SS 09 AB-08 17:10 English

Efficacy of liver stiffness measurement by supersonic shear wave elastography for diagnosis of significant and severe portal hypertension in chronic liver disease

Seung Hyun Kim, Woo Kyoung Jeong, Yongsoo Kim, Min Yeong Kim, Soo Yeon Kim
Hanyang University Guri Hospital, Korea.
jeongwk@hanyang.ac.kr

PURPOSE: To assess the correlation between liver stiffness (LS) measured by Supersonic shear wave elastography (SSWE) and hepatic venous pressure gradient (HVPG), and to investigate the diagnostic performance of LS by SSWE for significant (HVPG $\geq$ 10 mmHg) and severe ($\geq$ 12 mmHg) portal hypertension (PH).

MATERIALS AND METHODS: This retrospective study was approved by our institutional review board, and written informed consent was waived. Clinical data of cirrhotic patients (n = 105) with hemodynamic measurement along with healthy patients (n = 11) were consecutively collected between September 2010 and January 2012. A healthy patient was defined as a person who showed no evidence of PH and was verified to have no significant fibrosis ($\leq$ F1 according to METAVIR score system) on liver biopsy. We repeatedly performed SSWE and calculated the median value (representing LS) and interquartile range divided by the median (IQR/M) from several measurements per patient. LS measurement was performed on the same day of HVPG measurement. Pearson correlation test and receiver operating characteristic curve (ROC) were used to evaluate the correlation and performance between LS and severity of PH.

RESULTS: Mean LS of cirrhotic and healthy patients were 28.2 and 6.43 kPa, respectively ($p < .05$). Mean IQR/M of cirrhotic and healthy patients were 0.12 and 0.15, respectively ($p = .422$). Of 116 patients, significant and severe PHT were in 93 patients (80.2%) and 81 patients (69.8%), respectively. The values of HVPG were moderately correlated with LS ($r = 0.575$; 95% CI, 0.431–0.691; $p < .05$). The areas under the ROC curves for the diagnosis of significant and severe PH were 0.930 (95% CI, 0.868–0.969; $p < .05$) and 0.854 (95% CI, 0.777–0.913; $p < .05$), respectively. When the cut-off values for prediction of significant and severe PH were 15.2 and 18.5 kPa, respectively, the sensitivities were 90.3% and 86.4%, and the specificities were 91.3% and 77.1%, respectively.

CONCLUSION: LS measured by SSWE is positively correlated with HVPG and it is useful to diagnose significant and severe PH.