

COMPREHENSIVE ULTRASOUND AS A TRIAGE TOOL IN THE DIFFERENTIAL DIAGNOSIS OF FOCAL LIVER LESIONS

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Keywords: focal liver lesions; ultrasound; color Doppler imaging; elastography; contrast-enhanced ultrasound.

Relevance. Focal liver lesions are found ever more often as incidental findings on routine abdominal ultrasound. Most of them are benign, such as simple cysts, hemangiomas and focal nodular hyperplasia. However, hepatocellular carcinoma and metastases may look very similar at first examination. Magnetic resonance imaging (MRI) resolves most of these doubts, but it is expensive and not available everywhere. Clear criteria are therefore needed to decide which lesions can be followed with ultrasound alone and which require MRI.

Aim. To analyze current literature on the diagnostic value of B-mode, color Doppler imaging, shear wave elastography and contrast-enhanced ultrasound (CEUS), and to define the place of comprehensive ultrasound as the first, triage step in the work-up of focal liver lesions.

Materials and methods. International guidelines (EASL, WFUMB, EFSUMB) and widely cited reviews indexed in PubMed and Scopus were analyzed, with a focus on ultrasound signs that separate benign from malignant lesions.

Results and discussion. B-mode ultrasound reliably identifies simple cysts by their anechoic content, thin wall and posterior acoustic enhancement. A typical hemangioma appears as a small, well-defined, homogeneously hyperechoic lesion. Its appearance may change, though, against a fatty liver, and some metastases are also hyperechoic [3, 4]. Color Doppler imaging adds information on the vascular pattern. A spoke-wheel arterial flow suggests focal nodular hyperplasia, whereas chaotic intratumoral vessels favor malignancy. Shear wave elastography measures the stiffness of both the lesion and the background liver, but values overlap and must be read together with B-mode findings [2]. CEUS shows lesion perfusion in real time. Washout in the portal and late phases is the key sign of malignancy, while peripheral nodular enhancement with centripetal fill-in is typical of hemangioma [1, 4]. Based on these

signs, lesions can be sorted into three groups: typical benign (follow-up with ultrasound), indeterminate (targeted MRI) and suspicious (mandatory MRI and, if needed, biopsy).

Conclusion. Comprehensive ultrasound combining B-mode, color Doppler imaging and elastography, supplemented by CEUS where available, can serve as an effective triage step. It confirms typical benign lesions without further imaging and directs MRI to the patients who truly need it. This approach makes better use of MRI resources and shortens the time to diagnosis of malignant lesions.

References

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