

Author's Reply to "Painting a Clearer Picture by Measuring the Quadriceps Muscle with Ultrasound"

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Dear Editor,

We would like to express our gratitude to Abdusalam et al. [1] for reading our article and providing valuable comments. We have carefully reviewed the comments and would like to address a few points.

First, we appreciate the insights provided regarding the reliability of temporal muscle thickness or area (TMT or TMA) in detecting sarcopenia. We agree that measuring the quadriceps muscle is very important in detecting sarcopenia, as the quadriceps muscles plays a key role in many activities and directly affects how we assess sarcopenia.

Our initial intent in utilizing the TMA or TMA in patients with cerebrovascular disease (CVD) comes from previous reports that identified them as prognostic factors in patients with brain tumors or CVD [2, 3]. TMT also showed a high correlation with the lumbar skeletal muscle cross-sectional area in patients with brain metastasis [4]. TMT could be advantageous in CVD patients because, beyond its correlation with skeletal muscle mass as demonstrated in our study [5], it also could be asso-

ciated with the severity of dysphagia [6]. Therefore, we believe that TMT or TMA could serve as useful clinical indicators in CVD patients, potentially eliminating the need for additional ultrasound, BIA, or DXA scans using already scanned brain images. Moreover, TMT also can be measured using ultrasound [7] and showed an excellent intraclass correlation coefficient (0.99, 95% CI 0.98–1.00) [8]. Thus, even in developing countries lacking CT/MRI facilities, ultrasound could provide a viable alternative method for assessing TMT in CVD patients.

Regarding the correlation between skeletal muscle mass measured by BIA and temporal muscle parameters, we acknowledge that predicting skeletal muscle mass from the TMT or TMA may be challenging. Nevertheless, the prognostic utility of TMT or TMA in patients with CVD or brain tumors is supported by their correlation with skeletal muscle [4, 5], underscoring their importance. While the evaluation of the quadriceps muscle holds substantial value in general sarcopenia assessments, the potential role of TMT or TMA as prognostic factors in patients with brain pathology

should not be overlooked. We believe that TMT or TMA deserve consideration for their prognostic relevance in this specific patient population.

Conflict of Interest Statement

The authors have no conflicts of interests to declare.

References

- 1 Abdusalam AJ, Anay P, Kara M. Painting a clearer picture by measuring the quadriceps muscle with ultrasound. *Gerontology*. 2024. <https://doi.org/10.1159/000540995>
- 2 Katsuki M, Kakizawa Y, Nishikawa A, Yamamoto Y, Uchiyama T. Temporal muscle thickness and area are an independent prognostic factors in patients aged 75 or younger with aneurysmal subarachnoid hemorrhage treated by clipping. *Surg Neurol Int*. 2021;12:151. https://doi.org/10.25259/SNI_814_2020
- 3 Sadhwani N, Aggarwal A, Mishra A, Garg K. Temporal muscle thickness as an independent prognostic marker in glioblastoma patients—a systematic review and meta-analysis. *Neurosurg Rev*. 2022;45(6):3619–28. <https://doi.org/10.1007/s10143-022-01892-3>
- 4 Leitner J, Pelster S, Schöpf V, Berghoff AS, Woitek R, Asenbaum U, et al. High correlation of temporal muscle thickness with lumbar skeletal muscle cross-sectional area in patients with brain metastases. *PLoS One*. 2018;13(11):e0207849. <https://doi.org/10.1371/journal.pone.0207849>
- 5 Han JM, Kim DH, Lee BC. Association between the thickness or area of the temporal muscle and skeletal muscle mass in bioimpedance analysis. *Gerontology*. 2024;70(8): 823–30. <https://doi.org/10.1159/000539063>
- 6 Sakai K, Katayama M, Nakajima J, Inoue S, Koizumi K, Okada S, et al. Temporal muscle thickness is associated with the severity of dysphagia in patients with acute stroke. *Arch Gerontol Geriatr*. 2021;96: 104439. <https://doi.org/10.1016/j.archger.2021.104439>
- 7 Koruyucu AN, Aşantoğrul F. Determination of masseter and temporal muscle thickness by ultrasound and muscle hardness by shear wave elastography in healthy adults as reference values. *Dentomaxillofac Radiol*. 2024;53(2): 137–52. <https://doi.org/10.1093/dmfr/twad013>
- 8 Hasegawa Y, Yoshida M, Sato A, Fujimoto Y, Minematsu T, Sugama J, et al. Temporal muscle thickness as a new indicator of nutritional status in older individuals. *Geriatr Gerontol Int*. 2019;19(2):135–40. <https://doi.org/10.1111/ggi.13570>

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Author Contributions

Byung Chan Lee is the sole author.