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Prevalence and Clinical Characteristics of Chronic Constipation in Senegalese Children

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Abstract

Introduction: Constipation is the infrequent emission of hard stools. It is common, most often of functional origin, with a prevalence ranging from 0.7% to 29.6%. The aim of our study was to investigate the prevalence of constipation in children undergoing paediatric gastroenterology. **Methodology:** This was a bi-centric retrospective study carried out at the Albert Royer Children's Hospital and the Dalal Jamm Hospital Pediatrics Department. Children followed in the pediatric gastroenterology consultation during the period from January 1, 2013 to February 29, 2020 were included. **Results:** A total of 337 children (205 boys; 60.83%) were included, representing a prevalence of 25%. The median age was 3 years 6 months. The 13 - 24 months age group was the most frequent (27.6%). Rare stools were the main reason for consultation (92.8%). Rare stools were noted in 92.88% of cases. Bristol types 1 and 2 accounted for 6.53% and 54.60% respectively. The main associated signs were abdominal pain (29.4%), followed by abdominal bloating (20.96%). Abdominal pain was functional in 73.58% of cases. Under treatment, 90.19% of children had a favorable outcome. **Conclusion:** Constipation is common in Senegalese children with a prevalence close to that reported in Western countries. In most case, it is functional with good prognostic.

Keywords

Children, Chronic Constipation, Bristol Scale, Dakar, Hirschsprung Disease

1. Introduction

Constipation is defined as fewer than 3 bowel movements per week, with a hard,

dry, granular consistency or with fissures on the surface [1]. It is a frequent symptom affecting children of all ages worldwide. Its exact prevalence is difficult to pinpoint, due to the large number of children and adults who suffer from it and do not necessarily consult a doctor, as well as differences in definition criteria, cultural influences and differences in interpretation [2] [3]. A systematic review reported a mean and median prevalence of 14% and 12% respectively in children [3]. In general paediatrics, it affects 3% of children, compared with 10 to 25% in paediatric gastroenterology consultations. In 17% to 40% of cases, constipation begins in the first year of life [2] [4]. The etiologies of constipation are manifold, dominated by functional constipation (95% of causes), which is recognized according to the Rome IV diagnostic criteria [5] [6]. Very few data are available from sub-Saharan Africa in general. In Senegal, a single study was carried out in 2004 in a Dakar hospital [7]. To make up for this lack of data, we undertook this study in children aged 0 to 15 followed up in the pediatric gastroenterology consultation at two Dakar university hospitals.

2. Methodology

2.1. Study Design

This is a bicentric retrospective study, carried out during the period from January 1, 2013 to February 29, 2020 at the Albert Royer Children's Hospital in Fann and the Dalal Jamm Hospital's pediatric department, which houses the pediatric gastroenterology consultation. The Albert Royer Children's Hospital is the largest pediatric hospital in Senegal, and is of the highest standard for our country with medical and surgical ward, while the Dalal Jamm national hospital center is a highest public hospital located in the suburbs of Dakar. Children of all ages with gastrointestinal and liver diseases are referred to it from secondary or peripheral health facilities as well as from other hospitals of the same standing (level III).

2.2. Populations

All children and adolescents aged 0 - 15 years followed up in the pediatric gastroenterology consultation in Albert Royer Children's Hospital and Dalal Jamm National Hospital Center were included in our study. Since 2013, we had started a pediatric gastroenterology and hepatology consultation at Albert Royer Children's Hospital. In 2017, we transferred it to Dalal Jamm Hospital. The consultation took place once a week, on Wednesdays, and each patient had a follow-up medical record. Recruitment was exhaustive, based on the patients' medical records, which we exploited.

2.3. Eligibility Criteria

All children and adolescents aged 0 - 15 years followed up for chronic constipation which medical observation record is available were included. Constipation was defined as chronic when it lasts more than six months.

2.4. Data Collection

Data were collected from the children's medical observation records. We collected socio-demographic data (sex, age, address, occupation and level of education of the mothers), clinical data (stool frequency, associated signs), radiological data and evolutionary data.

2.5. Statistical Analysis

Qualitative variables are described according to frequencies, proportions and their confidence intervals. Quantitative variables are described according to the mean and standard deviation when the distributions were normal, in median and quartiles in the opposite case.

