Review

NON SPECIFIC MESENTERIC ADENITIS OF FORTY-FIVE CASES IN CHILDHOOD AND REVIEW

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ABSTRACT

Mesenteric lymphadenitis is a disease that pediatric surgeons face on a daily basis due to symptoms resembling the symptoms of acute appendicitis. 45 children with abdominal pain were examined for the last 3 years, aged 3 to 18 years, treated non-surgically, and proven laboratory, microbiological and instrumental diagnosis. Mesenteric lymphadenitis is a very common diagnosis in children with suspected acute appendicitis. In previous methods, based solely on age and location, there were many difficulties in identifying the etiology of acute abdominal pain in children. We decided to develop a new systematic classification of acute abdominal pain. Carrying out a clinical and epidemiological analysis of the diseased children with acute surgical diseases in order to establish a pre-operative imaging and laboratory diagnosis, to establish the sensitivity of microbiological markers An overview of the literature on the topic has been made

Key words: mesenteric lymphadenitis, childhood, diagnosis

INTRODUCTION

In previous methods, based solely on age and location, there were many difficulties in identifying the etiology of acute abdominal pain in children. We decided to develop a new systematic classification of acute abdominal pain. Carrying out a clinical and epidemiological analysis of the diseased children with acute surgical diseases in order to establish a pre-operative imaging and laboratory diagnosis, to establish the sensitivity of microbiological markers. Acute nonspecific or primary mesenteric lymphadenitis is a self-limiting inflammatory condition affecting further sensitive lymph nodes located in the intestine (1, 2). The term "nonspecific" is used unless otherwise indicated. In the literature, it is generally considered to be a fairly common phenomenon, which is essential solely from the point of view of differential diagnosis in childhood surgical diseases.

According to studies in children, suspected appendicitis or intussusception is confirmed that mesenteric lymphadenitis is the most common alternative diagnosis (3, 4). The use of high-quality imaging studies at the present stage is better characterized by mesenteric lymphadenitis, but its etiology and treatment are not clearly defined.

PURPOSE

To summarize the available information on mesenteric lymphadenitis and related diseases, this would serve to develop an adequate algorithm used by surgeons and practitioners who encounter this in their daily practice.

MATERIALS AND METHODS

45 children with abdominal pain were examined for the last 3 years/2016-2019/, aged 3 to 18 years, treated non-surgically, and proven laboratory, microbiological and instrumental diagnosis. Methods: 1. Clinical, epidemiological, standard and disease-specific. 2. Laboratory, immunological and microbiological for the purpose of establishing the etiological microbiological agent of mesenteric lymphadenitis (Jersey enterocolytic). 3. Introduction of a new

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laboratory immunological microbiological panel for more accurate pre-operative diagnostics. 4. Conventional ultrasound, CT and abdominal organs 5. Statistical methods.

RESULTS

Mesenteric lymphadenitis accounts for about 12% of all acute surgical diseases and is often associated with adenoviral infection that mimics appendicitis. The pain is usually severe (ranging from discomfort to severe colic), sometimes with evidence of peritoneal irritation. From March 2010 to December 2019, clinical data were collected retrospectively from 342 hospitalized children with acute abdominal pain with no apparent underlying disease. According to definitive diagnoses, diseases causing acute abdominal pain were classified into the following groups: The nine groups were catastrophic surgical abdomen from a group I (1.6%), group II "acute appendicitis and mesenteric lymphadenitis" (12.7%), Group III 'intestinal obstruction' (57 patients, 12.9%), group IV 'viral and bacterial acute gastroenteritis' (20.4%), group V' peptic ulcer and gastroduodenitis' (14.9%), group VI 'hepatobiliary and pancreatic disease' (3.2%), group VII' febrile viral disease and extraintestinal infection' (15.6%), group VIII' functional gastrointestinal disorder (acute manifestation)' (20 patients, 4.5%) and group IX' unclassified acute abdominal pain' (14.3%). Four patients were enrolled in two disease groups each. Nevertheless, experts point out the most common causes of the disease:

- Adenoviruses and enteroviruses - infections are related to acute respiratory type
- Yersinia. These are the causes of pseudotuberculosis and intestinal yersiniosis. They are one of the most common causes of mesadenitis in many areas of the world.
- Epstein-Barr virus. Provokes infectious mononucleosis
- Cytomegalovirus
- Streptococci (beta-hemolytic), staphylococci and others
- Mycobacterium tuberculosis
- Campylobacter and other pathogens of intestinal infections (salmonella and others)

Despite the development of medicine, acute onset, anatomical features and rapid

progression, making a timely diagnosis of an acute surgical abdomen remains a significant clinical challenge for the surgeon. Therefore, the development and improvement of laboratory, immunological and microbiological markers of inflammation continues. Unlike in adults, the ability to perform the full range of imaging studies due to radiation exposure is limited in childhood.

