

Clinical applicability of two-dimensional shear wave ultrasound for evaluating liver fibrosis stage

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Background: Several real-time two-dimensional shear wave elastography (2D-SWE) have been developed to assess liver fibrosis with readily use of combining elastography and traditional ultrasound imaging. However, compared with transient elastography (fibroscan), the diagnostic accuracy and clinical usefulness of these methods were not fully validated. In this study, newly developed 2D-SWE (LOGIQ E9, GE healthcare, UK) was evaluated for predicting liver fibrosis stage and compared with fibroscan. **Methods:** Out of 1,395 patients who received 2D-SWE during May 2015 to Apr 2016, seventy(5.0%) who failed to get available value of 2D-SWE due to obesity and 131(9.4%) with high value of AST or ALT were excluded in the analysis. Liver biopsy was performed in 177 patients. 2D-SWE measurement was considered valid when homogenous color pattern in a region of interest of at least 10 mm was shown at 10 different sites. Diagnostic performance was calculated using area under the receiver operating characteristics curve (AUROC). **Results:** Patients were male predominant (60.8%), their mean age was 50.4±12.4 years old and most common etiology of liver disease was hepatitis B(40.3%) followed by alcohol(26.1%). Liver fibrosis stage consisted of F0(14.1%), F1(12.4%), F2(28.8%), F3(18.1%) and F4(26.6%). Overall, 2D-SWE was well correlated with transient elastography ($r=0.788$, $p<0.001$). 2D-SWE median values (kPa) increased with increasing stage of liver fibrosis[F0 (5.0±1.5), F1 (6.4±2.3), F2 (6.5±2.0), F3 (9.0±2.7), F4 (12.7±2.9)] (p for trend <0.001). For the diagnosis of liver cirrhosis, AUROCs and optimal cutoff of 2D-SWE were 0.928 (95% confidence interval [CI], 0.890-0.967) and 10.1 kPa. The sensitivity, specificity, positive predictive value and negative predictive value for predicting cirrhosis were 82.2%, 92.2%, 78.7% and 93.7% respectively. For diagnosing significant liver fibrosis ($\geq F2$), AUROCs and optimal cutoff of 2D-SWE were 0.913 (95% CI, 0.870-0.956) and 7.99kPa. **Conclusions:** With good comparability to fibroscan and availability of a conventional ultrasound examination, Two-dimensional SWE is an useful tool for stratifying liver fibrosis stage and diagnosing liver cirrhosis.

Hepatic resection versus radiofrequency ablation for single HCC up to 5 cm in diameter

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Background & Aims: Once diagnosed with hepatocellular carcinoma (HCC), optimal selection of treatment for HCC is needed to improve patient survival. Recently, radiofrequency ablation (RFA) has been recommended as an alternative treatment for early HCC. However, there is still controversy whether role of RFA could be extended to intermediate stage-HCC with single tumor up to 5 cm. The purpose of this study was to compare overall survival between curative-intended surgical resection and RFA in patients with single HCC up to 5 cm. **Methods:** A total of 958 treatment-naïve, consecutive, newly diagnosed HCC patients between 2010 and 2013 at a single center were analyzed. All patients were classified into two groups depending on whether they underwent hepatic resection ($n=494$) or RFA ($n=464$). The study included patients with well-preserved liver function (Child-Pugh class A), single tumor up to 5cm, and no presence of vascular invasion or extrahepatic spread. **Results:** When we compared 5-year survival rates depending on whether the patient received surgical resection or RFA, there was no statistically significant difference in patients with single HCC up to 5 cm (5-years survival rate, resection=92.1% vs. RFA=88.7%, $p=.094$). In analysis of sub-size HCC, in cases of patients with a tumor of 3 cm or less in diameter, overall survival rate was not significantly different in the two groups (5-years survival rate, resection=88.0% vs. RFA=89.3%, $p=.535$). In cases of patients with a tumor between 3 cm and 5 cm in diameter, the ones who received surgical resection presented more favorable prognosis than those who received RFA. However, the difference was not statistically significant (5-years survival rate, resection=85.9% vs. RFA=79.2%, $p=.450$). **Conclusion:** The present study showed comparable overall survival between surgical resection and RFA in patients with single HCC up to 5 cm. When treating patients with intermediate stage-HCC up to 5 cm, RFA could be considered as an alternative curative treatment.