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The role of contrast-enhanced ultrasound in the diagnosis of focal liver lesions

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Introduction: At present, differential diagnosis of focal liver lesions usually identified at computed tomography (CT) or magnetic resonance imaging (MRI). The conventional ultrasound (US) offers no such comparable ability to characterize a focal liver lesion. The appearance of malignant liver lesions in ultrasound B-mode are very variable: they can be hypoechoic, hyperechoic; they can have a peripheral halo. For example, hemangioma and colorectal carcinoma metastases can be very similar and be hyperechoic in a grayscale. New imaging method - contrast enhanced ultrasound (CEUS) with micro bubble contrast agents has improved the ability of US to characterize a focal liver lesions. On CEUS, all liver malignant lesions can present a typical wash-out pattern in the portal and late phases.

Aim: Aim of our study was to evaluate the diagnostic value of CEUS for the characterization of focal liver lesions.

Materials & Methods: This prospective study was carried out at the Petrov Research Institute of Oncology, Ministry of Health, Russia. This study was approved by the institution review board at our institute and informed written consent was obtained from all of the reviewed subjects. 119 patients underwent conventional ultrasound examination including standardized CEUS of a focal liver lesion within our institute. The CEUS results were compared with the CT or MRI. Final diagnosis was based on histology.

Results: CEUS is more sensitive than conventional US for the detection of focal liver lesions. The efficacy of CEUS examination is similar to that of contrast CT and MRI. CEUS may play a significant role in questionable diagnostic situations owing to its ability to visualize characteristic features of different liver lesions therefore, helping to adequately plan the treatment strategy.

Conclusion: It should be noted that the high diagnostic potential of CEUS of focal liver lesions do not decrease the capabilities of the other diagnostic methods (CT and MRI), and in particular cases can supplement them. Therefore, the role of CEUS, in our opinion, should be limited to the use in difficult differential diagnostic cases.

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