Review

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Dyschezia or functional constipation: a frequent challenge in pediatric practice

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ABSTRACT

Dyschezia and constipation in infants are functional digestive disorders that have defecatory difficulty in common and differ fundamentally in the age of presentation and the consistency of the stool. Both disorders generate concern in parents and frequent consultations with the health system.

Dyschezia is a self-limited functional digestive disorder resulting from incoordination in the evacuation mechanism. On the other hand, functional constipation is fundamentally linked to retentive behavior related to pain and fear of evacuation and sometimes requires nutritional and/or pharmacological intervention. Studies that observed the natural history of children with dyschezia showed that there is no causal relationship between dyschezia and functional constipation, so they should be considered two different entities. Both require, for their better management, family support through educational, clear, and reassuring messages to be included in the medical consultation.

Keywords: *gastrointestinal tract; constipation; differential diagnosis; therapeutics; infant.*

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INTRODUCTION

The normal defecation pattern changes, especially in the first months of life. With age, the frequency decreases, and the consistency of stools increases on the way to intestinal maturation, increasing the intestine's capacity for water retention.[1]

In this variation, infant feeding plays an important role. Human milk acts on intestinal hormones such as motilin, which regulates intestinal motility and transit; its oligosaccharides (which promote a healthy intestinal microbiota) have an osmotic effect on the colon, and generates softer and more frequent stools in the first months of life.[1]

The beginning of complementary feeding after 6 months of age marks another significant change, with increased consistency and decreased stool frequency.[2]

Infant dyschezia is a functional digestive disorder in healthy infants that manifests in children under 9 months of age in episodes of severe straining and crying that last about 10-20 minutes and cease with the passage of stools that are usually liquid or soft. In 2017, experts determined these clinical criteria (Rome IV) and added that, despite the effort, there may be a failure to defecate.[3]

Functional constipation is often defined as the result of repetitive attempts of voluntary stool retention by the child, who tries to avoid a discomforting sensation of defecation, usually due to fear associated with painful evacuation.[2]

The published prevalence of dyschezia is very variable, according to the study methods used. Studies based on parent surveys show higher results than diagnoses according to strict pediatric clinical criteria (Rome Criteria III-IV). However, there is also significant variation between different geographical regions, lifestyles, diets, and socio-environmental characteristics; values vary in Europe between 0.9% and 5.6%;[4] in the USA, 2.4%;[5] in Asia, 11.6%;[6] and in Latin America, 12%.[7] The prospective study by Kramer et al. 2015, in which prevalences are analyzed according to the age of consultation, shows 21.2%, 7.4%, and 6.6% at 1, 3, and 9 months, respectively.[8]

The global prevalence of functional constipation in infants is 3%,[9] 12.1% in the USA,[10] and 9.2% in Latin America.[7]

Pediatric gastroenterologists reviewed the literature of the last 10 years on pathophysiology, diagnosis, and treatment of dyschezia and functional constipation in infants under 1 year of age. A search for published and indexed studies in PubMed was performed. In this manuscript, we included those that were considered relevant. The keywords used for the literature search were the following: functional constipation, dyschezia, infants, prevalence, risk factors, Rome criteria, awareness, diagnosis, and treatment.

This review aims to present the advances in pathophysiological knowledge, the latest diagnostic criteria, and management recommendations in the pediatrician's practice, as well as to provide strategies to avoid unnecessary studies and medications under the vision of this new knowledge.

PHYSIOPATHOLOGY

To understand the pathophysiology of this functional gastrointestinal disorder (FGID) in infants, it is essential to remember some aspects:

- The defecatory pattern in infants is variable according to age and type of feeding. The average number of bowel movements is 4-6 per day, reaching 10-12 in breastfed infants and, generally, less frequently in formula-fed infants.[8] The proper interaction of these mechanisms results in normal evacuation (*Figure 1*).
- The colon presents slow contractions that can be anteropulsive or retropulsive, which are responsible for the movement and propulsion of the fecal bolus, and mass contractions that are more powerful, facilitate oro-anal transport and are produced as a colicky response to feeding.[11]

On the other hand, the participation of the sphincter complex plays a fundamental role:

