Diagnostic accuracy of novel ultrasonographic halo score for giant cell arteritis: methodological issues

We were interested to read the paper authored by Dasgupta *et al* published in *Annals of the Rheumatic Diseases*.[1] In a prospective study design, 89 patients suspected of giant cell arteritis (GCA) were included. The authors used receiver operating characteristic, sensitivity, specificity and likelihood ratio (LR) for assessing the diagnostic accuracy of halo counts and halo scores and their relationship with disease severity in detecting GCA. Final clinical diagnosis after 6 months was considered as gold standard. In conclusion, they reported that both halo count and halo score can quantify the extent of vascular inflammation in GCA, and halo score has a better detecting of GCA rather than Halo count.

Although we admire this excellent study, we would like to explain some methodological issues that can cause misinterpretation. First of all, there is a difference between test research and diagnostic research. Diagnostic accuracy is focused on a test's added contribution to estimate the diagnostic probability of disease presence or absence.[2] In this way, the authors need to apply several tests and measure the performance of the new test in comparison with others. However, in the current study, the authors tended to evaluate test accuracy since they did not consider other tests and hence cannot provide information about the diagnostic added value of the test.[3] In fact, without the diagnostic added value, there is no evidence about the beneficial diagnostic yields of the new test.[4] Another limitation relates to the interpretation of the amount of LRs. Dasgupta *et al* interpreted that a positive LR greater than 6.41 and 2.0 can effectively predict the GCA and temporal artery (TA) biopsy, respectively. It should be noted that the range of LR+ is one to infinity and the higher the LR+, the more accurate the test is. Actually, an LR+ equal to 2 or 6 is a clear evidence for inaccuracy of the tests.[5] Also, assessing the diagnostic OR for GCA (halo count: 4.1, halo score: 5.40) and temporal artery biopsy (TAB) (halo count: 12.77, halo score: 9.4) confirms the inaccuracy of both tests.

Finally, for assessing diagnostic accuracy, it is important to evaluate both the discrimination and calibration of the new test. Without assessing calibration, it is not possible to compare the probability of the observed and predicted GCA and how these probabilities agree with the observed proportions of later developing disease.[6]

We thus argue that there are some methodological limitations and approaches to overcome them for assessing diagnostic accuracy; otherwise, misinterpretation cannot be avoided.

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