

Performance of B-mode ratio and 2D shear wave elastography for the detection and quantification of hepatic steatosis and fibrosis after liver transplantation

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OBJECTIVES: To evaluate the diagnostic performance of B-mode ratio and shear wave elastography (SWE) for the assessment of steatosis and liver fibrosis after liver transplantation.

MATERIALS AND METHODS: Patients hospitalized for a systematic check-up after liver transplantation underwent the same day hepatic ultrasound with B-mode ratio and SWE, followed by liver biopsy and biological examinations. Steatosis was measured using hepatorenal sonographic index of B-mode ratio and liver stiffness using SWE. Liver biopsy, used as gold standard, graded steatosis S0(<5%), S1(5-<33%), S2(33-<66%), or S3(\geq 66%) and liver fibrosis according to the Metavir score. The results were tested against two external validation cohorts.

RESULTS: Fifty-eight patients were included. Mean B-ratio value was significantly higher in patients with steatosis (0.95 ± 0.13 versus 1.39 ± 0.41 , $P < 0.001$). A B-mode ratio cutoff values at least 0.985 was found optimal for steatosis' detection [area under the receiver operating characteristic curve (AUROC) 0.902 ± 0.05 , sensitivity 95%, specificity 79%]. A B-mode ratio value below 0.9 ruled out steatosis and above 1.12 ruled in steatosis. Mean SWE value for patients without significant fibrosis (\leq F1) was 15.90 ± 9.2 versus 19.27 ± 7.7 kPa for patients with fibrosis ($P = 0.185$). A 2D-SWE value below 7.85 kPa ruled out significant fibrosis and above 26.35 kPa ruled it in.

CONCLUSION: The B-mode ratio is an efficient and accurate tool for the noninvasive diagnostic of steatosis in postliver transplantation patients. Yet, because liver stiffness is higher in postliver transplantation patients, 2D-SWE is not reliable in the diagnosis of significant fibrosis after liver transplantation.

Résumé en anglais

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