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Constipation in childhood and adolescent age

Опстипација у дечјем и адолесцентном добу

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Constipation in childhood and adolescent age

Опстипација у дечјем и адолесцентном добу

SUMMARY
Constipation is a common problem in childhood and adolescence. It occurs as a functional (primary or idiopathic) disorder or as part of various pathological conditions that compromise intestinal emptying. In 90-95% of cases, constipation in childhood and adolescence is of a functional nature. Given the seriousness of the problem, as well as potential complications, sometimes very serious, constipation requires an immediate diagnostic and therapeutic approach. The therapy of functional constipation is based on modifying the structure of the diet in order to normalize the consistency of the stool and facilitate the act of defecation, as well as establishing a normal rhythm of intestinal emptying and during the first two months, sometimes longer, on the use of laxatives, while the therapy of secondary constipation is of a causal nature.
Keywords: constipation; children and adolescents; clinical manifestations; therapy

САЖЕТАК
Увод Опстипација је чест проблем у дечјем и адолесцентном добу. Јавља се као функционални (примарни или идиопатски) поремећај или у оквиру различитих патолошких стања која компромитују интестинално пражњење. У 90–95% случајева опстипација у дечјем и адолесцентном добу је функционалне природе. Имајући у виду озбиљност проблема, као и потенцијалне компликације, некад и веома озбиљне, опстипација захтева неодложан дијагностичко-терапијски приступ. Терапија функционалне опстипације се заснива на модификацији структуре исхране у циљу нормализације конзистенције столице и олакшања акта дефекације, као и успостављању нормалног ритма интестиналног пражњења и током прва два месеца, некад и дуже, на примени лаксатива, док је терапија секундарне опстипације каузалног карактера.
Кључне речи: опстипација; деца и адолесценти; клиничке манифестације; терапија

INTRODUCTION

The term constipation implies difficult, incomplete and irregular elimination of excessively consistent fecal content [1, 2]. Defecation is often painful and sometimes accompanied by traces of light blood in the stool [2, 3]. According to literature data, it is registered in 3–14% of children and adolescents [2, 4–8]. From the etiological aspect, it is classified into functional (primary or idiopathic) and secondary [1, 2]. Functional constipation, unlike secondary constipation, is characterized by the absence of a pathological background accompanied by difficult intestinal emptying [1]. Constipation in childhood and adolescence is in 90-95% of cases of a functional nature [1, 2].

This article provides a brief overview of the etiopathology, clinical characteristics, and treatment of constipation in childhood and adolescence.

FUNCTIONAL CONSTIPATION

Functional constipation is, along with recurrent functional abdominal pain and irritable bowel syndrome, the most common inorganic gastrointestinal disorder in childhood and adolescence [4, 9, 10, 11]. It occurs between the ages of 2–4 years, less often earlier or later, until the onset of puberty with equal frequency in both sexes, and then somewhat more common in girls [1, 3, 4, 12, 13, 14].

From an etiopathogenetic perspective, functional constipation is a multifactorial disorder, i.e. it occurs as a consequence of hereditary predisposition, consumption of a diet low in fiber content, including fruits and vegetables, neglect of normal toilet rhythm, poor fluid intake, insufficient physical activity and psychological problems (stress, anxiety, depression), or a combination of these factors [1, 2, 7, 15–19]. In order to prevent constipation, the diet of children and adolescents must be complete and optimally balanced. It is known that adequate intake of fruits, vegetables and low-refined cereals favors regular bowel movements, while excessive consumption of animal-based foods, especially milk, cheese and eggs, as well as chocolate sweets, has the opposite effect [1, 17, 18]. Optimal intake of fermented dairy products in liquid form, such as yogurt and sour milk, compared to regular milk, is characterized by a smaller negative impact on intestinal motility [19, 20]. An extremely important place in the prevention of constipation is not to neglect the gastrocolic reflex, i.e. the urge to go to the toilet, which occurs naturally 15-30 minutes after a meal, especially in the morning [21, 22].

