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INTESTINAL INTUSSUSCEPTION IN CHILDREN: A REVIEW ON ETIOLOGY, CLINIC, DIAGNOSIS AND TREATMENT

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Abstract: Goal: To carry out the analysis and review of available articles on intussusception in children, evaluating aspects of its etiology, diagnosis, clinic and treatment. Methodology: The study consists of a bibliographical review, with a bibliographical survey in the databases: PubMed, Analysis and online retrieval system (MedLine); Scientific Electronic Library Online (SciELO), Google Scholar and LILASCS. Literature review: Most cases are idiopathic in nature, but infections and malformations may be the basis of the disease. The clinical picture is mainly characterized by abdominal pain, irritability and crying. The best diagnostic tool is ultrasound, with high sensitivity and specificity. Treatment is usually carried out with pneumatic or hydrostatic enema, with surgical treatment aimed at complications such as necrosis and loop perforation.
Keywords: "Intussusception"; "Children"; "Aspects".

INTRODUCTION

Intestinal intussusception consists of a pathophysiological entity characterized by an invagination of an intestinal loop and the associated mesentery, leading to the attachment of the fold into the adjacent intestinal cavity. The most common intussusception is ileo-colic, accounting for up to 90% of cases. Small intestinal intussusception is rarer and less important in epidemiological terms (EDWARDS et al., 2017)

It is a common cause of acute abdomen in children and is among the main causes of intestinal obstruction within this age group. The peak incidence occurs in the age group of 4-12 months of life. The incidence of the pathology is very varied and interregional variation appears to be an important variable. The highest incidences are found in the eastern Mediterranean region, while the lowest are seen in countries located in the American

region (CLARK et al., 2019).

The incidence of cases in children under 1 year of age in African countries is around 34 cases per 100,000 children, in the Americas this value is 36 per 100,000 children, in Europe 41 cases per 100,000 children and southwest Asia and east Asia Mediterranean occupy the second and first position, respectively, with 78 and 77 cases per 100,000 children (CLARK et al., 2019).

The cases of the disease are varied and have different etiologies. However, despite this, idiopathic intussusception ends up being the most frequently diagnosed form within the pediatric population and is associated with favorable anatomical variations, infections, hyperplastic lymphoid tissue and intestinal motility disorders. Secondary causes are also associated, generally associated with trauma, post-operative abdominal surgery, tumors and polyps (JIAMG et al., 2013).

A portion of intussusception cases are benign and resolve spontaneously. However, if left untreated, it can lead to intestinal edema, ischemia and necrosis, intestinal perforations and acute peritonitis, all of which pose a potential risk of death to the patient. If diagnosed early, the treatment is potentially curative and can lead to remission of the disease without further harm to the patient (JIAMG et al., 2013).

Considering the importance of this pathology, both in relation to its incidence and its harmful potential to affected patients, the aim of this work is to explore the main factors associated with intestinal intussusception in children, based on findings from scientific literature related to the topic.

METHODOLOGY

This is a literature review of the bibliographic review type, which is a method that favors analysis and research results without criteria or prospecting purposes. The sequence of steps for the construction of this study was defined. The research began by searching the literature for primary studies, followed by the extraction of pertinent information contained in the studies that were included in the previous stage, as well as their evaluation and, finally, the analysis and synthesis of the results of the review and presentation of the literature review. The key words used for the research were: "Intussusception", "Etiology", "Management" and "Treatment", searched in both Portuguese and English, with translation into the language.

The literature search was carried out in the following databases: PubMed, Analysis and Retrieval System Online (MedLine); Scientific Electronic Library Online (SciELO), Google Scholar and Latin American and Caribbean Literature in Health Sciences (LILASCS).

In this sense, the inclusion and exclusion criteria were defined. To enter the scope of the study, the selected articles needed to be original, in addition to being available in full text form, published in Portuguese, English and Spanish, they needed to be indexed in databases defined during the period from January 2012 to June 2012. 2022 and that presented matters related to II. The chosen time period aims to encompass a greater number of works and publications that provide up-to-date information related to the topic.

LITERATURE REVIEW

ETIOLOGY

Regarding etiology, several mechanisms have been identified for the disease. Idiopathic causes remain the main ones identified among this population, with around 10% of cases having an identifiable reason. Possible anatomical variations may be associated with a greater predisposition to intestinal intussusception in children (Marsicovetere et

al., 2017).

Among these, it is worth mentioning the anterior insertion of the terminal ileum in the cecum, reduced rigidity of the cecum or secondary to poor development of this region and low development of the longitudinal muscle fibers of the colon at the level of the ileo-colic valve. All of these changes, ultimately, favor inadequate rotation of the intestinal loops and their invagination, promoting the characteristic folds of the pathology (Marsicovetere et al., 2017).

Infectious causes may also be associated with II. Infections that generate mesenteric lymphadenopathy are an important cause of intussusception. Peye patch hypertrophy in the context of common viral infections, such as adenovirus and rotavirus, can lead to intussusception (KHALIFA et al., 2013).