If this diagnosis is severe, sepsis is also likely to develop. In the abdominal cavity, the lymph nodes are large - over 600. Their main task is to protect the body from infectious flora and prevent inflammation.

It mainly concerns the category of patients aged 6 to 13 years. In addition, when diagnosing this pathology, it is possible to identify chronic sources of infection, especially sinusitis, dental caries, tonsillitis, which cause an allergic predisposition to the body (1).

The female sex is affected several times more often than this disease. The search for laboratory predictors for early differentiation of acute abdominal diseases and accurate diagnosis to reduce the number of "white" appendectomies and unnecessary surgery is a goal for today's pediatric surgeons. The term acute surgical abdomen, although possibly incorrect in linguistic terms, has acquired citizenship and is used throughout medical literature and practice. Acute abdominal surgery involves various pathological conditions (abdominal wall, abdominal organs, retroperitoneal space, and retro- or extraperitoneally located organs) that develop acutely, rapidly, threatening the health and life of the sick child in hours, requiring emergency diagnosis and emergency treatment non-surgical or more frequent surgical treatment. In childhood, especially in infants and infants, slow-moving pathological conditions are included which also threaten the health of sick children and require treatment with so-called delayed urgency. If left untreated within the immediate hours and days of diagnosis they are in danger of becoming urgent with their development, but with delayed treatment and a real threat to the lives of children.

The specific variety involves the development of inflammation of the lymph nodes under the influence of yersiniosis or mycobacteria. In cases where the inflammatory process is caused by another pathogenic flora, we are talking about a non-specific variety (2).

MAIN SYMPTOMS

Making accurate diagnosis is difficult because young children are unable to objectify their complaints and are negatively influenced by research and manipulation. Often there are concomitant symptoms from the nasopharynx and upper respiratory tract that obscure the clinical picture. The symptoms are varied and atypical. The pain is mainly diffuse and without precise localization, vomiting occurs early and diarrheal and dysuric disorders are frequently observed. The pain syndrome is located in the area of the navel or to the right of it. In addition, the young patient is very moody and extremely aggressive, and this is not surprising. The intense pain is constantly disturbing the baby; a sharp temperature rise above 38 ° C is possible. There is always a feeling of nausea, often accompanied by vomiting and cyanosis of the skin. In order to prevent the progression of mesadenitis, the treatment should be timely (3).

The clinical picture accompanying mesadenitis largely depends on the cause of the infection, as well as the nature of the pathogen. In acute form, a rapid increase in symptoms is observed, the main one being pain syndrome. Usually the resulting pain is localized in the upper abdomen or around the navel, but it is quite blurred. At first glance, it may be suspected that acute appendicitis develops. After a while, the pain syndrome only intensifies with sudden movements. Disease is necessarily accompanied by general intoxication syndrome and digestive disorders (attacks of nausea and vomiting, as well as intestinal disorder - diarrhea or constipation). Body temperature rises to febrile values, rarely to subfebrile values. The patient complains of weakness, general malaise and headache; tachycardia and tachypnea (4).

Diagnosis the blood picture, leukocytosis with olive and accelerated ESR, elevated values of CRP, ferritin, IL-6, procalcitonin were detected, and in urine albumin and leukocytes. X-ray examination is needed to rule out the pulmonary process and search for hydro-aeric shadows in the abdomen.

Differential diagnosis is made with primary cryptogenic peritonitis, acute mesenteric lymphadenitis, gynecological diseases, invagination, Meckel's diverticulitis, torsion of the momentum, Acute appendicitis masks (basal pneumonia) (4, 5).

Differential diagnosis in acute abdominal pain in childhood should focus first on confirming or ruling out acute abdominal surgery, especially one requiring urgent surgical treatment. For a long time, enlarged mesenteric lymph nodes in children have been considered invariably associated with tuberculosis (3). Several years after World War I, the existence of mesenteric lymphadenitis, as an independent clinical unit of non-tuberculous origin, has been recognized (3, 4). At this time it is definitely difficult to diagnose before surgery (4, 5). Not surprisingly, it has been stated that "Acute mesenteric lymphadenitis is almost always confused with acute appendicitis" and that "there is hardly any other abdominal condition in which laparotomy is so common. *Yersinia enterocolitis* is considered to be the most common pathogen in temperate Europe, North America and Australia (5).

