Eye (2020) 34:1927–1928
https://doi.org/10.1038/s41433-019-0701-y

The ROYAL COLLEGE of OPHTHALMOLOGISTS

CORRESPONDENCE

Comment on: 'A new era for giant cell arteritis'

Edsel Ing[1]

Received: 13 October 2019 / Accepted: 6 November 2019 / Published online: 25 November 2019

To the Editor:

I congratulate Lyons et al. [1] on their work. However, the summary section implies that temporal artery biopsy (TAB) is no longer the "gold standard" for the diagnosis of giant cell arteritis (GCA). In 2018 the European League Against Rheumatism first suggested that ultrasound and MRI can be used for the first-line diagnosis of GCA at centres with sufficient expertise in performing and interpreting these studies [2]. However, ultrasound machines cost at least £15,000–60,000 [3], and require extensive training. The July 2019 draft British Society of Rheumatology guidelines recommended that the confirmatory diagnostic test for GCA could be either a TAB at least 1 cm in length, or an ultrasound of the temporal and axillary arteries, or both [4]. Most neuro-ophthalmologists still prefer TAB over ultrasound for the work-up of GCA [5]. On meta-analysis the estimated sensitivity of TAB is 77% [6]. In contrast, systematic review of the literature found that the hypoechoic halo sign on temporal artery ultrasound had 68% sensitivity and 81% specificity compared with a positive TAB [7]. Atherosclerosis and other conditions can cause a false-positive halo on ultrasound [8]. TAB may reveal alternative diagnoses including syphilis, sarcoidosis, metastases, amyloidosis [9], zoster, and granulomatosis with polyangiitis [10], which may not be discovered in an expedient fashion without tissue pathology.

The TABUL study [11] is referenced a dozen times by Lyons et al. to support their statement that, "investigations, along with clinician insight, produce the highest sensitivity and specificity" for GCA. However, the TAB in the TABUL study were substandard. Seven percent of the attempted TAB did not retrieve a temporal artery, and 43% of the TAB specimens were <1 cm in length.

"Clinician insight" is valuable in the diagnosis of GCA, but is subject to bias. TRIPOD-compliant [12], externally validated prediction models [13] more objectively estimate the pretest probability in patients with suspected GCA. Clinicians may have difficulty estimating the risk of non-linear continuous variables such as age and bloodwork, and may not appreciate that the platelet level is a stronger predictor for GCA than ESR or CRP [13]. Algorithms cannot replace physicians but can make them better [14].

Finally, inefficiency of the PD-1/PD-L1 (programmed cell death protein 1/programmed death-ligand 1) immune checkpoint has been implicated in the pathophysiology of GCA [15].

Compliance with ethical standards

Conflict of interest The author declares no conflict of interest.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

1. Lyons H, Quick VSA, Nagaraju S, Mollan S. A new era for giant cell arteritis. Eye (Lond). 2019. https://doi.org/10.1038/s41433-019-0608-7. [Epub ahead of print]
2. Dejaco C, Ramiro S, Duftner C, Besson F, Bley T, Blockmans D, et al. EULAR recommendations for the use of imaging in large vessel vasculitis in clinical practice. Ann Rheum Dis. 2018;77:636–43.
3. Costowl.com. How much does an ultrasound machine cost? 2019. https://www.costowl.com/healthcare/healthcare-ultrasound-machine-costs.html.
4. British Society of Rheumatology. BSR guideline on diagnosis and treatment of giant cell arteritis: executive summary, Draft revision. London: BSR; 2019.
5. Ing E, Xu Q, Chuo J, Kherani F, Landau K. Practice preferences: temporal artery biopsy versus doppler ultrasound in the work-up of giant cell arteritis. Neuro-ophthalmology. 2019. https://doi.org/10.1080/01658107.2019.1656752.
6. Rubenstein E, Maldini C, Gonzalez-Chiappe S, Chevret S, Mahr A. Sensitivity of temporal artery biopsy in the diagnosis of giant

✉ Edsel Ing
edinglidstrab@gmail.com

[1] University of Toronto, Department of Ophthalmology and Vision Sciences, Michael Garron Hospital, 650 Sammon Ave, K306, Toronto, ON M4C 5M5, Canada

cell arteritis: a systematic literature review and meta-analysis. Rheumatology. 2019. https://doi.org/10.1093/rheumatology/kez385. [Epub ahead of print]
7. Rinagel M, Chatelus E, Jousse-Joulin S, Sibilia J, Gottenberg J, Chasset F, et al. Diagnostic performance of temporal artery ultrasound for the diagnosis of giant cell arteritis: a systematic review and meta-analysis of the literature. Autoimmun Rev. 2019;18:56–61.
8. De Miguel E, Beltran L, Monjo I, Deodati F, Schmidt W, Garcia-Puig J. Atherosclerosis as a potential pitfall in the diagnosis of giant cell arteritis. Rheumatology. 2018;57:318–21.
9. Ing E, Woolf I, Younge B, Bjornsson J, Leavitt J. Systemic amyloidosis with temporal artery involvement mimicking temporal arteritis. Ophthalmic Surg Lasers. 1997;28:328–31.
10. Ong Tone S, Godra A, Ing E. Polyangiitis overlap syndrome with granulomatosis with polyangiitis (Wegener's) and giant cell arteritis. Can J Ophthalmol. 2013;48:e6–8.
11. Luqmani R, Lee E, Singh S, Gillett M, Schmidt W, Bradburn M, et al. The role of ultrasound compared to biopsy of temporal arteries in the diagnosis and treatment of giant cell arteritis (TABUL): a diagnostic accuracy and cost-effectiveness study. Health Technol Assess. 2016;20:1–238.
12. Collins GS, Reitsma JB, Altman DG, Moons KG. Transparent reporting of a multivariable prediction model for individual prognosis or diagnosis (TRIPOD): the TRIPOD statement. BMJ 2015;162:55–63.
13. Ing EB, Miller NR, Nguyen A, Su W, Bursztyn LLCD, Poole M, et al. Neural network and logistic regression diagnostic prediction models for giant cell arteritis: development and validation. Clin Ophthalmol. 2019;13:421–30.
14. Parikh R. MIT Technology Review. AI can't replace doctors. But it can make them better. 2018. https://www.technologyreview.com/s/612277/ai-cant-replace-doctors-but-it-can-make-them-better/. Accessed 5 Aug 2019.
15. Zhang HWR, Berry G, Vaglio A, Liao YJWK, Goronzy J, Weyand C. Immunoinhibitory checkpoint deficiency in medium and large vessel vasculitis. Proc Natl Acad Sci USA. 2017;114:E970–9.