

The Algorithm of Radiation Diagnosis of Acute Intestinal Obstruction, Taking into Account Clinical, Radiological and Ultrasound Methods of Investigation

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ABSTRACT

Taking into account the high informativeness of ultrasound, today indications for the examination of the stomach, duodenum and other hollow organs, including in cases of suspected OCD, are an erased clinical picture, the presence of an unclear cause of abdominal pain, palpable volumetric formation. High mortality and difficulties in the diagnosis of various forms of acute intestinal obstruction still determine the need to introduce modern methods of examination of patients into clinical practice. This was made possible by the introduction of new technologies. Traditionally, clinical and radiological studies are of primary importance in OCN syndrome. At the same time, special attention in urgent surgery is paid to the infusionless time is devoted to ultrasound examination. According to a number of authors, ultrasound promotes differentiated patient management tactics even with erased clinical manifestations, including OCD.

Actuality: The desire to minimize the time of diagnostic search, to combine diagnostic measures with therapeutic ones, certainly applies to ultrasound examination with OCN [6,7,26]. Of great interest are the few publications about the possibility of applying gastrostomy under ultrasound control for nutrition in extremely severe patients for whom laparotomy or EGDS are intolerable or technically impossible. Puncture percutaneous discharge colostomy is also being introduced into practice in case of tumor intestinal obstruction [7,9]. It is possible to combine ultrasound of hollow organs with puncture-aspiration biopsy (percutaneous and endoscopic) to clarify the cytological characteristics of the pathological focus [9].

Ultrasound examination of the abdominal cavity is already a universal method of screening diagnostics in emergency surgery in patients with an "acute abdomen" and palpable volume formation of the abdominal cavity. The more unclear the clinic of the disease, the more obvious the advantages of ultrasound in terms of the possibility of finding pathology. The use of ultrasound as a screening diagnostic method for patients with abdominal pain syndrome, intestinal paresis allows them to determine the diagnosis and refuse further examination in every fifth patient. Ultrasound is especially informative for non - palpable abdominal tumors. In

addition to the possibility of establishing obvious ultrasound signs of diseases of the stomach, small intestine and colon, the method allows you to differentiate such conditions, assess the level of gastrointestinal tract damage, identify metastatic liver and lymph nodes, germination of surrounding tissues and organs, assess patency, motor evacuation function of a particular part of the digestive tube.

The first reports on the use of ultrasound in the diagnosis of diseases of hollow organs date back to 1973. The era of examination began with a study of the stomach, when it was possible to visualize its wall and purposefully observe the motor-evacuation activity of the gastrointestinal tract [7]. This became possible based on the evaluation of the weak reflection of rectilinear ultrasonic waves from the boundary of the media between the wall of the hollow organ and the air or liquid in its lumen [4]. However, until recently, due to difficulties in interpreting the acoustic picture of the gastrointestinal tract, ultrasound was rarely used in diagnosis. Ultrasound has received the greatest recognition in oncology as a method of clarifying the prevalence of the tumor process, searching for distant metastases when examining patients on a planned basis. [11, 29].

The impetus for a more in-depth study of the possibilities of ultrasound in the diagnosis of diseases of hollow organs was numerous publications on the role of ultrasound in the diagnosis of intussusception [10] and acute appendicitis [7]. Modern ultrasound devices equipped with convex sensors operating in modes from 3.5 to 20 MHz made it possible to examine in more detail the structure of the wall of the stomach and intestine, to detail the condition of the mucous, submucosal and muscular membranes [6]. This circumstance has significantly expanded the possibilities of contact ultrasound in the diagnosis of gastrointestinal diseases, including those leading to disruption of passage through the digestive tube. There were mentions of the combined use of a fibroscope and a miniature ultrasonic sensor [8].

Taking into account the fact that in violation of the passage through the gastrointestinal tract, patients develop gastrostasis phenomena, it is recommended to pay attention to the condition of the stomach, the thickness of its walls and the volume of contents in case of suspicion of OCN [3,4]. However, the symptom cannot be considered strictly specific. For example, the detection of contents in the stomach on an empty stomach is characteristic of any hypersecretory state [19,23]. The sensitivity of contact ultrasound ranges from 77.7 to 82.4 and even 95.2% [8]. At the same time, the differential diagnosis of pyloroduodenal stenosis and OCN requires an assessment, first of all, of the condition of the stomach walls [4]. Normally, on an echogram, the stomach in any part of it is represented by a volumetric structure with a hypoechoic wall and a hyperechoic lumen. On the transverse sections, the stomach is visualized in the form of a ring, on the longitudinal sections — in the form of a brace or a semi-oval. The hyperechoic center corresponds to the interstitial spaces with mucus and/or contents. The greatest contrast can be achieved in the presence of fluid not only in the stomach, but also in the lumen of the gastrointestinal tract [17]. Moreover, this is possible both during a routine examination with directed filling of the stomach [19], and with the phenomena of gastrostasis, which may be a consequence of a violation of the passage through the gastrointestinal tract.

In recent years, much attention has been paid to the description of the echosemiotics of the unchanged stomach wall and its pathology [19, 22, 24, 25, 27, 28]. Consideration of this parameter is essential for the initial examination of patients in urgent situations with differential diagnosis. Echographically, the wall of an unfilled stomach consists of three layers: external (serous) and internal (mucous) hyperechoic, hypoechoic (muscular) membranes between them

[8]. The difference in acoustic density between the gastric mucosa and its intraluminal contents explains the variation in the intensity of the echo signal from the boundary of the gastric mucosa/lumen media. According to a number of authors, normally, when filled with liquid (which should be taken into account in gastrostasis of various genesis), even five layers of the gastric wall are differentiated, corresponding to certain histological structures and media boundaries [4]. Not all authors adhere to this interpretation [19]. It is quite obvious that the correct interpretation of the layers of the stomach allows you to recognize the pathological conditions of its wall.

