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Pediatric hemispheric cerebellar low-grade gliomas: clinical approach, diagnosis, and management challenges—experience at a tertiary care children's hospital

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Abstract

Purpose: This study aims to provide an exhaustive analysis of pediatric low-grade gliomas (pLGGs) in the cerebellar hemispheres, focusing on incidence, clinical characteristics, surgical outcomes, and prognosis. It seeks to enhance understanding and management of pLGGs in the pediatric population.

Methods: We conducted an observational, descriptive, retrospective, and cross-sectional study at a pediatric hospital, reviewing medical records of 30 patients with cerebellar hemispheric pLGGs treated from December 2014 to January 2023. Data collection included demographics, clinical presentation, imaging findings, surgical approach, postoperative complications, histopathological diagnosis, hydrocephalus management, and follow-up. Molecular markers and adjuvant therapies were also analyzed.

Results: The cohort predominantly presented with cerebellar symptoms, with 60% showing hydrocephalus at diagnosis. MRI with gadolinium was crucial for diagnosis. Surgical focus was on achieving gross total resection (GTR), accomplished in 70% of cases. Postsurgical hydrocephalus was less common, and cerebellar mutism was not reported. While a complete molecular analysis was not performed in all cases, available data suggest significant influence of molecular markers on prognosis and therapeutic options of pLGGs.

Conclusions: This study highlights the unique clinical and molecular characteristics of cerebellar hemispheric pLGGs in children. The lower incidence of postoperative hydrocephalus and absence of cerebellar mutism are notable findings. Emphasizing a multidisciplinary approach, our findings contribute to a deeper understanding of pediatric pLGGs, underscoring the need for personalized treatment strategies and vigilant follow-up.

Keywords: Cerebellar tumors; Neuro-oncology pediatrics; Pediatric low-grade gliomas (pLGGs); Pediatric neurosurgery.

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