In addition to immediate discomfort, constipation is often accompanied by additional manifestations, such as poor appetite, nausea, abdominal pain, anal fissures, rectal prolapse, and fecal impaction [1, 3, 15, 17, 23]. Anal fissures and prolapse of the rectal mucosa cause very painful defecation and bleeding, while the decomposition of intestinal contents above the fecal plug, which is seen in more severe and neglected cases of constipation, leads to

pseudodiarrhea and encopresis [1, 3, 15, 16, 17, 23]. In addition, it should be noted that "lazy bowels" are often accompanied by "lazy bladders", so these children, especially girls, show an increased tendency to urinary tract infections [2, 17, 19, 23]. Extremely rarely, mainly in adolescence, neglected chronic constipation can be complicated by hemorrhoids, secondary megacolon, and even stercoral perforation accompanied by peritonitis, sepsis, and a potential fatal outcome [24–27]. It has been proven that long-term chronic functional constipation can also have negative repercussions on the longitudinal growth of a child [17, 28].

Considering the numerous complications and possible consequences, often very serious, functional constipation requires timely diagnosis and appropriate treatment [4, 29].

The diagnosis of functional constipation is based on the exclusion of a pathological background of the disorder and the presence of two or more of the following criteria occurring at least once a week for at least one month: ≤ 2 defecations per week in a child ≥ 4 years of age, ≥ 1 episode of fecal incontinence per week, evidence of retentive posturing or excessive volitional stool retention, evidence of hard or painful bowel movements, presence of large fecal mass in rectum and large diameter stools that obstruct toilet [4]. Digital rectal examination should not be performed routinely in functional constipation, i.e. it is indicated only in conditions suspected of fecal impaction, Hirschsprung's disease, and anorectal anomaly [1, 29]. Also, in the absence of anamnestic and/or clinical indicators that would indicate constipation as a secondary manifestation, radiographic or ultrasound examinations of the abdomen, as well as contrast enemas and various laboratory and other tests, are not necessary [1, 18, 29]. Anorectal manometry offers a more detailed assessment of anorectal function and sensation in patients with functional constipation accompanied by fecal incontinence, as well as in those who do not respond to standard therapy or if they are suspected of having dyssynergic defecation [7, 18, 30].

The therapy of functional constipation is based on modifying the structure of the diet in order to normalize the consistency of the stool and facilitate the act of defecation, as well as establishing a normal rhythm of intestinal emptying (toilet training) and during the first two months, sometimes longer, on the use of laxatives [1, 7, 17, 29, 31, 32]. Physical activity and optimal fluid and fiber intake stimulate intestinal peristalsis, while excessive fiber intake has a counterproductive effect and is not recommended [1, 2, 17, 18, 19, 29, 32]. The use of glycerin suppositories and enemas is only justified in cases of fecal impaction [1, 16, 29]. Due to possible colon perforation, digital disinfestation should be avoided [1]. According to the results of a large number of studies, there is no evidence that the use of probiotics, symbiotics and prebiotics significantly contributes to resolving functional constipation [29, 33]. Table 1 provide the doses of the most commonly used laxatives intended for the treatment of constipation in children and adolescents [1, 16, 17, 29, 32, 34, 35].

Polietolen glikol (PEG) is the first-choice laxative in the treatment of functional constipation. It is characterized by good solubility in water, negligible intestinal absorption (0.1 to 0.2%) and, accordingly, high effectiveness in treating constipation in all ages [1, 16, 29]. In addition, it is successfully used in the treatment of fecal impaction [1, 18, 29]. Like other oral laxatives, it is contraindicated in diseases accompanied by intestinal obstruction [18].

Lactulose (4-0-b-D-galactopyranosyl-D-fructofuranose) is a synthetic disaccharide composed of galactose and fructose molecules linked by a β 1→4 glycosidic bond. Like PEG, it is used in the treatment of functional constipation at all ages [1, 16, 29]. It achieves its laxative effect by not breaking down in the small intestine and, together with the accompanying water fraction, reaches the colon making fecal contents less consistent and easier to eliminate [18, 35]. The osmotic laxative effect is further enhanced by lactic and acetic acids, which are produced by the fermentation of a portion of lactulose by colonic bacteria. The use of lactulose in the

treatment of functional constipation, thanks to its high efficiency and safety, has lasted for more than 50 years. Due to the presence of free galactose, it is contraindicated in patients with galactosemia.