Other non-infectious causes may be related to the disease. Intestinal allergies, celiac disease and Chron's disease may predispose to II. Similarly, to infectious causes, idiopathic hypertrophy of Peyer's patches and mesenteric lymphadenopathy act as triggers for II. Secondary causes such as neoplasms are rare causes of II, but when present, lymphomas are common in the pediatric population, while adenocarcinomas are common in the adult population (BUSSELL et al., 2019).

Changes in peristalsis in focal areas can lead to aperistaltic segments invaginating into areas with normal contraction, with pathological submucosal hemorrhages such as Henoch-Schonelin purpura predisposing and allowing the formation of an intussusspect. Other functional intestinal disorders, such as neurotenteric, pseudo-obstruction of the small intestine, can result in altered peristalsis and cause intussusception in a similar way (JIAMG et al., 2013).

In cases with identifiable secondary causes, a variable number of etiologies may be associated with II. Congenital abnormalities of the gastrointestinal tract, such as Meckel's diverticulum, intestinal duplication, presence of polyps, harmatomas, or malignancies, may be associated with intussusceptions. In the pediatric population, cytic fibrosis, foreign bodies, intestinal parasites, fecalomas can result in triggers in the ileum, causing ileo-colic intussusception (CHARLES et al., 2015).

Additionally, intestinal malrotation during organogenesis can be considered a predisposing factor for II, a condition called Waugh syndrome. The pathophysiology involves prolapse of the ileocolic region in the unfixed ascending colon of the midabdomen in children with malrotation. As the ascending colon is not attached to the retroperitoneum, the intussusceptum often advances to the descending colon and rectum without compromising the vascularization of the intestine (Marsicovetere et al., 2017).

CLINICAL PRESENTATION

The clinical presentation is variable, but in general, the patient presents with abdominal pain and signs of intestinal obstruction. In the pediatric population under 2 years of age, they classically present with abdominal pain, with acute-onset colic, generally with semi-flexed knees, crying and excessive irritability (MANDEVILLE et al., 2012).

Vomiting and diarrhea are common after the onset of the condition. An important clinical sign is feces with a currant jelly appearance, which occurs due to the mixing of blood with the fecal cake. Abdominal physical examination may reveal a sausage-shaped mass, palpable in the right upper quadrant or epigastric region of the abdomen, but the mass is only found in about 60% of cases.

A pediatric triad for II is postulated, with abdominal pain, palpable abdominal mass and gooseberry jelly stool, but it only appears in 15% of cases (COX et al., 2021).

DIAGNOSIS

The diagnosis is mainly based on the clinic, which provides a high degree of suspicion and complementary imaging tests. An initial assessment can be carried out using plain X-rays of the abdomen to look for intestinal obstruction, excessively distended loops or intestinal perforation. Despite being part of the initial assessment, the X-ray has little diagnostic value and does not diagnose a significant number of of frames, with low sensitivity and specificity (MRAK, 2014).

Some radiographic findings allow the diagnosis of II, namely the target sign, consisting of two concentric radiolucent circles superimposed on the right kidney, which represents peritoneal fat surrounding the intussusception, an obscured hepatic margin, or lack of air in the cecum, preventing its visualization (CARROLL et al., 2017).

However, the method with the greatest specificity and sensitivity for diagnosis is diagnostic ultrasound, reaching almost 100% specificity and sensitivity. As it is less invasive, it ends up being the method of choice for diagnosing II, reducing the patient's exposure to ionizing radiation. The classic appearance of II during ultrasound is the target sign and the pseudo-kidney, formed by the intussusception layers (LI et al., 2021).

TREATMENT

In the pediatric population, treatment depends on the type of intussusception. As ileio-colic intussusception is the most common, its treatment is the most used. It consists of reduction by pneumatic or hydrostatic enema, guided by ultrasound or fluoroscopy, being successful in 85-90% of cases. After surgery, strict monitoring is necessary, due to the greater possibility of recurrence after 24 hours (LIOUBASHEVSKY et al., 2013).

Small bowel intussusception, which is rare in children, can usually be evaluated safely and will subside spontaneously without surgery. Persistent small bowel intussusception, however, has been associated with lead point or intestinal necrosis and would likely require surgical intervention. In all cases, the assessment of the presence of signs of necrosis must be carried out, in addition to refractoriness with enema treatment, as in any of these situations a more invasive surgical approach is essential (KELLEY-QUON et al., 2021).

CONCLUSION

Intestinal intussusception is a relatively common pathology in the pediatric population. Most cases have an unidentifiable etiology. The clinical picture is intestinal obstruction, with abdominal pain, cramps, irritability and crying. Diagnosis must be made based on clinical and imaging findings, with ultrasound as the main diagnostic tool. Treatment is with pneumatic or hydrostatic enema, with the possibility of spontaneous remission. Surgery is aimed at conditions with complications, such as necrosis and perforations.

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