



P87 Ultra-high Frequency Ultrasound Assessment in Vascular Ehlers Danlos Syndrome: a Validation and Reproducibility Study

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ABSTRACT

Background: In patients with Vascular Ehlers-Danlos syndrome (vEDS), an abnormally low carotid intima-media thickness (CIMT) may increase the risk of arterial dissection and rupture. Thus its accurate assessment by ultra-high frequency ultrasound (UHFUS), thanks to its higher spatial resolution, may be clinically relevant.

Aim: To assess the feasibility and reproducibility of carotid parameters, assessed by UHFUS in vEDS patients, and to evaluate the agreement with the gold standard technique, echotracking by radiofrequency.

Methods: 16 vEDS patients were recruited (6 women, 40 ± 11 years, BP $115 \pm 6/62 \pm 6$ mmHg). Common carotid parameters were assessed by echotracking (Esaote, Artlab software) and UHFUS (VevoMD, Visualsonics; CVSuite software, Quipu srl), to evaluate agreement. The coefficient of variation between two consecutive clips was computed. The results were compared to those of 16 age-, sex- and BP-matched healthy individuals.

Results: In all 16 patients the acquisition and automated analysis of carotid clips was feasible. Correlation between echotracking and UHFUS was satisfactory (diameter $r = 0.63$, $p = 0.001$; CIMT $r = 0.65$, $p = 0.006$; distension $r = 0.84$, $p < 0.001$). Bland-Altman plots showed a good agreement between the two techniques, with a non significant bias either for diameter [$110 \mu\text{m}$ ($-184; 404$)] or CIMT [$27 \mu\text{m}$ ($-10; 75$)]. Intra-operator coefficient of variation was 3.26% (diameter), 7.11% (CIMT) and 5.65% (distension). vEDS patients had reduced CIMT (419 ± 85 vs $522 \pm 97 \mu\text{m}$, $p = 0.004$) and distension (453 ± 150 vs $613 \pm 176 \mu\text{m}$, $p = 0.01$) than controls and tended to have a reduced diameter (6558 ± 525 vs $6945 \pm 653 \mu\text{m}$, $p = 0.08$), while carotid-femoral pulse wave velocity was similar (7.38 ± 1.08 vs 7.46 ± 1.396 m/s, $p = 0.78$).

Conclusion: UHFUS is feasible, accurate and reproducible for the evaluation of carotid parameters in vEDS.

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