

## ANALYSIS OF THE USE OF ULTRASONOGRAPHY IN THE DIAGNOSIS AND TREATMENT OF INTESTINAL OBSTRUCTION IN CHILDREN

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**Summary.** *Over the past 10 years, 266 children aged 5 months to 16 years with a diagnosis of acute intestinal obstruction were treated at the Specialized Children's Surgical Clinic of SamSMU. In the complex of diagnostic studies for suspected intestinal obstruction, in addition to traditional methods, we included ultrasonography of the abdominal cavity; in addition, according to indications, we perform multislice computed tomography. This method allowed successful diagnosis, sharply reduced the number of x-ray examinations and, thereby, reducing the overall radiation exposure to the patient and staff, and also significantly increased the percentage of conservatively treated patients with intussusception.*

**Key words:** *acute intestinal obstruction, abdominal ultrasonography, children.*

## АНАЛИЗ ИСПОЛЬЗОВАНИЯ УЛЬТРАСОНОГРАФИИ В ДИАГНОСТИКЕ И ЛЕЧЕНИИ ОСТРОЙ КИШЕЧНОЙ НЕПРОХОДИМОСТИ У ДЕТЕЙ

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**Резюме.** *За последние 10 лет в Специализированной детской хирургической клиники СамГМУ, находились на лечение 266 детей в возрасте от 5 мес до 16 лет с диагнозом «острая кишечная непроходимость». В комплекс диагностических исследований при подозрении на кишечную непроходимость, кроме традиционных методов включили ультрасонографию брюшной полости, кроме того, по показаниям проводим мультиспиральную компьютерную томографию. Данный метод позволил успешно произвести диагностику, резко снизил количество рентгенологических исследований и, тем самым, уменьшая общую лучевую нагрузку на пациента и персонал, а также значительно повышается процент консервативно излеченных больных при инвагинации кишечника.*

**Ключевые слова:** *острая кишечная непроходимость, ультрасонография брюшной полости, дети.*

**Topicality.** Among acute surgical diseases of the abdominal cavity in children, acute intestinal obstruction ranges from 1.2 to 9.4%, ranking second after acute appendicitis, but, at the same time, the incidence of adverse outcomes is much higher than in other forms of acute abdominal pathology [1, 3, 6].



X-ray examination remains the traditional and most accessible method of diagnosing intestinal obstruction, but in recent years, ultrasound examination has become increasingly important in the diagnosis of intestinal obstruction [2, 4, 5].

**Purpose of the work:** Assessment of the Significance of Ultrasonography in the Complex of Diagnostic Studies in Acute Intestinal Obstruction in Children.

**Material and methods of research.** We analyzed the results of examination and treatment of 266 children with various forms of acute intestinal obstruction, who were in the Department of General Surgery No. 1, specialized pediatric surgical clinic of Samarkand State Medical University, over the past 10 years. Children aged 5 months to 1 year accounted for 61 (23%), 1-3 years - 35 (13%), 3-7 years - 50 (19%), 7-16 years - 120 (45%). 32 (12%) patients were admitted within 6 hours from the onset of the disease, 29 (11%) patients were admitted within 6-12 hours, 65 (24%) patients were admitted within 12-24 hours, and 140 (53%) patients were delivered later than 24 hours.

The structure of acute intestinal obstruction was presented as follows: adhesional intestinal obstruction was observed in 104 (39%) children, intussusception in 71 (27%), various forms of obstructive obstruction in 39 (14.6%), ileus based on Meckel's diverticulum in 32 (12%), paralytic obstruction in 20 (7.4%) sick children.

In addition to traditional methods (anamnestic data, clinical symptoms, physical examination, X-ray methods), we have included ultrasonography (ultrasound) of the abdominal cavity in the complex of diagnostic tests for suspected intestinal obstruction, in addition, if indicated, we perform multispiral computed tomography (MSCT). Ultrasonic monitoring is performed on devices using linear and convex sensors with a frequency of 3.5-7.5 MHz and more. It should be noted that this method of examination is the most acceptable for children, due to the absence of radiation and the possibility of repeating this examination several times.

**Результаты исследования и их обсуждение.** Ultrasonography allowed us to visualize the echographic signs characteristic of individual types of intestinal obstruction, as described in the relevant guidelines [4, 5]. The area of dilated



intestinal loops above the obstacle, pendulum-like movement of the intestinal chyme, weakening or absence of peristalsis in this area, the presence of effusion in the abdominal cavity in the late stages of the disease, changes in the vascular pattern on color Doppler mapping (CDM).

