

Multicenter Study J Neurooncol. 2025 Dec;175(3):1235-1246.

doi: 10.1007/s11060-025-05229-0. Epub 2025 Sep 29.

Prognostic value of temporal muscle thickness in pediatric medulloblastoma patients aged 3–12 years

Xu An ^{# 1 2}, Junhua Wang ^{# 3}, Jingzhe Yuan ^{# 1}, Xuan Zhou ⁴, Xiaozhu Liu ², Xiaoyan Sun ^{5 6}, Jian Gong ^{1 5}, Qingnan Wu ⁷, Yunwei Ou ^{8 9}

Affiliations

PMID: 41023500 DOI: [10.1007/s11060-025-05229-0](https://doi.org/10.1007/s11060-025-05229-0)

Abstract

Purpose: This retrospective, multicenter cohort study aimed to investigate the prognostic significance of temporal muscle thickness (TMT) in medulloblastoma (MB) patients.

Methods: Preoperative cranial MRI was used to measure TMT. Patients were divided into training and test cohorts. An optimal TMT cutoff for progression-free survival (PFS) and overall survival (OS) was established.

Results: Among the 303 enrolled MB patients, TMT was found to be associated with prognosis in the 230 patients aged 3–12 years. TMT demonstrated positive correlations with age and body mass index, while inverse associations were observed with the presence of hydrocephalus and metastasis. A TMT cutoff value of 6.115 mm was established in the training cohort, which served as a significant threshold for both PFS and OS. The 5-year PFS rates were $(38.0 \pm 11.5) \%$ (low mean-TMT group) versus $(88.3 \pm 3.2) \%$ (high mean-TMT group), and OS rates were $(57.2 \pm 8.7) \%$ versus $(96.5 \pm 1.7) \%$, respectively. The multivariate Cox regression revealed significantly better PFS (hazard ratio (HR) = 0.165; 95% confidence interval (CI): 0.064–0.427; $P < 0.001$) and OS (HR = 0.064; 95% CI: 0.020–0.207; $P < 0.001$) in patients above versus below this cutoff. These findings were validated in test cohort and two independent validation cohorts.

Conclusion: MRI-measured TMT is a potential prognostic indicator for MB patients aged 3–12 years, and may help guide risk stratification and treatment planning. To validate its clinical applicability, large-sample prospective researches remain essential.

Keywords: Medulloblastoma; Overall survival; Progression-free survival; Sarcopenia; Temporal muscle thickness.

© 2025. The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature.

[PubMed Disclaimer](#)