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Comparative Accuracy of Endosonographic Shear Wave Elastography and Transcutaneous Liver Stiffness Measurement: A Pilot Study

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Study Objective

This study compared Vibration-Controlled Transient Elastography (VCTE) (i.e. Fibroscan) with EUS-guided Shear Wave Elastography (EUS-SWE) in patients undergoing liver biopsy. In this single-center, prospective, nonrandomized, tandem study, the diagnostic accuracy of EUS-SWE and VCTE for liver fibrosis was compared.

The primary outcome was to evaluate the diagnostic performance of EUS-SWE to detect the presence of advanced hepatic fibrosis. Secondary outcomes were comparison of technical success and diagnostic accuracy of VCTE, EUS-SWE for left and right hepatic lobes for moderate and advanced fibrosis, and cirrhosis.

Results/Conclusion

- A total of 42 patients underwent VCTE, EUS-SWE and liver biopsy sampling.
- The most common etiology of liver disease was NAFLD.
- Technical success of EUS-SWE was achieved in 100% of patients and defined by the ability to obtain at least 10 values of elasticity, each with a net effective shear wave velocity of at least 60%, using the median for the final value for assessment of fibrosis.
- VCTE was unreliable in 8 patients (19%), all of whom underwent EUS-SWE successfully, whereas the remaining VCTE were deemed successful.
- Compared with VCTE, left-lobe EUS-SWE had a higher PPV for advanced fibrosis and cirrhosis, whereas the NPV was similar between the 2 tests.
- No significant differences were noted between VCTE and right-lobe EUS-SWE.
- EUS-SWE correlates well with liver histology and is a safe and reliable diagnostic test for assessing liver fibrosis with accuracy comparable with VCTE.

Discussion Points

- This study demonstrates that EUS-SWE correlates well with liver histology for assessment of degree of fibrosis.
- EUS-SWE can be reliably performed in patients with suboptimal VCTE examinations.
- Unlike VCTE, EUS-SWE is an invasive procedure with potential adverse events.
- Now, due to recent advancements in endoscopic ultrasound (EUS), liver imaging, shear wave measurement, contrast harmonic imaging, liver biopsy and portal pressure gradient measurement can be accomplished during a single procedure, under EUS-guidance.

Continued on reverse

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Advantages of EUS-SWE

- Direct real-time visualization of the liver allows the operator to select an optimal spot for measurement.
- EUS-SWE can be performed on patients considered morbidly obese or on those with narrow intercostal spaces.
- Both the right and left hepatic lobes can be assessed with EUS-SWE, as opposed to only the right lobe with VCTE, though assessment of the elasticity of the left lobe may not be ideal with EUS-SWE.

Study Limitations

- Single center study with a small sample size of patients.
- The prevalence of advanced hepatic fibrosis was high, which does not necessarily reflect NAFLD in the general population.
- Most patients were older white men, which reflects the demographics of the veteran population, but may not be representative of all patients with risk factors for liver fibrosis.
- Inclusion criteria were restricted to patients in whom noninvasive tests were unreliable and liver biopsy was deemed to be clinically necessary.

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