Bitesize Research:
Giant Cell Arteritis (GCA)

Written by Dr Nida Nadeem, Vascular Laboratory, King's College Hospital, London

INTRODUCTION:

Giant cell arteritis (GCA) is a chronic vasculitis that primary affects medium to large arteries. The hallmark of GCA is inflammation of the arterial wall leading to vessel narrowing, ischaemia and complications such as vision loss or stroke. Early diagnosis and prompt treatment are essential to prevent irreversible damage. Laboratory findings typically demonstrate elevated inflammatory markers, however they can be non-specific and a definite diagnosis often relies on biopsy or imaging. In recent years ultrasound has emerged as a valuable diagnostic tool for GCA particularly with evaluation of the temporal and axillary arteries. High resolution ultrasound can detect characteristic findings such as:

- Halo sign
- Compression sign
- Stenosis or occlusion

Despite its growing role much research is still needed to optimise ultrasound in GCA diagnosis. Key areas of research include standardisation of protocols, interpretation criteria, operator training and how best to utilise its application in clinical practice.

Paper 1:

Dejaco C, Ramiro S, Bond M, et al. EULAR RECOMMENDATIONS FOR THE USE OF IMAGING IN LARGE VESSEL VASCULITIS IN CLINICAL PRACTICE: 2023 UPDATE. Annals of the Rheumatic Diseases 2024;83:741-751.

Summary:

This paper presents the 2023 update of the European Alliance of Associations for Rheumatology (EULAR) recommendations for the use of imaging in large vessel vasculitis, specifically GCA and Takayasu arteritis (TAK). The key updates are:

- Recommendation of ultrasound as the first-line imaging test for suspected GCA over temporal artery biopsy.
- Early imaging but also early treatment in suspected cases of GCA in situations where imaging cannot be conducted quickly.
- The use of MRI as the preferred imaging modality for TAK

Pros:

- Evidence-Based: The recommendations are based on a comprehensive review of recent studies and expert consensus, ensuring they are up-to-date and scientifically sound.
- The recommendations offer practical guidance on the preferred imaging techniques for different clinical scenarios, aiding in the diagnosis and management of vasculitis diseases.
- The inclusion of patient representatives in the task force ensures that the recommendations also consider patient perspectives and needs.

Cons:

- The recommendations may be challenging to implement in areas with limited access to advanced imaging technologies and trained specialists.

Impact on practice:

- The new recommendation of using ultrasound as first line imaging for GCA will likely drive specialised training for vascular scientists and with that resource allocation.
- These guidelines propose a standardised approach to using imaging for vasculitis diseases across all healthcare settings.
- Emphasis on early imaging tests may lead to quicker diagnosis and treatment, potentially reducing the risk of complications like blindness in GCA.

Paper 2:

López Gloria K, Rodríguez-Merlos P, Serrano-Benavente B, et al. ULTRASOUND INTIMA MEDIA THICKNESS CUT-OFF VALUES FOR CRANIAL AND EXTRACRANIAL ARTERIES IN PATIENTS WITH GIANT CELL ARTERITIS. Annals of the Rheumatic Diseases 2022;81:1423-1424.

Summary:

This retrospective study aimed to establish optimal intima media thickness (IMT) cut-off values for cranial and extra-cranial vessels to improve the diagnostic accuracy of ultrasound in patients suspected with GCA.

157 patients were referred to a fast track GCA clinic where bilateral ultrasound examination of the cranial (temporal arteries) and extracranial arteries (carotid, subclavian and axillary) were performed. Clinical confirmation of GCA by the referring rheumatologist after 6 months was the diagnostic gold standard. Receiver operating characteristic (ROC) analysis was used to identify IMT cut off values.

IMT cut-off values with high diagnostic accuracy to discriminate between patients with and without GCA are as follows:

- Common superficial temporal artery: 0.44mm
- Frontal branch: 0.34 mm
- Parietal branch: 0.36 mm
- Carotid artery: 1.1mm
- Subclavian and axillary arteries: 1mm

Pros:

- Proposed very precise IMT cut-off values which improved diagnostic precision of ultrasound GCA (sensitivity and specificity were high).
- Aligns with EULAR recommendations for fast-track imaging for GCA.
- Included a relatively decent sample size and a detailed ultrasound protocol for reliability and reproducibility.

Cons:

- High potential for bias from the retrospective design as the sonographer and clinicians were not blinded.
- High prevalence of steroid use among the participants before ultrasound may have influenced results.

Impact on practice:

- By proposing actionable IMT cut-off values, these may be implemented in ultrasound protocols across centres, thus enhancing the accuracy of GCA diagnosis.
- Supports a reduced reliance on invasive biopsy procedures.
- Highlights the importance of including extracranial vessels, particularly in inconclusive cranial artery cases.

Paper 3:

Oshinsky C, Pollock PS, Sacksen I, et al. THE COMMON CAROTID ARTERY IN THE ULTRASOUND EVALUATION OF GIANT CELL ARTERITIS. J Clin Rheumatol. 2024 Sep 1;30(6):243-246.

Summary:

This study evaluates the role of including the CCA in the vascular ultrasound protocol for diagnosing GCA. It compared diagnostic accuracy when adding CCA imaging to the standard evaluation of temporal and axillary arteries. The study analysed 57 patients with GCA and 86 without, using two IMT cutoffs for CCA: 1.0mm and 1.5mm.

Key findings:

- Adding the CCA IMT cut off of >1.0 mm increased sensitivity but significantly decreased specificity due to high false positive rate.
- Using the higher cut off of 1.5mm improved sensitivity further but still had low specificity.
- The ROC curve was 0.398 indicative of poor discriminatory power of CCA IMT measurements for GCA diagnosis.

Pros:

- Used trained vascular sonographers who underwent a robust training regime with European experts.

Cons:

- Unable to validate ultrasound findings against biopsy because very few patients underwent this procedure. According to this paper biopsy is the traditional gold standard.

Impact on practice:

This study recommends excluding CCA from vascular ultrasound protocols to avoid high rates of false positives and unnecessary treatments with steroids and immunosuppressant drugs.

Paper 4:

Haaversen ACB, Brekke LK, Kermani TA, et al. VASCULAR ULTRASOUND AS A FOLLOW-UP TOOL IN PATIENTS WITH GIANT CELL ARTERITIS: A PROSPECTIVE OBSERVATIONAL COHORT STUDY. Front Med (Lausanne). 2024 Jul 29;11:1436707.

Summary:

132 patients with GCA were prospectively followed with scheduled visits to include clinical assessment, ultrasound examination and CRP measurements.

The researchers aimed to:

1. Assess GCA relapse rates.
2. Evaluate the usefulness of ultrasound as a monitoring tool.
3. Develop a composite GCA disease activity score (GCAS) incorporating clinical symptoms, ultrasound findings and laboratory markers.

Pros:

- Prospective design and long-term follow-up provide robust data on the utility of ultrasound in monitoring GCA.
- Conducted in an outpatient clinic, the study's findings are applicable to everyday clinical practice.
- The development of a composite GCA score offers a more comprehensive approach to assessing disease activity.

Cons:

- The moderate sensitivity and specificity of ultrasound limit its reliability as a sole monitoring tool.
- The absence of a universally accepted gold standard for defining relapse in GCA complicates the interpretation of the study's findings.

Impact on practice:

- The study supports the use of ultrasound as part of a multi-modal approach to monitor GCA relapse.
- The proposed GCAS could become a valuable tool in clinical practice, offering a more nuanced assessment of disease activity and may inform future guidelines on GCA management.

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