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RE: The effect of venous anatomy on the morphology of multiple sclerosis lesions: a susceptibility-weighted imaging study

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RE: The effect of venous anatomy on the morphology of multiple sclerosis lesions: a susceptibility-weighted imaging study

Sir—We read with great interest the article by Oztoprak *et al*. regarding the morphology of what they describe as “atypical multiple sclerosis lesions” [1]. Their paper addresses an important clinical issue and provides insights into the formation of such lesions.

The article raises a number of points that are integral to the ongoing debate about the value of intralesional veins as a diagnostic feature to distinguish multiple sclerosis (MS) from other white matter lesions. Although we understand this was not the primary aim of the paper, it certainly provides information relevant to this issue.

At our centre we have been using a co-registered fluid attenuated inversion recovery (FLAIR) and T2* technique (FLAIR*, [2]) at 3 T, and post-contrast medium administration to assess venous anatomy in MS plaques, as we find that white matter lesions are more conspicuous and the venous anatomy better defined, and this saves the reader from having to “match up” each lesion on two separate sequences. We find there are particular problems with the definition of lesions, which the authors have defined as “patchy”, as these may contain multiple traversing veins; however, it is difficult to determine whether these veins are associated with the lesion or incidentally passing through it, as the authors note.

This brings up the issue of a consensus definition of a “central vein”, which has remained elusive despite multiple studies on the subject. The central vein has been

defined as “considered to be present if its hypointensity appeared at the centre of the surrounding hyperintense lesion in at least 2 of 3 orthogonal planes” [3] which remains the most complete definition, but does not eliminate incidental crossing veins or account for large lesions. The authors description of the morphology of the lesion with respect to the vein, i.e. clearly formed along it, may be more useful, however remains difficult to objectively define.

The issue of objectivity in assessment of these lesions is also an important aspect in these investigations. Even the identification of white matter lesions shows interobserver variation. Thus, a consensus on morphology may be difficult to reach. The authors mention in their methods that lesions found to be “atypical by one radiologist and typical by the other were excluded, along with lesions determined as uncertain”. The boundaries between “typical” and “atypical” lesions cannot be clearly defined if an “uncertain” category exists. Similarly, lesions “in contact with one another or having uncertain borders” were excluded. It would be interesting to know what proportion of lesions had to be excluded on these grounds, as these are often the lesions that lead to diagnostic challenges.

It may also be that assessment of these “atypical” lesions is unnecessary in clinical practice. For example, Mistry *et al*. developed a set of criteria based on “morphologically characteristic lesions” of MS, which reduces the assessment time as only six lesions are required for the analysis [4]. Their approach correctly categorised 20 patients as having either MS or microangiopathic white matter lesions. These morphological characteristics relate to what the authors describe as “typical” MS lesions, for example, Dawson’s finger lesions and ovoid perivenous lesions.

We agree with the conclusions that more comparative studies are required to determine the usefulness of lesion morphology in differentiating the underlying cause, and suggest that this should lead to consensus definitions of useful morphological characteristics to allow widespread clinical use.

REFERENCES

1. Oztoprak B, Oztoprak I, Yildiz OK. The effect of venous anatomy on the morphology of multiple sclerosis lesions: a susceptibility-weighted imaging study. Clin Radiol 2016; 71:418-426

2. Sati P, George IC, Shea CD, Gaitan MI, Reich DS. FLAIR*: a combined MR contrast technique for visualizing white matter lesions and parenchymal veins. Radiology 2012; 265(3):926-932

3. Mistry N, Dixon J, Tallantyre E et al. Central veins in brain lesions visible with high-field magnetic resonance imaging. JAMA 2013; 70(5):623-628

4. Mistry N, Abdel-Fahim R, Samaraweera A et al. Imaging central veins in brain lesions with 3-T T2*-weighted magnetic resonance imaging differentiates multiple sclerosis from microangiopathic brain lesions. Mult Scler J 2015;

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