



Reply: Does superb microvascular imaging reflect Hashimoto's thyroiditis or thyroid functional status?

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Dear Editor,

We sincerely thank the author for the meticulous review and for bringing these issues to our attention.¹

Regarding the discrepancy in the abstract, the values were transposed because of a typographical error during final formatting. As accurately reported in the Results section and Table 2, the values of 8.85% and 8.40% correspond to the right and left lobes of the group of patients with Hashimoto's thyroiditis (HT), respectively, whereas the corresponding values in the control group are 3.75% and 3.97%. An official Corrigendum has been submitted to rectify this error.

Concerning the comparison between patients with HT who were euthyroid and healthy controls, color superb microvascular imaging (cSMI) vascularity index (VI) values differed significantly between the two groups ($P < 0.001$). Receiver operating characteristic (ROC) curve analysis revealed an area under the curve (AUC) of 0.872 [95% confidence interval (CI), 0.802–0.942; $P < 0.001$]. Using the maximum Youden index of 0.589, the optimal cut-off was 4.99%, yielding a sensitivity of 81.6% (95% CI, 65.7%–92.3%), specificity of 77.3% (95% CI, 65.3%–86.7%), and diagnostic accuracy of 78.9%. The negative predictive value was 87.9%. The negative predictive value reached 87.9%, suggesting that values below this cut-off can reliably exclude HT among patients who are euthyroid. This is particularly relevant because diagnosing HT among patients who are euthyroid represents a diagnostic challenge in which conventional Doppler parameters often fail. In the pediatric literature, Bayramoglu et al.² reported a higher cut-off of 10.58% (AUC, 0.794), with 67.1% sensitivity and 90% specificity, in a mixed cohort of patients who were euthyroid or had hypothyroidism, whereas Durmaz et al.³ identified a cut-off of 6.00% (AUC, 0.925), with 86.3% sensitivity and 82.2% specificity. Our lower threshold is consistent with the expectation that patients with HT who are euthyroid, and therefore lack thyroid-stimulating hormone-driven hypervascularization, exhibit lower VI values than patients with HT who have mixed or predominantly hypothyroid thyroid function.

As our study is among the first to quantitatively evaluate cSMI VI in adults with HT, the identified threshold of 6.75% should be regarded as a strong candidate for validation in future studies rather than as a definitive clinical guideline.

We also thank the reviewer for the critical observation regarding the comparison between patients with HT who had hypothyroidism and those who were euthyroid, which led us to identify a clerical transcription error. During the transfer of the ROC output, the absolute number of true-positive cases ($n = 34$) was inadvertently entered as the sensitivity percentage, and the specificity was misreported because of row misalignment in the coordinates table. Upon reanalysis, at the optimal cut-off of 8.825%, cSMI VI demonstrated a sensitivity of 89.47% (95% CI, 75.20%–97.06%), specificity of 94.29% (95% CI, 80.84%–99.30%), and diagnostic accuracy of 91.78%. These corrected values are fully consistent with the reported AUC of 0.959 (95% CI, 0.913–1.000) and Youden index of 0.838, confirming that this threshold effectively discriminates hypothyroidism among patients with HT. A Corrigendum has also been submitted.

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Received 07 September 2026; accepted 09 September 2026.



Epub: 12.10.2026

DOI: 10.4274/dir.2026.264454

Finally, our study aimed to establish cSMI VI as an independent quantitative parameter; a formal comparison with conventional B-mode findings was not performed. Comparisons between B-mode ultrasonography alone and B-mode ultrasonography combined with cSMI VI, as well as longitudinal studies evaluating changes in VI during therapy, are planned as directions for future research.

Footnotes

Conflict of interest disclosure

The authors declared no conflicts of interest.

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