

CLINICAL AND DIAGNOSTIC FEATURES OF MECKEL'S DIVERTICULUM IN CHILDREN

Yusupov Sh.A.^{1,3}, Muhammadiev A.A.², Djalolov D.A.³

Email: Yusupov6101@scientifictext.ru

¹Yusupov Shukhrat Abdurasulovich - Doctor of Medical Sciences, Professor, Head of Department;

²Muhammadiev Abdunosir Abduganievich - Master's Degree Resident;

³Djalolov Davlatshokh Abduvokhidovich - Student,

DEPARTMENT OF PEDIATRIC SURGERY № 1, FACULTY OF PEDIATRICS,
SAMARKAND STATE MEDICAL INSTITUTE,
SAMARKAND, REPUBLIC OF UZBEKISTAN

Abstract: the aim of the study is to study the clinical manifestations of Meckel's diverticulum in children. Most often, diverticulum causes strangulation obstruction in newborns and young children, manifesting as a clinic of acute intestinal obstruction, but can cause intestinal obstruction with a characteristic clinical and radiological picture at any age. The diagnosis of Meckel's diverticulum as a source of obstruction is established only with surgical intervention. One of the frequent threatening complications of diverticula is intestinal bleeding, the cause of which should always be kept in mind the bleeding Meckel's diverticulum when excluding the source of bleeding in the upper digestive tract. Diverticulum can manifest in older children with diverticulitis, causing a clinical picture of "acute abdomen". Rarely, Meckel's diverticulum can serve as a reservoir for swallowed foreign bodies of the digestive tract and be diagnosed accidentally during x-ray examination for another pathology.

Keywords: children, Meckel's diverticulum, intestinal obstruction, intestinal bleeding, laparoscopy.

КЛИНИКО-ДИАГНОСТИЧЕСКИЕ ОСОБЕННОСТИ ДИВЕРТИКУЛА МЕККЕЛЯ У ДЕТЕЙ

Юсупов Ш.А.^{1,3}, Мухаммадиев А.А.², Джалолов Д.А.³

¹Юсупов Шухрат Абдурасулович - доктор медицинских наук, профессор, заведующий кафедрой;

²Мухаммадиев Абдуносир Абдуганиевич - резидент магистратуры;

³Джалолов Давлатшох Абдувохидович – студент,

кафедра детской хирургии № 1, педиатрический факультет,
Самаркандский государственный медицинский институт,
г. Самарканд, Республика Узбекистан

Аннотация: целью нашего исследования явилось изучение клинических проявлений дивертикула Меккеля у детей. Чаще всего дивертикул приводит к странгуляционной кишечной непроходимости у новорожденных и у детей раннего возраста, проявляясь клиникой острой кишечной непроходимости, но может вызывать кишечную инвагинацию с характерной клинико-рентгенологической картиной в разных возрастах. Диагноз дивертикула Меккеля как источника непроходимости устанавливается только при оперативном вмешательстве. Одной из нередких грозных осложнений дивертикула является кишечное кровотечение, в качестве причины которого всегда надо иметь в виду кровотокающий Меккелев дивертикул при исключении источника кровотечения в верхних отделах пищеварительного тракта. Дивертикул может проявиться у детей старшего возраста дивертикулитом, вызывая клиническую картину «острого живота». Также редко дивертикул Меккеля может быть резервуаром для проглоченных инородных тел ЖКТ и диагностироваться случайно при рентгенологическом исследовании по поводу другой патологии.

Ключевые слова: дети, дивертикул Меккеля, кишечная непроходимость, кишечное кровотечение, лапароскопия.

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Meckel's diverticulum (ileal diverticulum) is a congenital anomaly of the small intestine associated with a violation of the reverse development of the proximal part of the yolk duct (the duct between the navel and the intestine), when its proximal part remains ungliterated (unclosed). The function of the yolk duct is nutritional and hematopoietic. But in 1.8% of cases, diverticulum can persist and be detected during abdominal surgery in children of different ages [1, с. 267, 2, с. 41, 3, с. 429]. In such cases, during planned surgical interventions, the diverticulum is removed simultaneously, since it can cause various kinds of severe complications [4, с. 39, 5, с. 153, 6, с. 142].