- The internal anal sphincter (IAS) acts as an innate, involuntary, smooth muscle reflex innervated by the autonomic nervous system. In contrast, the external anal sphincter (EAS) acts as a learned, voluntary, striated muscle reflex innervated by the pudendal nerve.[11]

In infantile dyschezia, one of the primary differential diagnoses of functional constipation, there is a failure of coordination between the increase in abdominal pressure, the descent of the pelvic floor, and the relaxation of the external sphincter and puborectalis muscle.[3,12]

As mentioned, functional constipation's pathophysiology is multifactorial and unknown.[13] However, the predominant factor is retentive behavior related to painful experiences, feeding changes, sphincter control, and certain emotional

and behavioral factors (*Figure 2*). A series of events then occur that lead to the symptomatology of this FGID.[2]

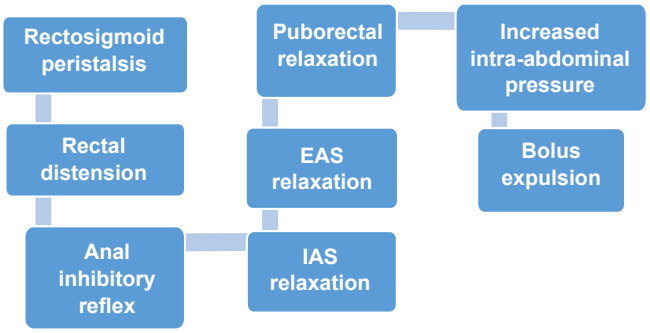
As in all FGIDs, complete anamnesis is one of the most significant tools for the correct diagnosis;[14] the age of presentation and the consistency of the stool are the most critical differential clinical criteria.

It is essential to reconceptualize FGIDs within the disorders of the gut-brain axis (GBA) in which the participation of the microbiota, the immune system, and the neuroenteric system is recognized as part of etiopathogenesis. The increased permeability to antigens in dysbiosis, cytokines, serotonin, dopamine, and gamma-aminobutyric acid release, and their relationship with sensory processing and integration, should be considered in FGIDs/GBAs.[12] In a multicenter study, Kadim et al.[15] conclude that three factors significantly influence the appearance of symptoms characteristic of dyschezia: being an only child, the type of feeding, and socioemotional aspects (*Table 1*).

CLINICAL IMPLICATIONS

Under this new bio-psycho-social vision, FGIDs represent a source of concern for parents and caregivers of affected children. It is distressing for them not to be able to adequately interpret the discomfort or pain experienced, especially in infants. Whether parents can use medical consultation to channel these concerns depends on their parenting habits, perception of their child's symptoms, and previous experiences. During the consultation, the physician should remember that these parental factors are as important as the child's symptomatology, primarily because the diagnosis of a functional digestive

Figure 1. Normal defecation mechanism



EAS: external anal sphincter; IAS: internal anal sphincter.

Figure 2. Pathophysiology of functional constipation

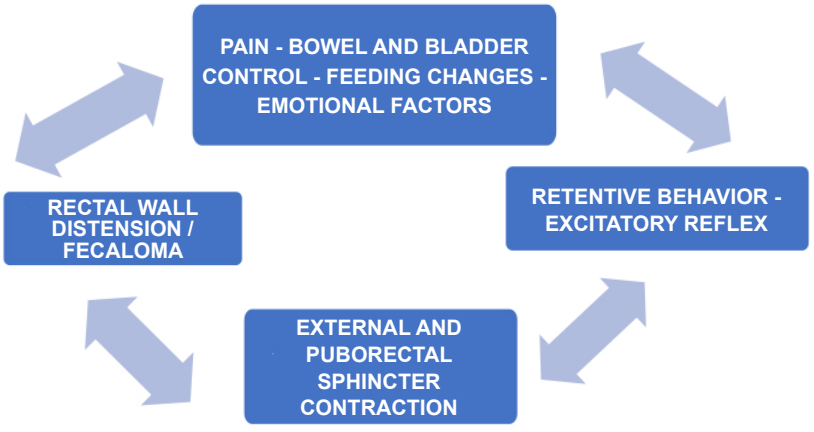


Table 1. Risk factors for dyschezia

Factor	Mechanism involved. Increased risk
Being an only child	Increased parental attention to the infant's symptoms[10]
Feeding	Formula feeding Immaturity of the digestive tract Alteration of microbiota and intestinal colonization Complementary feeding[11]
Social-emotional disorders	Discomfort, difficulty in learning to defecate and developmental disorders, and daily routines[12] Deterioration of the bond with parents and caregivers Impairment of safety and self-control skills

