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THE VALUE AND ROLE OF ULTRASOUND DIAGNOSTICS OF THE LUNGS IN PATIENTS WITH POST COVID SYNDROME

***Abstract.** In March 2020, the World Health Organization announced the outbreak of the novel coronavirus as a pandemic. The emergence of COVID-19 poses challenges for healthcare professionals to quickly diagnose and provide medical care to patients. According to Fang Y. et al., in the diagnosis of COVID-19, the sensitivity of CT (98%) was significantly higher than that of PCR (71%). However, the limitation of this method is the impossibility of its use at the patient's bedside and a certain contingent (children, pregnant women). Some clinics in China, Europe and Russia began to use ultrasound of the lungs (USIL) as an alternative imaging method. Ultrasound of the lungs demonstrates a high diagnostic value of various lung diseases and the specificity is superior to X-ray examination of the chest organs.*

***Keywords:** COVID-19, lung ultrasound, multislice computed tomography of the lungs.*

Purpose of the study: to study the possibility of determining the severity of fibrosis of the pulmonary parenchyma using lungs ultrasound of the (LUS) in patients with COVID-19.

Material and research methods. There were 281 patients under observation, with the presence of clinical manifestations of postcoid syndrome. As a comparison group (CG), 20 patients who had undergone COVID-19 and whose disease ended in full recovery were examined. Ultrasound examination of the lungs (LUS) was carried out using an ultrasound scanner with a convex probe with a frequency of 3.5 MHz. The presence and severity of infiltrative lesions of the pulmonary parenchyma were assessed according to a 4-point system: normal ultrasound picture (A-pattern) - 0 points, single B-lines (B-pattern) - 1 point, multiple B-lines ("white lung") - 2 points, consolidation of the pulmonary parenchyma (hepatization) and air bronchograms - 3 points. Multislice computed tomography(MSCT) of organs of the chest was performed on a tomograph using 128 slices according to the standard

technique.

Research results. According to MSCT data, in both groups of patients who underwent COVID-19, there was a significant decrease in the average volume of pulmonary parenchyma lesions. However, in the comparison group, the relative dynamics of MSCT was significantly greater than in the patients of the main group ($-51.65 \pm 26.63\%$ versus $-6.51 \pm 16.16\%$, respectively, $p < 0.001$). According to ultrasound scan data, the average score for the loss of airiness of the pulmonary parenchyma was 14.70 ± 10.65 points in the main group and 7.40 ± 6.54 points in the comparison group ($p < 0.001$). The sensitivity of ultrasound scanners in patients with COVID-19 in detecting changes in the lungs was 95.88% (4.22% false negative results), the specificity of detecting interstitial lesions of the pulmonary parenchyma was 90.00% (10% of false positive results), the diagnostic value was 95.68% (frequency of matching interpretation).

Conclusion. The sensitivity of ultrasound scanners in patients with COVID-19 (in relation to MSCT) in detecting interstitial changes in the pulmonary parenchyma and a decrease in the airiness of the lung tissue was 95.88%, specificity - 90%, diagnostic value - 95.68%. According to the detection of pulmonary fibrosis (a relatively new criterion for MSCT - the absence of dynamics), the relative sensitivity of the ultrasound scan was 87.88%, the specificity was 76.56%, and the diagnostic accuracy was 85.42%.

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