Surgical complications of Meckel's diverticulum can be divided into 4 groups [7, с. 284, 8, с. 5, 9, с. 3]:

1. Acute intestinal obstruction, not infrequently of the strangulation type in the form of inversion of

intestinal loops around the diverticulum or infringement in a false internal hernia, formed by pathological attachment of the diverticulum to the mesentery or to the parietal peritoneum. One of the most common types of intestinal obstruction formed by Meckel's diverticulum is intestinal obstruction;

2. Intestinal bleeding-usually asymptomatic, manifesting post-hemorrhagic anemia and melena. Bleeding is associated with erosions on the diverticular mucosa, since the diverticular wall has an ectopia of goblet cells of the gastric mucosa, which are able to produce acid and thus cause ulceration of the mucous membrane;

3. Inflammation in the abdominal cavity, occurs as acute appendicitis with pain syndrome, as well as symptoms of intoxication. The cause of the "acute abdomen" is determined during surgery in the form of phlegmonous or gangrenous-perforated diverticulitis;

4. Also, the Meckel's diverticulum can be a reservoir for swallowed foreign bodies of the gastrointestinal tract – small toys, fish bones, small metal products, etc..

Very rarely in the literature cases of neoplasms in the Meckel's diverticulum itself are described [10, c. 94, 11, c. 71].

Removal of the Meckel's diverticulum has its own characteristics: in case of intestinal bleeding, it is appropriate to resect the ileum area together with the diverticulum with further imposition of the inter-intestinal anastomosis, since erosive ulceration can be localized on the adjacent segment of the intestine, especially on the mesenteric side. In many uncomplicated cases, it is possible to resect the diverticulum at an angle of 45° to the length of the intestinal tube to prevent narrowing of the intestinal lumen, or to treat it with a loop like an appendectomy if the base of the diverticulum is no more than 1.5 cm in diameter [12, c. 507, 13, c. 10, 14, c. 267].

Research materials and methods:

Over the past 18 years (from 2000 to 2018), 65 children with Meckel's diverticulum have been admitted to the surgical departments of the 2nd clinic of the Samarkand State medical Institute. The age of children and the nature of detected diverticular complications are shown in Fig. 1.

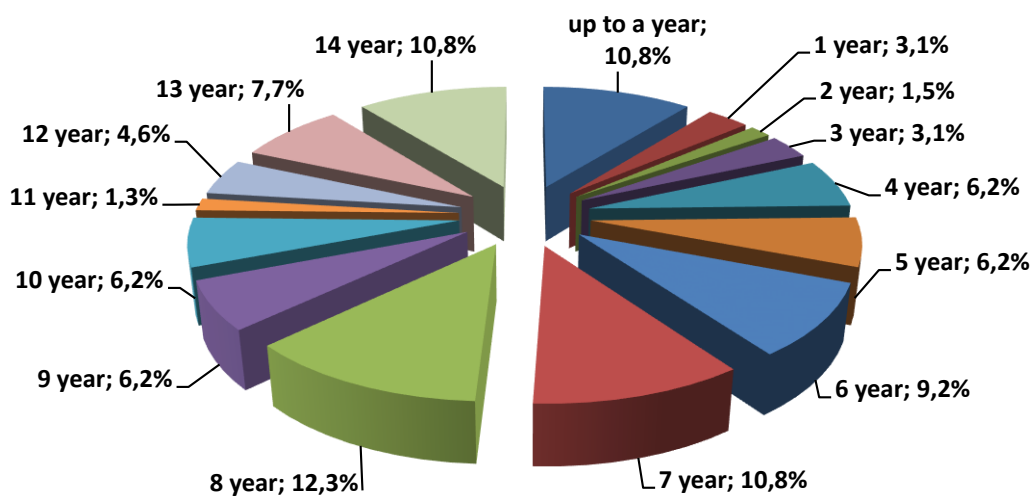


Fig. 1. Age structure of patients with Meckel's diverticulum

Most complications of Meckel's diverticulum were found in children aged 1 month to 2 years in the form of strangulation obstruction – 15.4%. In children older than 3 years of diverticulum, intestinal bleeding was observed in 3.1% of cases, and in 22% of cases - inflammation of the diverticulum, of which in one case-perforation of the latter. By gender, boys predominated-78.5% (51).