3. Results

During the study period, 1349 children were seen in the pediatric gastroenterology consultation. Of these, 337 patients presented with constipation, representing a prevalence of 25%.

3.1. Socio-Demographic Characteristics

The median age was 3 years 6 months. In just over half (50.4%) of cases, constipation had begun within the first two years of life which 5.0% in the first six months of live. Socio-demographic characteristics are shown in Table 1.

3.2. Clinical and Radiological Characteristics

Infrequent bowel movements (92.88%) were the main reason for consultation. Nearly half (48.96%) of children had a stool frequency of one to two times a week, 16.02% went more than a week without a bowel movement and 29.97% less than one per week. The signs associated with constipation are shown in Figure 1. The stools were Bristol type 1 (6.53%) and type 2 (54.6%). Physical signs

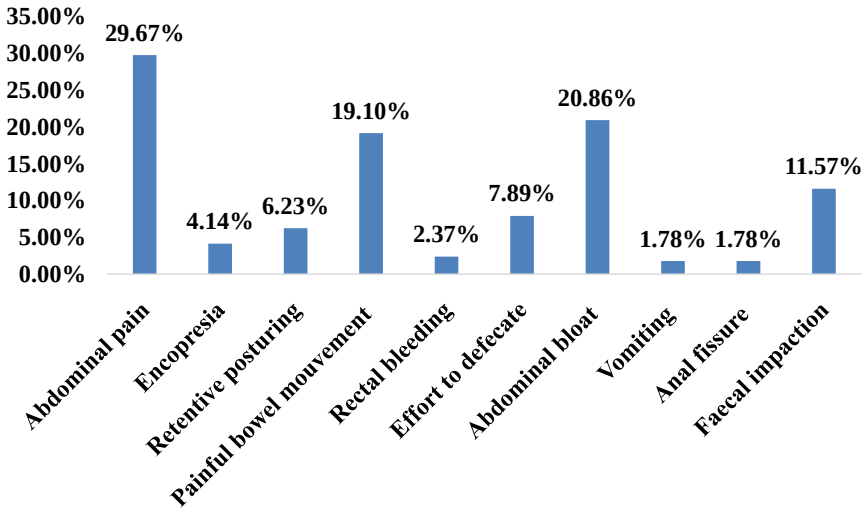

Figure 1. Associated signs of constipation.

Table 1. Sociodemographic characteristics.

Sociodemographic characteristics	Frequency	Percentage (%)
Sex		
Male	205	60.83
Female	132	39.17
Child's age (months)		
0 - 6	17	5.0
7 - 12	60	17.8
13 - 24	93	27.6
25 - 60	82	24.3
61- 120	66	19.6
121 - 180	19	5.7
Address		
Urban	158	46.9
Suburban	136	40.4
Rural	43	12.7
Mother's occupation		
Housewife	136	40.4
Student	20	5.9
Income generating activity	135	40.1
Employee	46	13.6
Mother's education		
No schooling	122	36.2
Primary	102	30.3
Secondary	95	28.2
Universitary	18	5.3

were abdominal bloating (20.86%), fecal impaction (11.57%) and anal fissure (1.78%). Paraclinical examinations were not systematically carried out, and were only prescribed if an organic cause was suspected. Of the children followed up, 75 had benefited from a barium enema. In most case (94.67%), the barium enema showed no signs suggestive of anatomical anomalies. Only 5.33% of patient had suggestive aspect of Hirschsprung disease. The results are shown in Table 2. Colonic biopsy was not done to confirm Hirschsprung disease.

3.3. Treatment and Outcome

Treatment was based on osmotic laxatives (54%), lubricants (45.99%) and suppositories (5.34%), under monotherapy in the majority of cases (81.30%). In 12.17% of cases, children required two medications combining an osmotic laxative and a lubricant. Progression was favorable in 90.19% of children, with disappearance

Table 2. Radiological signs.