Modified from: Kadim M, et al.[15].

disorder is mainly based on parental reports and interpretations of the child's symptoms. This makes the diagnostic process challenging and underlines the importance of strict criteria for recognition and differentiation (*Table 2*).

Within the symptomatology that characterizes these FGIDs, two predominant factors differentiate the picture of dyschezia from functional constipation: the presentation age and the stool's consistency.[16]

Dyschezia is usually prevalent during the first 9 months of life, most frequently during the first three months, while constipation is of later presentation, exceeds this period, and may extend well beyond infancy, including early and middle childhood.[2,3]

Regarding the type and consistency of the stool, the infant with dyschezia passes stool of soft consistency, while those affected by constipation expel voluminous stool of increased consistency. This differentiation should always be considered a diagnostic approach strategy in the appropriate anamnesis[2,3] (*Figure 3*).

Paradoxically, the defecatory difficulty is the most effortless event to perceive by the parental/doctor consulted and the most difficult to explain. In functional constipation, the painful experience (proctalgia) of expelling hard and

Table 2. Differential clinical picture between functional constipation and dyschezia. Warning signs to suspect organic causes

Functional constipation (0 to 48 months)	Dischezia (0 to 9 months)	Organic causes Warning signs
Fecal incontinence Fecal mass in rectum	Straining and crying are characteristic symptoms of the baby.	Bloating and abdominal pain Vomiting Palpable fecal mass in the abdomen Empty rectal ampulla
Retentive habit Pain when evacuating Fear of evacuation	Straining with failed evacuation of stools	Delayed meconium clearance Early onset in the first month of life Anal/lumbosacral malformations Bladder pathology
Pain during defecation Associated abdominal pain Normal weight and stature	Pain before, during, and after defecation Normal weight and stature	Abdominal pain associated with constant bloating abdominal Failure to thrive Maturational delay Signs of hypothyroidism
Presence of large amounts of fecal material of increased consistency in the rectum Stools of large volume and consistency	Usual amount of soft stool in the rectum Soft stools, normal volume	Bloody stools Mucus and bloody stools Explosive stools after voiding delay

bulky fecal matter generates a retentive habit, often accompanied by abdominal pain, which culminates in a predictable and interpretable vicious circle. In turn, in dyschezia, the infant manifests its discomfort and effort with crying and/or screaming, accompanied by blushing or sometimes purple coloration of the face, during the defecatory act with or without failure. These symptoms have a frustrating and distressing impact on the family bond, making diagnosis a real challenge.[2,3]

There is no causal relationship between dyschezia and functional constipation; the idea that they should be considered different entities is emphasized.

TREATMENT

As previously stated, dyschezia and functional constipation, both functional disorders related to defecation, are two distinct entities with different diagnoses and treatments. Although the literature on infants with dyschezia is limited, it is known to be a benign condition and usually resolves spontaneously after a few weeks.[8,9]

As in all FGIDs, the management of dyschezia and functional constipation is based on containing the family nucleus and on medical treatment, as far as possible, without pharmacological intervention.[17] To this end, we must include educational, nutritional, and clinical management messages in the consultation[8] (*Figure 4*).

Education

Effective treatment is based on ensuring alliance therapy with the parents.[18] Information about normal defecation patterns in infants should be provided,[15] focusing on reassuring them about the delay in evacuation and explaining that dyschezia is only an incoordination in defecation.

Following the pathophysiological basis of the origin of the dyschezia condition, parents welcome the explanation that this is a stage of child development in which the infant must learn to relax the pelvic floor as part of a maturational process and of learning to defecate. Reinforce the concept of a benign, transitory condition that ultimately results in a soft bowel movement.[19]

Nutritional management

The results of the study conducted by Kramer et al.[8] suggest that the type of feeding plays a vital role in dyschezia and functional constipation.

