Acoustic radiation force impulse: a new ultrasonographic technology for the widespread noninvasive diagnosis of liver fibrosis:

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Acoustic radiation force impulse: a new ultrasonographic technology for the widespread noninvasive diagnosis of liver fibrosis:

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Background/aims: As a module of a standard ultrasound imaging device, acoustic radiation force impulse (ARFI) is a new technology for liver stiffness evaluation (LSE). We aimed to evaluate accuracy, feasibility, reproducibility, and training effect of ARFI for liver fibrosis evaluation.

Methods: One hundred and one patients with chronic liver disease had LSE by Fibroscan and ARFI. LSE by ARFI was performed in the two liver lobes by two operators: an expert and a novice. Correlation and agreement were evaluated by the Pearson (Rp) and intraclass (Ric) correlation coefficients. The independent reference for liver fibrosis was fibrosis blood tests. Results: ARFI results, ranging from 0.7 to 4.6 m/s, were well correlated with Fibroscan results (Rp=0.76). Fibroscan had a significantly higher area under the receiver operating characteristic curve (AUROC) than ARFI for the perprotocol diagnosis of significant fibrosis: 0.890±0.034 versus 0.795±0.047 (P=0.04). However, LSE failure occurred in zero patients using ARFI versus six patients using Fibroscan (P=0.03). Thus, on an intention-to-diagnose basis, Fibroscan and ARFI AUROC for the diagnosis of significant fibrosis were not different: 0.791±0.049 versus 0.793±0.046 (P=0.98). Interobserver agreement was very good (Ric=0.84) and excellent for ARFI interquartile range (IQR)≤0.30 (Ric=0.91). Indeed, agreement was independently predicted only by ARFI IQR, but not by LSE result as earlier observed for Fibroscan. ARFI AUROC was 0.876±0.057 in patients with ARFI IQR ratio≤0.30, and Fibroscan AUROC was 0.912±0.034 in patients with Fibroscan IQR ratio less than 0.21 (P=0.59). Intersite ARFI agreement between the two liver lobes was fair (Ric=0.60). There was no training effect for LSE by ARFI. Conclusion: ARFI is highly feasible and reproducible, and provides diagnostic accuracy similar to Fibroscan. This new device seems noteworthy for the widespread noninvasive diagnosis of liver fibrosis.

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