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Introduction Acoustic Radiation Force Impulse (ARFI, Virtual Touch®) elastography is a novel validated technique for measuring liver stiffness (LS), with advantages over transient elastography including greater accuracy in ascites or obesity. However, elastography has not been well studied in acutely ill patients with decompensated chronic liver disease (CLD). We report our experience in a consecutive controlled cohort in a secondary care setting.

Aims: (1) To establish whether LS is significantly different in patients hospitalised for decompensated CLD from outpatients controls with proven cirrhosis; (2) To investigate correlation between ARFI and severity scores such as DF, GAH, Lille, Child Pugh and MELD.

Methods ARFI was performed by a single radiologist, using a standard 10 observation technique. 108 patients were studied: (1) 60 hospitalised patients (15 AAH-acute alcoholic hepatitis with Bili >80); 19 Dald-decompensated ALD; 12 DCLD-decompensated CLD; 10 ALC-alcohols without severe liver disease; 6 acute hepatitis, representing 39% of 152 consecutive cases seen by the liver service; and (2) 48 age and sex matched CLD controls (all never hospitalised, 33 with biopsy-proven advanced fibrosis/cirrhosis; 15 with clear clinical/radiological/endoscopic evidence of advanced CLD).

Results Validation: technical ARFI failure <5%, IQR/median <0.5 in 98%. Compared with CLD controls, significantly higher mean shear velocity (SV) was seen in both (a) all 52 decompensated ALD patients (AAH+ALD—2.9±0.8 vs 2.4±0.3 m/s, 99% CI 0.2 to 1.0, p=0.001) and (b) all 44 decompensated CLD patients (AAH+DCLD+DLD—2.8±0.8 vs 2.4±0.8 m/s, 99% CI 0.0 to 0.8, p=0.006). In hospitalised patients with ALD (AAH+DLD+ALC) significant correlations were seen between mean SV and both DF (r=0.55, p<0.001) and GAH (r=0.38, p=0.01), but not with Lille score. Strong correlations were shown in all inpatients between SV and Child-Pugh score (r=0.52, p<0.001), and also with MELD score (r=0.42, p=0.002), but not in controls.

Conclusion In this “real world” study, ARFI elastography is an accurate and highly reproducible tool in assessing severity and prognosis in acutely ill patients with decompensated CLD, as shown by (a) increased LS in hospitalised ALD/CLD patients compared with cirrhotic controls, and importantly (b) further increases in LS reflect severity and adverse prognosis as shown by standard scores. As higher LS scores appear to reflect disease processes beyond fibrosis, the usefulness of this “real” measurement as an alternative to current “surrogate” prognostic markers merits further analysis in larger studies.

Competing interests None declared.