factors that cause enuresis [3-6]. Constipation is under-diagnosed, and treated poorly [7]. Functional constipation is the most common cause of constipation in children [8]. Constipation has effects on the urinary system [9].

Enuresis has different classifications. Enuresis is classified as day time wetting and nocturnal enuresis.

In daytime wetting, enuresis occurs when the child is awake. In nocturnal enuresis, enuresis occurs when the child is asleep [10, 11]. The correlation between enuresis and constipation is well established. But there is limited research on the correlation of time of voiding and constipation.

Aim

The aim of this study was to evaluate the pattern and frequency of enuresis among children with and without constipation.

Material and methods

In this cross sectional study, all cases of constipation or enuresis were included. All patients were evaluated for both constipation and enuresis. Constipation was defined as hard defecation or defecation less than 3 times per week for more than 2 weeks [12]. In the standard classification, enuresis is categorized as day and night enuresis. In this study we classified enuresis in 3 categories in relation to the time of voiding. Our classification was different from the standard classification. Patients who wet their bed in the day were placed in group I. Patients who wet their bed at night were placed in group II. And patients who wet their bed at both day and night were placed in group III. We used this author-suggested classification, because we wanted to find more information if there is a difference according to time of enuresis.

Statistical analysis

Data were analyzed with SPSS version 16.0 (Chicago, IL, USA) and Epi-info version 6.4 (CDC). The χ^2 and *t*-test were used for analysis. Value of *p* below 0.05 was considered significant.

Results

In this study 560 (male 362, female 198) patients with constipation (*n* = 400) or enuresis (*n* = 160) as the

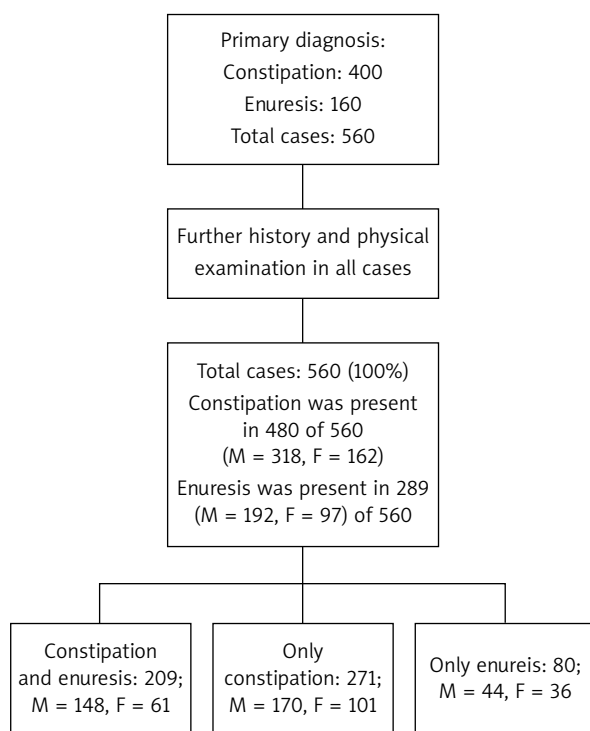


Fig. 1. Primary diagnosis and final findings in our study

primary chief complaint were included. All patients with constipation was evaluated for enuresis and vice versa. Finally, constipation was found in 480 cases and there were 290 cases of enuresis (Figure 1).

From 560 patients, 537 (95.9%) were aged 5-10 years and 23 (4.1%) were aged 10-15 years ($p < 0.001$). From 480 children with constipation, 318 (66.25%) were male and 162 (33.75%) were female ($p < 0.001$, χ^2 test). Of 289 patients with enuresis, 192 were male and 97 were female. From 192 male patients with enuresis, 148 (77.08%) had constipation and 44 did not have constipation. From 97 female patients with enuresis, 61 (62.88%) had constipation (Figure 1). Of 318 constipated boys, 148 (46.55%) had enuresis and 170 (53.45%) were without enuresis. Of 162 constipated girls, 61 (37.65%) had enuresis. The rate of enuresis among constipated boys was significantly higher than girls ($p = 0.0001$, χ^2 test).

As seen in Table I, the rate of constipation was similar between different groups of time of enuresis ($p = 0.09$, χ^2 test).

Duration of constipation was 9.60 ± 7.1 (1-42) weeks and duration of enuresis was 6.17 ± 4.74 (1-25) weeks. There is a significant correlation between duration of constipation and duration of enuresis ($p < 0.001$, Pearson test). Most of the patients in group III were male and this rate was significantly higher than other groups ($p = 0.003$, χ^2 test) (Table II).