It is essential to reinforce the importance of breastfeeding since breast milk (BM) ensures a decrease in stool consistency due to its action on the response of intestinal hormones related to motility (motilin), gastrointestinal maturity, and the intestinal microbiota (IM) through its pre- and probiotic action. Clinical studies show that constipation in breastfed infants is less than 1%.[17] This is an incomparable benefit in infants in whom a soft stool will facilitate evolution. If the infant does not receive BM, verify the form of formula preparation and, as mentioned above, consider using formulas with prebiotics and/or synbiotics. The use of juices containing sorbitol (plum, pear, or apple) is not indicated. If the infant has already started complementary feeding, a healthy diet is recommended; always verify that the amount of fiber in the diet is adequate; it is unnecessary to increase its volume or fluid intake or control the volume of dairy products.

On the other hand, the recommendations differ in children with functional constipation. For the reasons above, it is recommended to increase human milk intake to ensure softer stools. Formula-fed infants should be controlled in preparation and dilution, and those containing prebiotics and synbiotics are of choice.

Another functional component that must be considered in the formula is the lipid fraction since the beta position of palmitic acid content in the triglyceride molecule reduces the accumulation of calcium soaps in the intestine.[20] It is known that the presence of these soaps determines the increased consistency of the stool. Incorporating some fiber modules should be evaluated in children older than 6 months. Incorporating fiber with fruits and vegetables.[11,12,17,21-23]

Clinical management

Parents are instructed not to perform rectal stimulation, as it produces artificial sensory experiences that could be harmful and condition the child in response to stimulation to defecate.[8,12,18] Nor would it be recommended to use probes or suppositories to train infants to evacuate in response to external stimuli rather than learning the appropriate response to internal signals.[16]

Pharmacological management

The use of suppositories, laxatives, or other medications is not indicated in dyschezia.[3,8,12]

Treatment of functional constipation requires, in addition to dietary and habit changes, pharmacological intervention with laxatives, which aim to decrease stool consistency and

