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Providing Emergency Medical Care for Certain Diseases in the Practice of Ultrasound Diagnostic Specialists

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Abstract: The article summarizes the long-term experience (2016-2022) of the Department of Ultrasound Diagnostics using ultrasound in the diagnosis of acute injuries and damage to various organs and organ systems. The use of ultrasound diagnostics increased, which increased the need for its differential diagnosis, that is, the participation of doctors of other specialties with appropriate training in ultrasound. The main complication of ultrasound as an important method is the examination of seriously ill and injured patients according to urgent instructions.

Keywords: ultrasound diagnostics, ultrasound, acute disease, damage of various organs, diagnosis according to urgent indications.

Intraduction. Nowadays, ultrasound, as one of the most modern methods for diagnosing diseases of organs and systems, and medical specialists of various fields take a strong place in the work process[1,5,9].This is evidenced by the significant increase in the number of studies in recent years, which is primarily due to the increase in the number of doctors, offices and departments of ultrasound diagnostics (USD) in medical institutions, but also with the rapid proliferation of ultrasound scanners of various classes. This trend will undoubtedly increase in the future due to the wide implementation of high-tech techniques such as elastography, ultrasound examination with contrast agents, puncture of various organs under ultrasound control, and in the future - automatic ultrasound navigation of pathological foci. Due to the expansion of research areas, there was a need to separate ultrasound as a separate diagnosis from other methods of radiation diagnostics (in particular, radiology), as well as to specialize in individual organs and systems, and specialized medical organizations. Today, this problem has been successfully solved[3,7]. In the offices of the ultrasound department, patients with various diseases are examined: abdominal cavity, kidneys and genitourinary system; musculoskeletal system and soft tissues; small organs (thyroid gland, mammary glands, salivary glands), peripheral lymph nodes. Examination of the peripheral vessels of the heart and extremities, as well as the vessels of the neck and head, is carried out by highly specialized doctors of the functional diagnostics department; examination of the uterus and ovaries is carried out by gynecologists; under ultrasound control, punctures of peripheral veins are performed by anesthesiologists for their catheterization; punctures of the pleura and abdominal cavity, kidneys, joints, as well as volume formation of soft tissues, thyroid glands, mammary glands by doctors with special training and experience (surgeon, traumatologist, urologist, oncologist) performed together in ultrasound rooms.

Our experience have developed a certain clear algorithm for the operation of all ultrasound rooms with the goal of timely, high-quality and complete examination of all patients and victims[1,6,3].

Materials and methods. Special attention is given to patients who need ultrasound due to urgent reasons. Thus, as determined by the attending physicians, all patients should undergo an initial ultrasound examination within the first two days after hospitalization. For urgent instructions, patients and injured patients are admitted to the emergency department for ultrasound examination in the first hours by calling the doctor on duty. Solving this important problem is related to the rational distribution of ultrasound scanners between rooms and placing these rooms as close as possible to the wards of medical departments. All intensive care units and intensive care units have portable small-sized ultrasound scanners that allow for high-quality ultrasound examination at the patient's bedside.

Results and discussion. Diagnostic rooms (CT, X-ray, endoscopic) serving patients in the surgical departments are located nearby, which allows for comprehensive and rapid examination of critically ill patients and victims, as well as joint research. This approach to work organization has been introduced in other departments as well. An analysis of the work in the past few years shows that there is an increasing trend in emergency research, with relatively stable indicators of the total number of studies by year (2016-2022). Thus, in 2016, this indicator was 7 percent, in 2018 - about 9 percent, in 2021, 2022 - up to 12 percent. This is explained, first of all, by equipping ultrasound examination rooms with modern multi-functional ultrasound scanners, as well as by improving the quality of training of ultrasound examination doctors and their professional training in leading higher educational institutions. It is important to increase the awareness of other specialists about the possibilities of ultrasound in the diagnosis of diseases of specialized patients, as well as the constant communication between ultrasound doctors and treating doctors. In the local literature, there is relatively little information on the organization and performance of ultrasound in critically ill and injured patients for urgent ultrasound guidance. At the same time, the organization and conduct of ultrasound examinations in such a contingent of patients is associated with the incorrect behavior of patients during the study, their forced position, sometimes inconvenient for access to the studied organs, and the lack of basic training of the patients. causes serious difficulties. Flatulence during the study of the organs of the abdominal cavity, its presence in the field of study produces an artifact. In such conditions, ultrasound doctors require great experience and skills, close communication with treating doctors and knowledge of clinical data. Such experience is gained through the daily participation of ultrasound doctors in the examination of patients and victims. Taking into account the peculiarities of the work of our medical institution, gaining professional experience allows ultrasound doctors to improve their ability to conduct ultrasound examinations during mass admissions of patients and victims.

In addition, the organization and conduct of ultrasound examination for urgent indications, as well as the possibilities of ultrasound examination for some acute diseases are presented in articles published in the special medical journal in 2015-2018, doctors of the ultrasound department and specialized department lim doctors co-authors: 1.On the difficulties and possibilities of ultrasound diagnostics in the study of seriously ill and injured patients in intensive care units and intensive care wards in a military clinical hospital (“Chief Doctor of the South of Russia” 2016); 2.Possibilities of ultrasound in the diagnosis and treatment of pleural effusions (“Chief Doctor of the South of Russia” 2015).Unfortunately, when examining critically ill patients and victims in relatively worse conditions, as mentioned above, there are several other tasks that the ultrasound doctor must solve immediately, but it is a difficult problem to solve them all successfully. Thus, not in all cases, but when the patient is in a forced state, when the organs are damaged, it is possible to detect fluid in different parts of the abdominal cavity in the cavities of the intestine. It is difficult to determine the fluid in the pleural spaces and determine its location and amount for puncture in patients with injuries of the chest organs and combined injuries of the chest and abdominal organs, as well as in postoperative patients. It is very difficult to visualize the spleen and liver during respiratory failure and when the lungs are on an artificial ventilation device, it is impossible to rule out their damage. With severe flatulence, the effectiveness of diagnosing acute diseases of the pancreas is significantly reduced.

When the patient is forced to lie on his back during artificial ventilation, it is also significantly difficult to visualize the kidneys and the retroperitoneal space. According to our data, ultrasound is most effective in diagnosing acute cholecystitis and exacerbation of chronic calculous cholecystitis (96%). In choledocholithiasis, the efficiency of detecting stones in the common bile duct is significantly lower (76%). In renal colic, the problem of identifying the expansion of the abdominal systems, the causes of obstruction of the urinary tract and determining their patency during the initial study reaches 93%. In acute pancreatitis and exacerbation of chronic pancreatitis, the effectiveness of ultrasound is 76%, in intestinal obstruction - 82%, in acute appendicitis - 81%. When there is fluid in the pleural cavity, the efficiency of ultrasound is almost 98%, which is significantly higher than that checked by x-ray methods. Effectiveness of identifying direct signs of organ damage in case of damage to the abdominal cavity: for the liver - 63%, for the spleen - 84%, for the kidneys - 75%. The detection rate of free fluid in the abdomen is 86%, and in the pelvis is 89%. When combined with other methods (CT, X-ray methods, endoscopy) in a timely manner, the diagnostic efficiency is 82-90%, which allows the technical capabilities of the above methods, the reduction of research volume and their targeted use. This problem is done together with the patient's attending physician and doctors of relevant diagnostic departments.

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