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 ± 6/62 ± 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 μm (−184; 404)] or CIMT [27 μm (−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 ± 97 μm, $p = 0.004$) and distension (453 ± 150 vs 613 ± 176 μm, $p = 0.01$) than controls and tended to have a reduced diameter (6558 ± 525 vs 6945 ± 653 μm, $p = 0.08$), 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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