Sorbitol and lactitol are polyhydroxy alcohols (polyols) with a sweet taste. The osmotic laxative effect is a result of the low degree of intestinal absorption.

There are other medications for the same purpose, such as magnesium hydroxide, magnesium citrate, bisacodyl, sodium phosphate, sodium picosulfate, senna, and mineral oils, but their use in the treatment of functional constipation in children and adolescents is less common [17, 29, 32, 35].

SECONDARY CONSTIPATION

Secondary constipation is a consequence of pathological conditions that compromise intestinal emptying. It occurs as part of various anatomical, neuromuscular, inflammatory, endocrine, metabolic and neoplastic diseases, the use of some drugs and heavy metal poisoning (Table 2) [1, 2, 4, 5, 36–48].

With the exception of Hirschsprung disease and anorectal malformations, where constipation may be the only sign of the disease, in the other pathological conditions listed it is only one of the manifestations of the underlying disorder [44]. Therefore, a detailed history and complete physical examination play an important role in identifying the underlying disorder and programming its confirmation. Accordingly, it should be noted that the failure to pass meconium within 48 hours after birth suggests Hirschsprung's disease, the presence of persistent constipation with onset in the neonatal period suggests Hirschsprung's disease, cystic fibrosis, hypothyroidism, congenital anomalies of the anorectal or spinal region, the absence

of anal and/or crematernal reflex suggests a spinal cord anomaly, verification of spasm and lack of rectal contents on digital examination, and explosive elimination of liquid stool and gases upon finger withdrawal suggests Hirschsprung's disease, hypertrichosis, fovea, lipoma or hemangioma in the lumbar region suggests spinal dysraphism, and the like [1, 17, 23].

Treatment of secondary constipation is primarily causal in nature.

CONCLUSION

Constipation is a common disorder in childhood and adolescence. Functional constipation, which accounts for 90-95% of this disorder, occurs in the absence of a pathological background, while secondary constipation is a consequence of various pathological conditions accompanied by the inability to have normal intestinal emptying. Considering the importance of the problem, as well as the potential complications, sometimes very serious, chronic constipation requires an immediate diagnostic and therapeutic approach. The therapy of functional constipation is based on modifying the structure of the diet, normalizing the rhythm of intestinal emptying, and adjuvant use of laxatives, while the treatment of secondary constipation is causal in nature.

Ethics: The authors declare that the article was written in accordance with the ethical standards of the Serbian Archives of Medicine as well as the ethical standards of medical facilities for each author involved.

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Table 1. Dosages of most frequently used laxatives

Laxatives	**Age**	**Dosages**
Polyethylene glycol	All ages	Maintenance: 0.2–0.8 g/kg/day; Fecal disimpaction: 1–1.5 g/kg/day (max six consecutive days)
Lactulose (70% solution)	All ages	1–2 mL/kg/day in once or twice doses
Sorbitol (70% solution)	1–11 years > 12 years	1 mL/kg/day in one or two doses 15–30 mL/kg/day in one or two doses
Lactitol	1–6 years 6–12 years 12–18 years	0.5–1 g/kg/day in two or three doses 10–30 g/day in two or three doses 20–60 g/day in two or three doses
Glycerin suppository	< 1 year > 1 year	0.5 pediatric suppositories once daily 1 pediatric suppository once daily

Table 2. Causes of secondary constipation in childhood and adolescence

Hirschsprung's disease	Anorexia nervosa
Anorectal malformations	Psychological stress
Spina bifida	Depression
Hypothyroidism	Autism
Diabetes mellitus	Cerebral palsy
Celiac disease	Meningomyelocele
Cow's milk protein allergy	Chronic intestinal pseudo-obstruction
Cystic fibrosis	Visceral/autonomic neuropathy
Diabetes insipidus	Diuretics
Vitamin D intoxication	Anticholinergics
Hypokalemia	Anticonvulsants
Uremia	Calcium channel blockers
Porphyria	Antidepressants
Down syndrome	Chemotherapy
Ehlers-Danlos syndrome	Methylphenidate
Scleroderma	Heavy metal poisoning (Pb, Hg, Cd, As)

