ABSTRACT

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Childhood Medulloblastoma: An Overview.

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Medulloblastoma (MB) is the most common malignant pediatric brain tumor, representing 60% of childhood intracranial embryonal tumors. Despite multimodal advances in therapies over the last 20Â years that have yielded a 5-year survival rate of 75%, high-risk patients (younger than 3Â years, subtotal resection, metastatic lesions at diagnosis) still experience a 5-year overall survival of less than 70%. In this introductory chapter on pediatric MB, we describe the initial discrimination of MB based on histopathological examination and the more recent progress made in global gene expression profiling methods that have allowed scientists to more accurately subclassify and prognosticate on MB based on molecular characteristics. The identification of subtype-specific molecular drivers and pathways presents novel therapeutic targets that could lead to MB subtype-specific treatment modalities. Additionally, we detail how the cancer stem cell (CSC) hypothesis provides an explanation for tumor recurrence, and the potential for CSC-targeted therapies to address treatment-refractory MB. These personalized therapies can potentially increase MB survivorship and negate some of the long-term neurotoxicity associated with the current standard of care for MB patients.

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