Characteristics	Frequency (n = 75)	Percentage (%)
Dolichocolon	67	89.34
Suggestive of Hirschsprung's disease	4	5.33
Sterco-aeric stasis	1	1.33
Normal	3	4

of constipation. Persistence or recurrence on discontinuation of treatment was noted in 26.42%, giving a complete cure rate of 73.58%. No child had undergone surgical treatment

4. Discussion

This study, the first to focus on constipation in children in Senegal, found a high frequency of constipation in Senegalese children followed up in the pediatric gastroenterology consultation, with a prevalence of 25%. Encopresis was noted in 7.62% of children. Constipation was of functional origin in the majority of cases (73.58%). A study carried out in 2002 reported a prevalence of 3.7% among children hospitalized in pediatric wards in Dakar [7]. This difference in prevalence can be explained by the recruitment method used in that study, which concerned only children hospitalized for constipation, whereas our study focused on children followed up on an outpatient basis in the gastroenterology consultation. There is very little data on constipation in West Africa, and the majority of studies carried out in developed countries have focused on functional constipation.

This high prevalence found in our study is in line with data from the African literature. Indeed, Africa has the highest prevalence of functional constipation (31.4%) of any continent [8]. A multicenter cross-sectional study of functional gastrointestinal disorders in African infants carried out in ten African countries reported a prevalence of 31.4% [9]. In Nigeria, Udoh found a 27% prevalence of functional constipation among Nigerian adolescents, with a predominance in urban areas (29%; $p > 0.05$) [10]. On the other hand, in North Africa, a study carried out in Egypt among children aged 4 - 18 years to assess the prevalence of functional gastrointestinal disorders reported a low prevalence of 8.4% of constipation among children and adolescents [11]. Lower prevalence of functional constipation has been reported in other continents. A multicenter study carried out in Korea according to Rome III criteria in pediatric gastroenterology clinics (6.4%) [12]. In the Mediterranean region of Europe, a multicenter study carried out in 9 countries in children aged 4 to 18 found a prevalence of 11.7% and 13.1% in children aged 4 to 10 and 11 to 18 respectively [13]. In Yemen, the prevalence of constipation was 8% in children aged 0 - 18, with variability between age groups. The 5 - 10 and 2 - 5 age groups were more affected, with prevalence of 41.33% and 32.67% respectively [14].

A review of the literature found prevalence of functional constipation of 1.3% - 17.7%, 1.3% - 26% and 13% respectively in children aged 0 - 12 months, 13 - 48 months and 4 - 18 years [15]. The functional origin of constipation is the most frequent in our study, is reported in the literature data [16] [17] [18]. In the vast majority of families in Dakar, the diet is characterized by a preponderance of foods based on local cereals (millet or corn porridge, couscous), rice, bread and legumes (cowpeas, local beans), and very little intake of fiber-rich foods and fruit [19]. This situation is identical across the country and could explain the high frequency of constipation reported in sub-Saharan Africa. Studies have shown that diets low in fruit and plant foods are significantly associated with constipation [21]. In our study, infrequent bowel movements were the main reason for consultation (92.88%). This figure is higher than that reported in Yemen. On the other hand, she reported more pain on defecation (60%) and fecal incontinence (20%) [14]. In study carried out by Yu-Chao using data from the Longitudinal Health Insurance Database 2000 (LHID 2000) of Taiwan, nocturnal enuresis was noted in 1.03% in children with constipation and after stratification for sex and age, both boys and girls with constipation had higher odds ratio (OR) for nocturnal enuresis (NE), and children aged 5 - 12 and 7 - 12 years had a higher OR for NE [21]. Favorable evolution with laxative treatment was similar to that reported in the literature [22]. In the study of Michaud, 21 of 45 (46%) patients with functional constipation reevaluated 10 - 12 years later remained constipated [23]. In the systematic review, 49.3% ± 11.8% of all of the children studied for 6 to 12 months were found to recover and taken off laxatives, and 60.6% ± 19.2% were free from complaints, regardless of laxative use [24]. The incompleteness of data in medical records, the absence of paraclinical examinations for the evaluation of children in the event of evacuating signs of an organic origin and the absence of long-term follow-up were the few difficulties we encountered during the study. So, in order to obtain comprehensive data, a prospective study with a questionnaire including paraclinical examinations to gain a better understanding of constipation in children was needed.

5. Conclusion

Constipation is common in Senegalese children, similar to that reported in Western countries. It most often affects pre-school-age children. In the majority of cases, it is functional in origin, with a favorable evolution under laxative treatment.

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Limitations

Limitations of this study include the unavailability of some medical or medical record misled, poor use of rectal biopsy and lack of long-term follow-up.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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