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## Clinical features and outcomes of pediatric intracranial gliomas: results from single center's 226 cases and corroborated with SEER database

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### Abstract

**Background:** Pediatric gliomas are the most common central nervous system (CNS) tumors in children and adolescents and show different clinical and histopathological characteristics from the adult. The prognostic factors were poorly defined in pediatric intracranial gliomas.

**Methods:** We collected pediatric intracranial glioma cases in our institution between February 2011 and June 2022. The patient clinical data, tumor growth characteristics, treatments, and follow-up data were analyzed by Cox regression analysis to identify impact factors on the prognosis of pediatric intracranial glioma patients. To corroborate our data, an independent cohort of pediatric intracranial glioma from the Surveillance, Epidemiology, and End Results Program (SEER) database was analyzed.

**Results:** A total of 181 cases of pediatric low-grade glioma (PLGG) and 45 cases of pediatric high-grade glioma (PHGG) were included. In multivariate Cox regression analysis, tumor size > 59.5 mm ( $p = 0.006$ ) and non-gross total resection (non-GTR; subtotal resection, STR,  $p = 0.042$ ; biopsy,  $p = 0.012$ ) were associated with decreased overall survival (OS) in PLGG patients. In PHGG patients, only chemotherapy ( $p = 0.023$ ) was associated with OS while tumor size was marginally prognostic for OS ( $p = 0.051$ ). Additional independent analysis of 2734 PLGG and 741 PHGG from the SEER database corroborated that larger tumor size was associated with decreased OS in LGG ( $p = 0.001$ ) and HGG ( $p < 0.001$ ) patients, separately.

**Conclusion:** In this study, we found that tumor size was a significant prognostic factor for the OS of PLGG patients in our series. Besides the tumor size, the extent of resection also independently impacted the prognosis of PLGG patients. While in PHGG patients, only chemotherapy was associated with improved OS and tumor size was marginally prognostic.

**Keywords:** Extent of resection; Glioma; Pediatric brain tumor; Prognosis factors; Tumor size.

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