Figure 3. Diagnostic algorithm in evacuatory delay

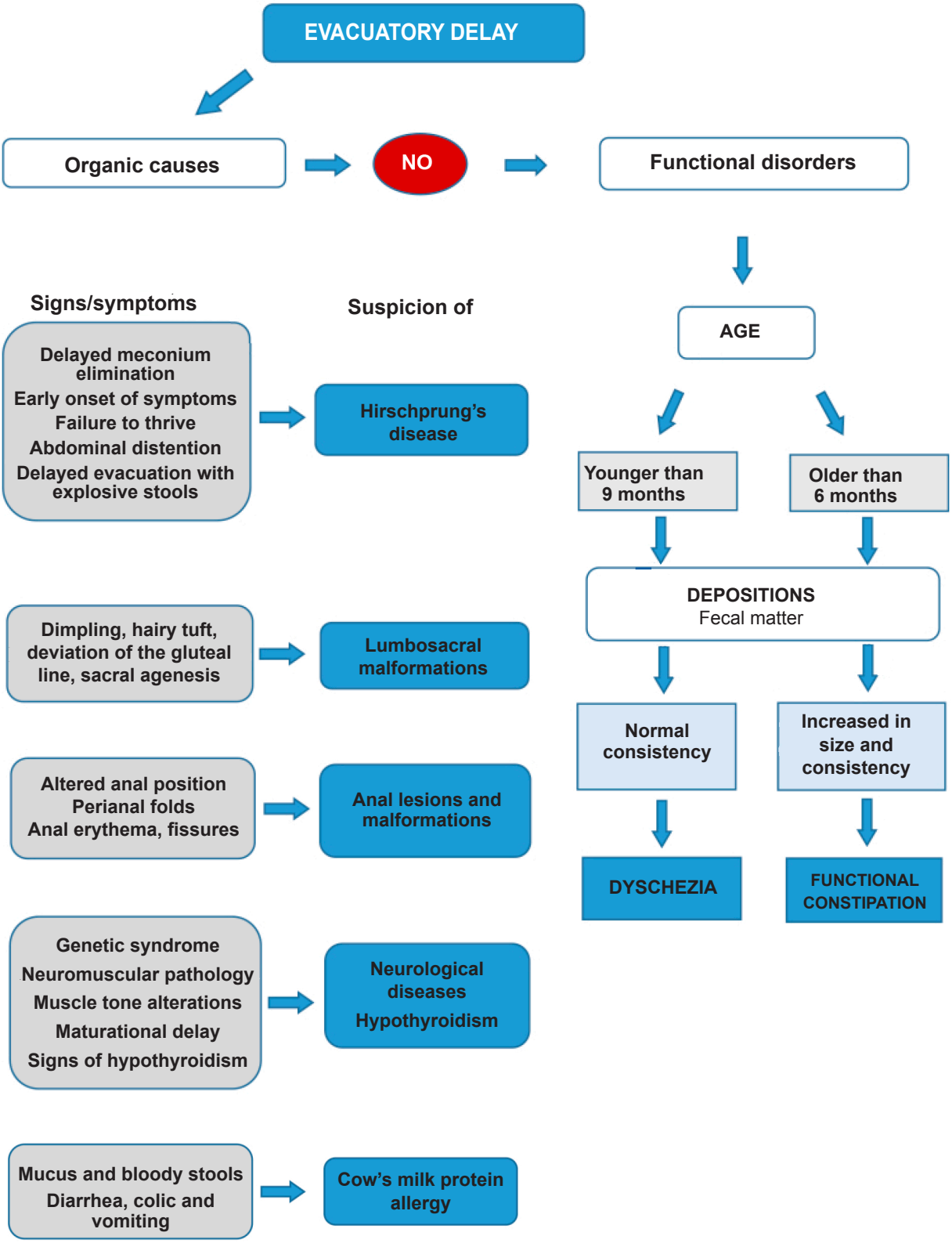
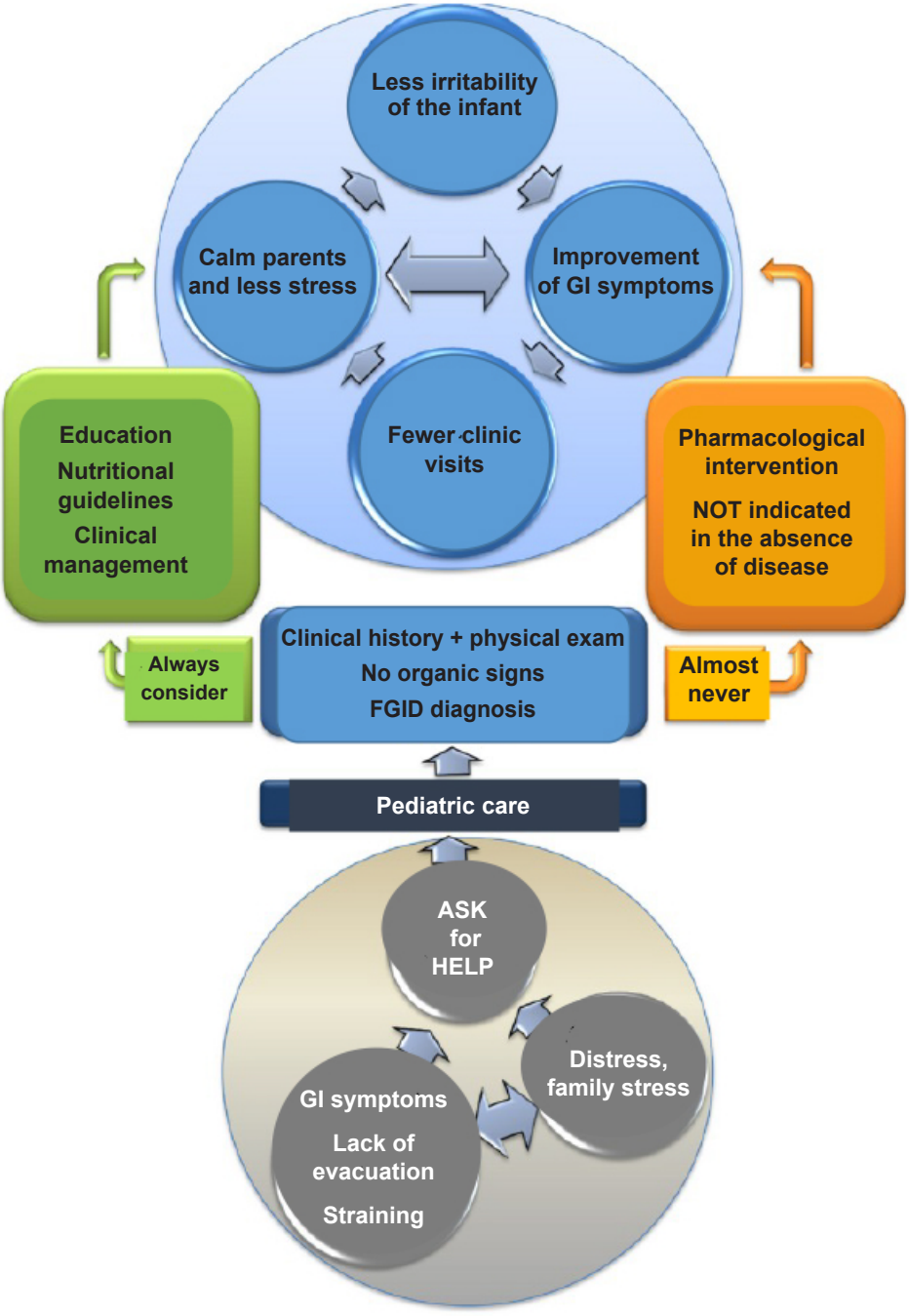