With accurate diagnosis, the results of the anamnesis, the spread of an existing tuberculosis process in other organs, the Mantoux positive test, X-ray data and laparoscopy are relied upon. When determining tubercular mesadenitis, it is necessary to completely exclude the possibility of such diseases and only then proceed to a treatment plan. Sometimes in infants and infants, an ileocolitis may also be present, suggesting that the involvement of the lymph nodes may be secondary to a primary enteric pathogen.

Unlike in adults, the ability to perform the full range of imaging studies is limited in childhood because of the radiation load that is produced. The search for laboratory predictors for early differentiation of acute appendicitis and accurate diagnosis to reduce the number of "white" appendectomies is a goal for modern surgeons. Because mesenteric lymphadenitis is commonly presented in young people, ultrasound is often an optional study. CT is usually reserved for older patients, if at all required (**Figure 1**). Enlarged lymph nodes 3 or more tender nodes with a short axis diameter of at least 5 mm, clustered in the right lower quadrant (see normal mesenteric lymph nodes. The enlarged lymph nodes are located in front of the right psoas in most cases or in the mesentery of the small intestine. There may be ileal or ileocecal wall thickening of less than 3 mm thick at least 5 cm from the intestine, despite opacity of the lumen of the intestine (CT) and rupture with normal administration (6).

Figure 1. US of lymphadenitis mesenterialis in 16 yrs old boy

Sometimes in infants and infants, the ileocolitis may also be present, suggesting that the involvement of the lymph nodes may be secondary to a primary enteric pathogen. Laparoscopy is also a consideration for differential diagnosis. Often mesenteric lymphadenitis is present in patients with appendicitis and is found to be an intraoperative finding. Mild, uncomplicated cases of mesenteric lymphadenitis and those caused by viruses usually pass relatively quickly in a few days to weeks. Discomfort may be affected by ordinary analgesics and antipyretics.

Treatment and prevention of the disease

In most cases, mesenteric adenitis is self-limiting and usually resolves within a few weeks (6). The diagnosis of non-specific mesenteric lymphadenitis is based on the patient's anamnestic data and complaints. There is a physical and instrumental review. Physical examination is difficult to perform palpation of mesenteric lymph nodes. Instrumental methods of study are also limited information. The most prominent data is computerized tomography (CT) of abdominal organs. This study may indicate an increase in mesenteric lymph node size and localization. It is important to observe the patient and exclude the presence of an ectopic pregnancy or appendicitis (7-8).

Methods for treating inflammation developed in mesenteric lymph nodes include antibacterial agents, non-steroidal anti-

inflammatory drugs, as well as detoxification measures. In case of purulent inflammatory process, immediate surgical intervention is required, which implies drainage of the abscess. The treatment of acute and chronic forms of mesadenitis in children begins in the same way with the elimination of the root cause that provokes its development. Antibacterial therapy for the intoxication of the child is also performed.

Preventive measures and prophylaxis of all respiratory viral diseases are necessary to avoid meadenitis in children. Timely treatment for major clinical manifestations is primarily conservative.

Antibacterial treatment for yersiniosis

The diagnosis is suspected in contact with dogs, pigs, consumption of unpasteurized milk, meat products without sufficient heat treatment, and the clinical picture of enteritis and exanthema. The disease occurs with various organ lesions - mesenteric lymphadenitis, arthritis, abscesses, cholecystitis, and meningitis. Hepato- and splenomegaly are common. Often, skin rash (punctate, maculopapular, hemorrhagic) occurs, mostly around the joints.

Clinical differentiation of yersiniosis symptoms is huge: from spontaneously resolving diarrhea to severe infections with bacteremia. The reasons include age, physical state of the patient, and pathogenic factors of bacteria, which depend on its strain (7, 8).

Antibiotic therapy for the treatment of Yersiniosis in humans has not been indicated except in systemic RA extraintestinal infection and enterocolitis in immunocompromised patients (9).

Dynamic follow-up with follow-up examinations in the coming hours is a routine practice to assist the diagnosis, but the risk of delayed emergency surgery should always be considered. If it is impossible to exclude an acute surgical abdomen, consultation with a pediatric surgeon is mandatory (10).

CONCLUSIONS

1. Mesenteric lymphadenitis is a very common diagnosis in children with suspected acute appendicitis.
2. The frequency of occurrence of yersiniosis among patients with pain in the right hypogastric area and suspected appendicitis oscillates around 2–23%.
3. It is recommended provide for the possibility of substantial but still rare infection with *Y. enterocolitica* in diagnostics of non-specific symptoms.

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