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Letter to the Editor

Due to its many Dependencies, the Thickness of the Temporal Muscle cannot Serve as a Predictor for the Outcome of an Ischemic Stroke

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Letter to the Editor

We read with interest the article by Weng *et al*. on a retrospective study developing a model to predict adverse outcomes after acute ischemic stroke (AIS). In this study, temporal muscle thickness (TMT) was measured, and the NIHSS score at admission, the Barthel Index, and the modified Rankin Scale (mRS) were considered in 479 patients [1]. The model proved useful in predicting adverse outcomes at 6 months (defined as mRS > 2) after AIS and was proposed as a tool to support treatment decisions and prognosis [1]. While the study is noteworthy, several points warrant discussion.

The first point concerns the retrospective study design [1]. Retrospective studies have several limitations [2]. These include poor data quality, missing data, the inability to demonstrate causality (only association), susceptibility to memory and selection biases, difficulties in controlling for confounding factors, and a generally lower level of evidence compared to prospective studies [2].

The second point concerns the insufficient standardization of TMT measurements [1]. TMT results are highly dependent on the MRI slice in which the measurement is performed, as well as on the tilt of the head relative to the support surface. Because the head position in the scanner was not standardized and measurement accuracy may have varied between patients, TMT results may be unreliable.

The third point is that the factors influencing muscle thickness have not been sufficiently considered [1]. These include age, sex, physical activity, nutritional status, anatomical location, dental status, diet, and disease status [3]. Muscle thickness decreases with age. Men have thicker muscles than women. Individuals who exercise their temporalis muscle through involuntary or voluntary activity may have thicker muscles than those with a sedentary lifestyle. Exercise also refers to chewing. Individuals with poor dental health, dentures, or temporomandibular joint arthritis may have less forceful biting and chewing and therefore exhibit less TMT than those who can chew and bite normally. TMT, as well as the geometric depth and thickness of a muscle, may also depend on fiber length and feathering (the angle at which muscle fibers attach to the tendon insertion). TMT may also be influenced by diet and its composition. Individuals who regularly consume hard foods may have higher total muscle tone (TMT) than those who regularly eat soft, solid foods or pureed foods. Furthermore, a protein-rich diet and a balanced energy intake can increase muscle protein synthesis and thus TMT. Patients with congenital or acquired head deformities may exhibit increased or decreased TMT. Finally, chronic systemic diseases such as malignancies or immune disorders lead to muscle wasting and thus reduced TMT.

Fourth, neither inter- nor intra-observer variability was calculated [1]. To determine whether different radiologists or the same radiologist obtained different results during the examinations, a comparison of the results from different or the same examiner would have been necessary [4]. Similarly, repeating the TMT measurements would have been necessary to assess whether the results remained the same or varied between examinations at different time points.

Fifth, two different MRI scanners were used for the study, but it was not reported whether the TMT results differed between the two methods.

Finally, the term “encephalalanosis” used in Table 2 is unclear [1]. Do the authors mean encephalopathy?

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