Taking into account the high informativeness of ultrasound, today indications for examination of the stomach, duodenum and other hollow organs [7], including in cases of suspected OCD, are an erased clinical picture, the presence of an unclear cause of abdominal pain, palpable volume formation [6]. The ability to assess the condition of the tissues and organs surrounding the stomach, to clarify the prevalence of the exoorgan component (in the presence of ulcers, tumors) helps to determine therapeutic tactics [9]. Ultrasound examination becomes especially valuable if EGDS, X-ray examination (including CT) is impossible or the patient refuses an invasive follow-up examination. This is important for cardiopulmonary decompensation, extreme severity of the patient's condition, convulsive syndrome, curvature of the cervical spine, pregnancy. The primary ultrasound examination becomes very significant in the stenosis of the output part of the stomach, gastro- and duodenostasis of various genesis [4, 5, 8, 10, 19, 22].

The aim: improving the results of the diagnosis of acute intestinal obstruction by improving the methods of ultrasound examination of the gastrointestinal tract.

Materials and methods: 70 patients with acute intestinal obstruction who were treated in the conditions of the general surgical hospital of the RSCEMP of the city of Bukhara appeared. To solve the tasks, the results of the examination of 70 patients with various forms of intestinal obstruction were analyzed. To assess the clinical significance of ultrasound, two groups of patients with various forms and causes of OCD were compared using this method and without it. The final diagnosis in patients was verified as a result of a comprehensive examination and intraoperative data, which minimizes the percentage of false data. In all observations of the analyzed groups, the OCN was of an acquired nature.

Results: The intestinal obstruction in 28 out of 70 cases, i.e., the intra-intestinal process in the abdominal cavity led to obstructive OCN. They were diagnosed in 20 out of 34 cases with obstructive OCN (6.8%). Only in 8 cases, bowel obturation was caused by stones and bezoar. In 35 cases out of 70 (50%), strangulation OCN was diagnosed (Fig.1).

Invagination (1), abdominal adhesions (4) and strangulated hernia (2) led to a mixed form of OCN (7 out of 70 (10%)).

Distribution of patients by disease duration

All patients were admitted to the hospital for emergency indications. Most patients were admitted 2-6 hours after the onset of the disease.

In the group of patients with suspected OCD, the examination was carried out in the first 6 hours from the moment of the disease in 19 cases (27.5%), from 6 to 24 hours - 16 (23.3%), and later than 24 hours - 35 (49.2%).

The clinical picture of OCN is diverse. At the stages of its development, when there are cramping pains, repeated vomiting, flatulence, prolonged retention of stool and gases, symptoms

of accumulation of free fluid in the abdominal cavity, the diagnosis is relatively easy. At the beginning of the disease, when these main signs are indistinct and unstable, diagnostic errors occur. Moreover, the value of the listed symptoms is far from equivalent, since the manifestations depend on the type of obstruction, the level of obstruction and the prescription of the disease.

In all groups, patients were compared according to various indicators. The average age of patients with OCD was 56.42 ± 19.85 . At the same time, in groups of patients with various causes of OCD, there is a significant difference in the age indicator. Obstructive obstruction in patients younger than 65 years was diagnosed in 40% of cases (28 people), strangulation - in 35 cases (50%), and among patients with tumor causes of OCD, the syndrome was more common in the elderly (over 65 years old) and the elderly. Among the elderly (over 75 years old) in the presented groups, the relative number of patients did not differ much.

Distribution of patients by disease duration

All patients were admitted to the hospital for emergency indications. The majority of patients in the main and control groups were admitted 2-6 hours after the onset of the disease — 70 patients with OTMN. Less often, patients were admitted for more than 6 hours, both in the main and in the control groups of 50 (35.2%).

On average, the time of admission from the moment of the disease is 4.98 ± 3.63 hours.

Upon admission and in dynamics on the 3rd, 5th, 7th day, ultrasound of the abdominal cavity and kidneys was performed, if necessary, in the presence of indications and concomitant pathology, ultrasound of the pleural cavities, ultrasound of the vessels of the lower extremities on the LOGIO 400MD device from General Electric (USA).

During the study, attention was paid to the presence and amount of free fluid in the abdominal cavity, its localization and nature. The presence and degree of dilatation of various parts of the intestine, the thickness of the intestinal wall, the nature of the intestinal contents (the presence of liquid and gas) were determined. Motor-evacuation activity of the intestine was determined (normal, increased, decreased, absent). Before ultrasound, a nasogastric probe was installed to evacuate liquid gastric contents.

Conclusions: High mortality and difficulties in the diagnosis of various forms of acute intestinal obstruction still determine the need to introduce modern methods of examination of patients into clinical practice. This was made possible by the introduction of new technologies. Traditionally, clinical and radiological studies are of primary importance in OCN syndrome. At the same time, special attention in urgent surgery is paid to the infusionless time is devoted to ultrasound examination. According to a number of authors, ultrasound promotes differentiated patient management tactics even with erased clinical manifestations, including OCD. In the last two decades, many works have appeared in the literature devoted to the echosemiotics of OCN, the use of new scanner capabilities (duplex research). Evaluation by sonography of the nature of changes in the small intestine (its diameter, wall thickness, the nature of peristaltic activity) makes it possible to differentiate with high reliability the mechanical and dynamic forms of acute intestinal obstruction.

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