The most common form of acute intestinal obstruction was postoperative adhesional intestinal obstruction (AIO) - 104 patients. Of these, 86 (83%) were previously operated on for purulent-destructive forms of acute appendicitis and appendicular peritonitis, 18 (17%) - for other acute surgical diseases of the abdominal cavity (abdominal injuries, intestinal obstruction, etc.). 26 (25%) patients had early AIO, and 78 (75%) had late. In 22 (21%) cases, the phenomena of intestinal obstruction were relieved by conservative measures, 82 (79%) patients underwent surgical dissection of interintestinal adhesions. In 3 cases, due to late admission, necrosis of a section of the small intestine was detected and resection of the necrotic part of the intestine with an end-to-end anastomosis was performed. At the same time, it was possible to clearly determine the signs of circulatory disorders at the CDM.

Acute intestinal obstruction based on Meckel's diverticulum was represented by various variants of volvulus or compression of the small intestine (26), intussusception (6). Ultrasound made it possible to visualize not only dilated and collapsed intestinal loops, but sometimes also the volvulus site.

Ultrasound is the most informative for intestine intussusception, as it allows you to clearly objectify the presence of intussusception, including small intestinal invagination, establish localization and structure, identify direct and indirect signs of complications, and, thus, determine the choice of conservative or surgical treatment tactics. For example, on a cross-sectional scan, the small intestine invaginate is visualized as an echopositive rounded formation with the presence of alternating concentric layers corresponding to the boundaries of the inner and outer cylinders and the number of cylinders involved in the invaginate. On longitudinal scanning, the invaginate has the appearance of an echo-positive mass with a characteristic layered structure. In the literature, this echosemiotics is described as a symptom of



the "target", "pseudokidney" and is recognized as the "gold standard" of ultrasound diagnosis of intussusception. Signs of the late stage of intussusception and possible complications are the localization of the head of the intussusception in the left half of the abdominal cavity, the accumulation of fluid between the layers and in the head of the invaginate, the absence of intestinal motility, the presence of enlarged mesenteric lymph nodes. Echo signs such as lack of blood flow in the walls of the intussusception, "passive" colon, accumulation of fluid in the abdominal cavity indicated ischemic disorders in the intussusception and peritonitis, which was confirmed intraoperatively.

Of the total number of children with intussusception (71), 41 (58%) patients underwent conservative treatment: 29 of them underwent pneumatic disintussusception under X-ray guidance. Recently, we have been applying hydrostatic disinvagination with a 1.5% sodium chloride solution under ultrasonography control. Treatment according to this method is started for all children admitted with signs of intussusception, regardless of the age of the disease and the age of the child, in the absence of peritoneal phenomena and small intestinal intussusception. This method was used in 12 patients, of which in 1 case it was not possible to completely straighten the intussusception, laparotomy revealed an organic cause - a polyp of the cecum. 30 (42%) patients were operated on due to late admission and failure of conservative measures: manual disinvagination was performed in 24 patients, and 6 patients underwent resection with anastomosis due to intestinal necrosis.

It should be noted that ultrasound allows to clearly visualize infiltrative and tumor-like formations of the abdominal cavity (11 patients), which also makes it possible to establish the mechanical nature of intestinal obstruction even before surgery and determine the optimal tactics of surgical treatment. In addition to the tumors themselves, echographically in the abdominal cavity clearly identified cystic formations (9 patients), in most cases these are cysts of the mesentery and omentum. One of the forms of intestinal obstruction is obturation of the intestinal lumen by roundworms, which can also be detected by ultrasound, we observed 3 cases of this pathology, in all cases enterotomy was performed with the extraction of parasites.



**Conclusion.** Thus, ultrasonography significantly expands diagnostic capabilities, unlike X-ray methods, eliminates radiation exposure to the patient and staff, is a highly informative, non-invasive and effective method of diagnosis in various forms of intestinal obstruction, and allows you to determine the optimal treatment tactics and monitor the effectiveness of treatment.

**References.**

1. Ashcraft T.U., Holder T.M. Pediatric surgery. - St. Petersburg, Pit-Tal. - 1997. – Volume I-II.
2. Vasilyev A.Yu., Vasilyeva M.A., Martirosyan N.K. Dynamic ultrasound monitoring of the postoperative course of intestinal obstruction. Radiology and Practice- 2007.- No4.- P.29-31.
3. Geraskin A.V. Children's Surgery: Clinical Analysis.- Moscow: GEOTAR-Media, 2011.-216 p.
4. Gisak S.N., Golovacheva T.V., Chagina V.V., Kadushev V.E., Kechedzhi V.V. Informativeness of ultrasound diagnostics of acute intestinal obstruction. Medical Bulletin of the North Caucasus - 2009. - №1. –P.33-34.
5. Dibirov M.D., Vasiliev A.Yu., Rodionov I.E., Martirosyan N.K. "Diagnosis and Choice of Treatment Method for Acute Intestinal Obstruction". Textbook for doctors. Moscow, 2006, p. 70.
6. Shamsiev J.A., Imamov D.O., Makhmudov Z.M. Intestinal stomas in pediatric coloproctology. International Journal on Integrated Education. Volume 4, Issue 3 March 2021 pp. 256-260