

Noninvasive Assessment of Liver Fibrosis via Spleen Stiffness Measurement using Acoustic Radiation Force Impulse Sonoelastography in Patients with Chronic Hepatitis B or C

Background/Aims: Portal hypertension and splenomegaly are common in patients with cirrhosis. However, there is limited previous *in vivo* research on the correlation between spleen stiffness and stages of liver fibrosis. This study aimed to evaluate the diagnostic value of spleen stiffness measurement (SSM), using Acoustic Radiation Force Impulse (ARFI) technology, for liver fibrosis assessment. **Methods:** Eligible patients with chronic hepatitis B or C (n = 163) underwent concurrent liver stiffness measurement (LSM), SSM, and percutaneous liver biopsy. Receiver operating characteristic curves estimated the diagnostic performance of SSM, with multiple linear regression models for LSM and SSM determining the significance of explanatory factors. **Results:** Results indicated significant correlation between LSM and SSM ($R^2 = 0.574$, $P < 0.0001$). Using SSM to classify METAVIR fibrosis (METAVIR F) scores, the areas under curves (AUCs) were 0.839 (95 % CI: 0.780-0.898) for METAVIR F1 vs. F2-4, 0.936 (95 % CI: 0.898-0.975) for F1-2 vs. F3-4, and 0.932 (95 % CI: 0.893-0.971) for F1-3 vs. F4; all $P < 0.001$. Multiple linear regression models identified BMI, spleen stiffness, METAVIR F3 and F4, serum alanine aminotransferase, international normalized ratio of prothrombin time, sodium,

and platelet count as significant independent explanatory factors for liver stiffness (adjusted $R^2 = 0.724$, $P < 0.001$). Male gender, liver stiffness, METAVIR F2, F3, and F4 also significantly and independently explained spleen stiffness (adjusted $R^2 = 0.647$, $P < 0.001$). **Conclusions:** ARFI SSM is potentially useful as a single or adjunct predictor of stages of liver fibrosis.