Diagnosis of Fibrosis Using Shear Wave Elastography in Non-alcholic Fatty Liver Disease

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Abstract

Background: The progression of liver fibrosis is an important prognostic factor of non-alcoholic steatohepatitis (NASH), and assessing the liver fibrosis stage is important in NASH patients. In this study, liver fibrosis measurements using ultrasound shear wave elastography (SWE) were carried out in NASH patients, and the usefulness of SWE was examined by comparing the findings with fibrosis stages based on liver biopsy results.

Methods: The study was carried out on 93 patients with non-alcoholic fatty liver disease (NAFLD), who had been examined with both SWE and liver biopsy at the same time between April 2016 and March 2017. Aplio 500™ with 3.75 MHz convex probe (Canon Medical Systems) was used as the diagnostic ultrasound equipment.

Results and discussion: The NASH patients showed a positive correlation between the liver fibrosis stage and the shear speed found in SWE. The SWE was significantly higher in Stage 3 than in Stages 0-2 ($p<0.0001$; cut off, 1.52 m/s (7.1 kPa)). There was a correlation between SWE and liver fibrosis grade, but no correlation between SWE and intrahepatic fat. Examination by SWE was unsuccessful in 29.3% of patients due to subcutaneous fat and BMI. Although subcutaneous fat and BMI were observed to affect SWE measurements in some patients, intrahepatic fat had little effect.

Conclusions: SWE is useful as a non-invasive method for the diagnosis of fibrosis in NASH patients.

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