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Pediatric-type low-grade gliomas in adolescents and young adults-challenges and emerging paradigms

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Abstract

Pediatric-type low-grade glioma (PLGG) encompasses a heterogeneous group of WHO grade 1 or 2 tumors and is the most common central nervous system tumor found in children. PLGG extends beyond pediatrics, into adolescents and young adults (AYA, ages 15-40). PLGG represents 25% of all gliomas diagnosed in AYA with differences in tumor location and molecular alterations compared to children, resulting in improved outcome for AYAs. Long-term outcome is excellent, though patients may suffer significant morbidity depending on tumor location. There are differences in treatment practices with radiation used to treat PLGG in AYAs more often than in children. Most PLGG in AYA harbor an alteration in the RAS/MAPK pathway, with limited insight into response to targeted therapy in this age group. This review discusses the epidemiology, current therapeutic approaches, and challenges in the management of PLGG in AYA.

Keywords: Adolescents and young adults; Molecular testing; Pediatric-type low-grade glioma; RAS/MAPK alterations; Targeted therapy.