Figure 4. Importance of the clinical management of dyschezia



FGID: functional gastrointestinal disorder; GI: gastrointestinal.
Modified from Salvatore et al.[17]

facilitate fecal expulsion.[2] In pharmacological treatment, polyethylene glycol is the first laxative choice for disimpaction and maintenance. If not available or poorly tolerated, lactulose is recommended. Both are osmotic in action.[2] The recommended dose of polyethylene glycol is 1-1.5 g/kg/day for disimpaction and 0.2-0.8 g/kg/day[2] for maintenance. For lactulose, the dosage is 1 to 2 g/kg/day in one or two doses.[2]

DYSCHEZIA IS NOT CONSTIPATION

Kramer and colleagues prospectively studied

the clinical course of infants with dyschezia in the Netherlands.[8] They followed 1,292 infants to investigate prevalence at 1 month, 3 months, and 9 months, the natural history of dyschezia, and its relationship to future functional constipation.

Following the Rome III criteria, dyschezia was observed in 223 (17.3%), 84 (6.5%), and 74 (5.7%) infants at 1 month, 3 months, and 9 months, respectively. Infants who presented symptoms at 1 month had no more symptoms at 3 months. Functional constipation was not present at 1 or 3 months; at 9 months, it was present in 10 children (0.8%). Only three children out of 61 with dyschezia in follow-up presented later functional constipation.

The conclusion was that dyschezia has no predictive value for the subsequent development of functional constipation.[8] Previous studies also reinforce these findings.[24]

CONCLUSIONS

According to the Rome IV criteria, infant dyschezia is a functional digestive disorder that manifests in healthy infants under 9 months of age as episodes of severe straining and crying lasting 10-20 minutes. These episodes subside with the passage of liquid or soft stools. They occur most frequently in the first three months of life.

It is differentiated from functional constipation by the age of presentation and by the consistency of the stool. Functional constipation presents at 6 months of age and is characterized by increased stool size and consistency, generating pain during defecation and, consequently, retentive behavior. There is no causal relationship between dyschezia and functional constipation.

In dyschezia, the recommended therapy is based on family containment, with clear and reassuring information, consistently reinforcing breastfeeding, and in those infants fed with formulas, prioritizing those with biotics.

Functional constipation requires dietary advice (breastfeeding or formulas with biotics, palmitic acid in the beta position, increased dietary fiber, or evaluation of the use of a fiber module in the formula), changes in habits, and laxatives to facilitate evacuation. ■

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