ABSTRACT

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Medulloblastoma in the Modern Era: Review of Contemporary Trials, Molecular Advances, and Updates in Management.

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Critical discoveries over the past two decades have transformed our understanding of medulloblastoma from a single entity into a clinically and biologically heterogeneous disease composed of at least four molecularly distinct subgroups with prognostically and therapeutically relevant genomic signatures. Contemporary clinical trials also have provided valuable insight guiding appropriate treatment strategies. Despite therapeutic and biological advances, medulloblastoma patients across the age spectrum experience tumor- and treatment-related morbidity and mortality. Using an updated risk stratification approach integrating both clinical and molecular features, ongoing research seeks to (1) cautiously reduce therapy and mitigate toxicity in low-average risk patients, and (2) thoughtfully intensify treatment with incorporation of novel, biologically guided agents for patients with high-risk disease. Herein, we review important historical and contemporary studies, discuss management updates, and summarize current knowledge of the biological landscape across unique pediatric, infant, young adult, and relapsed medulloblastoma populations.

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