



Does superb microvascular imaging reflect hashimoto's thyroiditis or thyroid functional status?

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Dear Editor,

I read with interest the study by Selçuk Can et al.¹ evaluating thyroid vascularity in Hashimoto's thyroiditis (HT) using power Doppler and color superb microvascular imaging (cSMI). Quantitative assessment of thyroid microvasculature is promising; however, several issues should be considered before the vascularity index (VI) is regarded as a diagnostic marker of HT.

First, there appears to be an important numerical inconsistency in the abstract. Colo cSMI VI values are reported as 8.85% in the HT group and 8.40% in the control group. According to the Results section and Table 2, however, these values correspond to the right- and left-lobe measurements within the HT group, whereas the corresponding control-group values are 3.75% and 3.97%. Since this comparison represents a major study finding, the discrepancy should be corrected.

More importantly, it remains unclear whether cSMI VI reflects HT itself or, at least partly, thyroid functional and vascular status. cSMI VI was considerably higher among patients with HT who had hypothyroidism than among patients with HT who were euthyroid and showed a strong correlation with thyroid-stimulating hormone levels ($p = 0.739$), whereas correlations with anti-thyroglobulin and anti-thyroid peroxidase antibodies were weak. A direct comparison between patients with HT who were euthyroid and healthy controls, preferably with a separate receiver operating characteristic analysis, would therefore help determine whether cSMI distinguishes HT independently of vascular changes associated with hypothyroidism.

This issue is also relevant to the proposed 6.75% diagnostic cut-off. This threshold was derived and evaluated in the same cohort, with an area under the curve (AUC) of 0.933, without reported internal or external validation. It may therefore be more appropriate to regard 6.75% as a candidate threshold rather than a clinically validated cut-off, particularly because its performance may depend on the distribution of thyroid functional states within the HT group.

The proposed 8.825% threshold for distinguishing hypothyroidism from euthyroid thyroid function among patients with HT also warrants clarification. Despite an AUC of 0.959, sensitivity was only 34.29%, with 100% specificity. Given that the Methods state that thresholds were determined using the Youden index, clarification of how this operating point was selected would be useful. Such a highly specific threshold may help rule in hypothyroidism, but its low sensitivity limits its usefulness as a general discriminator.

Another important question is whether cSMI provides incremental diagnostic value beyond conventional grayscale ultrasonography. Established B-mode findings, including hypoechogenicity, heterogeneous echotexture, and micronodularity, remain central to the sonographic assessment of HT.² Comparing grayscale ultrasonography alone with grayscale ultrasonography combined with cSMI VI would better demonstrate the added value of the technique.

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Finally, interpretation of cSMI VI as a marker of disease activity or progression should remain cautious. The analysis was cross-sectional, disease activity was not defined using an independent reference standard, and longitudinal changes or treatment response were not assessed.

Overall, the study provides promising data on thyroid microvascularity, but further analysis of euthyroid HT, validation of proposed thresholds, assessment of incremental

value beyond B-mode ultrasonography, and longitudinal evaluation are needed to define the clinical role of cSMI VI more clearly.

Footnotes

Conflict of interest disclosure

The author declared no conflicts of interest.

References

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