Management of pediatric and adult patients with medulloblastoma.

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Abstract

OPINION STATEMENT: Approximately 70% of newly diagnosed children with medulloblastoma (MB) will be classified as "standard risk": their tumor is localized to the posterior fossa, they undergo a near or gross total resection, the tumor does not meet the criteria for large cell/anaplastic histology, and there is no evidence of neuroaxis dissemination by brain/spine MRI and lumbar puncture for cytopathology. Following surgical recovery, they are treated with craniospinal radiation therapy with a boost to the posterior fossa or tumor bed. Adjuvant therapy for approximately 1 year follows anchored by the use of alkylators, platinators, and microtubule inhibitors. This approach to standard risk MB works; greater than 80% of patients will be cured, and such approaches are arguably the standard of care worldwide for such children. Despite this success, some children with standard risk features will relapse and die of recurrent disease despite aggressive salvage therapy. Moreover, current treatment, even when curative causes life-long morbidity in those who survive, and the consequences are age dependent. For the 20-year-old patient, damage to the cerebellum from surgery conveys greater risk than craniospinal radiation; however, for the 3-year-old patient, the opposite is true. The challenge for the neuro-oncologist today is how to identify accurately patients who need less therapy as well as those for whom current therapy is inadequate. As molecular diagnostics comes of age in brain tumors, the question becomes how to best implement novel methods of risk stratification. Are we able to obtain specific information about the tumor's biology in an increasingly rapid and reliable way, and utilize these findings in the upfront management of these tumors? Precision medicine should allow us to tailor therapy to the specific drivers of each patient's tumor. Regardless of how new approaches are implemented, it is likely that we will no longer be able to have a single standard approach to standard risk medulloblastoma in the near future.