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Medulloblastoma: from molecular pathology to therapy.

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Abstract

Medulloblastoma is the most common malignant tumor of central nervous system in children. Patients affected by medulloblastoma may be categorized as high-risk and standard-risk patients, based on the clinical criteria and histologic features of the disease. Currently, multimodality treatment, including surgery, radiotherapy, and chemotherapy is considered as the most effective strategy against these malignant cerebellar tumors of the childhood. Despite the potential poor outcomes of these lesions, the 5-year survival stands, at present, at 70% to 80% for standard-risk patients, whereas high-risk patients have a 5-year survival of 55% to 76%. Attempts to further reduce the morbidity and mortality associated with medulloblastoma have been restricted by the toxicity of conventional treatments and the infiltrative nature of the disease. Over the past decade, new discoveries in molecular biology have revealed new insights in signaling pathways regulating medulloblastoma tumor formation. Recent advances in the molecular biology of medulloblastoma indicate that the classification of these embryonal tumors, solely based on histology and clinical criteria, may not be adequate enough. Better understanding of the growth control mechanisms involved in the development and progression of medulloblastoma will allow a better classification, leading to the improvement of the existing therapies, as well as to the development of new therapeutic approaches.

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