From 148 males with constipation and enuresis, most of the patients were in group II ($p = 0.0001$, χ^2 test). Of 44 enuretic boys without constipation, most of the patients were in group II (Table III). Of 61 enuretic

Table I. Constipation among children with enuresis

Time of enuresis	Constipation	N
Group I	Yes	33 (70.21%)
	No	14 (29.79%)
Group II	Yes	113 (68.49%)
	No	52 (31.51%)
Group III	Yes	63 (81.81%)
	No	14 (18.19%)

$p = 0.09$, $\chi^2 = 4.79$

Table II. Distribution of enuresis among male and female patients

Group	Male	Female	Total
I	33 (70.21%)	14 (29.79%)	47 (100%)
II	97 (58.78%)	68 (41.22%)	165 (100%)
III	62 (80.51%)*	15 (19.49%)	77 (100%)

* $p = 0.003$, $\chi^2 = 11.48$

Table III. Time of enuresis among patients with and without constipation

Sex	Constipation	Group I n (%)	Group II n (%)	Group III n (%)	Without enuresis n (%)	Total n (%)
Male	Yes	24 (7.55)	70 (22.01)*	54 (16.99)	170 (53.45)	318 (100)
	No	9 (20.45)	27 (61.36)*	8 (18.19)	0	44 (100)
Female	Yes	9 (5.55)	43 (26.55)*	9 (5.55)	101 (62.35)	162 (100)
	No	5 (13.88)	25 (69.45)*	6 (16.67)	0	36 (100)
Total	Yes	33 (6.88)	113 (23.55)	63 (13.12)	271 (56.45)	480 (100)
	No	14 (17.5)	52 (65.00)	14 (17.5)	0	80 (100)

* $p < 0.05$

females with constipation, most of the patients (43/61) were in group II ($p = 0.0001$, χ^2 test). Of 36 enuretic females without constipation, 52 were in group II ($p = 0.00001$, χ^2 test). As a result, with or without constipation most patients were in group II (nocturnal enuresis).

Discussion

In our study from 480 patients with constipation, 209 (43.54%) had enuresis. Incidence of enuresis in encopretic children has been reported between 21.6% and 50.4% in different studies [13, 14].

In our study, two groups of cases were studied: in children who visited for treatment of enuresis (160 cases), frequency of constipation was about 50%; in children who visited for treatment of constipation (400 cases), we found that 129 also had enuresis (32.25%).

The difference between methods of study may be the result of this difference. In a cross sectional study among 277 children with enuresis, according to parental reporting 14% had constipation and clinical assessment found 36% with constipation. Parents are often unaware about constipation in their enuretic child [15]. In our study from 160 patients with enuresis as the chief complaint, constipation was found in 80 (50%) of them. This higher rate of constipation among enuretic patients may be due to failure of the primary physician to detect constipation or low knowledge of parents about constipation.

In a study by Çayan *et al.*, they found that incidence of constipation among enuretic patients (7.06%) was significantly higher than non-enuretic patients (1.45%). They studied only cases of nocturnal enuresis [16]. In our study, from 289 enuretic patients, constipation was found in 209 (72.31%). This finding showed that the rate of constipation in our enuretic cases was higher than enuretic cases in the Çayan *et al.* study [16]. Loening-Baucke reported that from patients with constipation, 29% had diurnal enuresis and 34% had nocturnal enuresis. Following successful treatment of constipation, 89% of those with diurnal enuresis and 63% with nocturnal enuresis showed complete resolution of enuresis [17].

In our study, of 318 constipated boys, 148 (61.46%) had enuresis. Of 318 boys with constipation, 24 (7.55%) had enuresis in the day; 70 (22.01%) had enuresis at night; and 54 (16.99%) had enuresis in the day and night. From 162 constipated girls, 37.65% had enuresis. Of 162 girls with constipation, 9 (5.55%) had enuresis in the day; 43 (26.55%) had enuresis at night; and 9 (5.55%) had enuresis in the day and night. However, we used a different classification in this study, but in two studies nighttime enuresis was more than day time enuresis.

Encopresis is a modifiable risk factor for nocturnal enuresis [18]. In our study, more than half of the patients had this risk factor. Our physicians must be aware of this high rate of constipation among Iranian enuretic patients.

Kasirga *et al.* studied 38 cases of chronic functional constipation and 31 healthy children as a control group. They did not find significant differences in incidence of enuresis between case and control groups. They studied cases of nocturnal enuresis [19]. In our study, we found a correlation between duration of enuresis and duration of constipation. However, our study was different from that of Kasirga *et al.*, because they studied enuresis in normal children and children with constipation. We studied constipation in enuretic children and enuresis in constipated children.

In our study we included all types of enuresis related to time of occurrence. But one of the limitation of this study was that it was cross sectional and we have no follow-up. Parents did not know the exact time of voiding.

Conclusions

In this study, we found a correlation between duration of constipation and duration of enuresis. The rate of constipation among enuretic children in our study was higher than in other studies. It is recommended to carefully examine for constipation in each child presenting with enuresis and for enuresis in each child presenting with constipation to design the best treatment plan for the child.

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