Background: Giant Cell Arteritis (GCA) is one of the most common systemic vasculitides. Temporal artery biopsy (TAB) has been the standard test to confirm the diagnosis of GCA. However, TAB has a lower sensitivity than clinical diagnosis and up to 44% of biopsy-negative patients are clinically diagnosed as having GCA.

In a recent meta-analysis of the diagnostic performance of ultrasound (US) in GCA the sensitivity was 77% (1). The included studies were performed by expert groups in single centres. In the to date only multicentre study (TABUL) investigating the diagnostic accuracy of US compared to clinical diagnosis after 6 months the sensitivity was lower (54%) (2).

Objectives: To evaluate the diagnostic accuracy of vascular US compared to TAB in a multicentre study.

Methods: In three Danish centres patients suspected for GCA were included during a period of two years. At baseline, clinical and laboratory data were collected and vascular US of temporal, facial, common carotid and axillary artery were performed. The US examinations were performed with high frequency transducers (15-18 MHz) and followed by a TAB. All ultrasonographers had participated in the same standardized US educational program and were blinded to clinical and laboratory data. An external expert blinded to clinical and laboratory data evaluated all images and made the final US diagnosis. A positive sign for vasculitis in cranial arteries was defined as a hypoechoic intima-media thickness (IMC) thickening (halo sign) and a positive compression sign. A homogeneous IMC increased thickness in axillary artery of ≥1mm and in common carotid artery ≥1.5mm was defined as vasculitis.

The consultant rheumatologist’s diagnosis at 6 months after initial presentation was considered as the reference standard for the diagnosis of GCA.

Results: During the recruitment period, 112 patients were included, 59% females, mean (SD) age 72.4(7.9) years, among which 91(81.3%) fulfilled the ACR 1990 classification criteria for GCA. 92% of the patients reported a newly emerged localizing headache, while 49 (43.8%) experienced polymyalgia rheumatica symptoms.

TAB was positive in 46(41.1%) and inconclusive in 6 patients, who were excluded from the analysis. Mean (SD) duration of glucocorticoid therapy prior to US and TAB was 0.91(1.55) and 4.02(2.61) days, respectively. In 62 patients, the final diagnosis was GCA.

In all patients with a positive TAB, the US of the temporal artery was also positive for GCA. Of 19 cases with positive US and negative TAB, 12 were clinically diagnosed with GCA of whom 6 had isolated large vessel involvement on US. Among 41 patients with both negative US and TAB, 4 were clinically diagnosed with GCA (Box 1) US had a sensitivity of 93% and specificity of 84% for the diagnosis of GCA, while the sensitivity for TAB was lower (74%) with a specificity of 100%. For the diagnosis of GCA, US had a PPV of 89.2% and a NPV of 90.2%, while for TAB the PPV was 100% and the NPV 73.3%.

Conclusion: US evaluation of the temporal, facial and selected supraaortic arteries performed by trained ultrasonographers can replace biopsy in the diagnosis of GCA.

References:


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