4 newborns under the age of 1 year were admitted with signs of intestinal obstruction, anxiety, flatulence, congestive vomiting, and lack of stool. On the survey x-ray of the abdominal cavity, "Cloiber's bowls" were found, and the children were operated on after a short preoperative preparation. In 3 cases (children aged 8 months, 8 years and 12 years), the examination palpated obstruction in the abdominal cavity, there were signs of intestinal obstruction. Due to the late hospitalization - more than 24 hours from the onset of the disease, the children were operated on, all operations were performed by laparoscopic method.

A special feature of invagination against the background of Meckel's diverticulum is the incidence in older children. Two children, 4 and 6 years old, had intestinal bleeding, without pain. All children with melena were excluded from bleeding from the upper and lower gastrointestinal tract, Meckel's bleeding diverticulum was detected during diagnostic laparoscopy.

In 41 cases, children were operated on laparoscopically with symptoms of acute appendicitis, and diverticulitis was detected during the operation. In one case, it was found - gangrenous-perforative inflammation of the diverticulum.

Thus, in children with complications of Meckel's diverticulum, the leading clinical symptom was pain syndrome, which was observed in 91% - 99% of cases, with the exception of patients with intestinal bleeding. The symptom of vomiting was observed in cases with intestinal obstruction, less often-with inflammation of the diverticulum. Melena's symptom was the main complaint in patients with bleeding diverticulum, in the form of "raspberry jelly" was observed in 49 % of children with intestinal obstruction and rarely in intestinal necrosis with strangulation intestinal obstruction. In case of diverticular complications, there was no increase in body temperature, except for diverticulitis, in this group of patients, subfebrility was detected in 55 % of cases.

The results of the study and their discussion:

All patients admitted with Meckel's diverticulum were operated on for emergency indications. Strangulation obstruction was caused by the formation of a false hernia when the diverticulum was fixed to the mesentery or to the anterior abdominal wall, the small bowel loop was pinched through the defect, or the operation revealed a small bowel inversion around the fixed string of the Meckel's diverticulum. Since children with strangulation intestinal obstruction in most cases were of newborn age, the operation was performed using an open laparotomy method. In all cases, the diverticulum was located at a distance of 40 to 50 cm from the ileocecal angle.

33% of surgical procedures were performed laparoscopically, mainly since 2016 (table 1).

Table 1. Types of operations performed for complicated Meckel's diverticulum

Type of operation	Diverticulectomy by ligature method	Diverticulectomy, manual suturing	Diverticulectomy with a hardware suture	Ileal resection, inter-intestinal anastomosis	Resection of ileum, ileostomy
Number of operations (n)	7	15	18	18	7
On the technique of diverticular ectomy	Diverticulectomy without bowel resection			Removal with resection of the carrier intestine	
	n = 40 (61,5%)			n = 25 (38,5%)	

Resection of the ileum bearing diverticulum was performed in the presence of changes in the intestine due to complications such as strangulation intestinal obstruction, obstruction, diverticulitis with perforation and peritonitis.

Conclusions:

1. Unreduced bile duct can occur in children at any age and with various complications.
2. Newborns and children of early age there is intestinal obstruction, usually strangulation of character. Bleeding from Meckel's diverticulum had a subacute clinical picture and was observed in children aged 3-6 years. Diverticulitis was more often diagnosed in older children during surgery for acute appendicitis. Intestinal obstruction against the background of Meckel's diverticulum can occur at any age.

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