Meningiomas: knowledge base, treatment outcomes, and uncertainties. A RANO review.

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Abstract

Evolving interest in meningioma, the most common primary brain tumor, has refined contemporary management of these tumors. Problematic, however, is the paucity of prospective clinical trials that provide an evidence-based algorithm for managing meningioma. This review summarizes the published literature regarding the treatment of newly diagnosed and recurrent meningioma, with an emphasis on outcomes stratified by WHO tumor grade. Specifically, this review focuses on patient outcomes following treatment (either adjuvant or at recurrence) with surgery or radiation therapy inclusive of radiosurgery and fractionated radiation therapy. Phase II trials for patients with meningioma have recently completed accrual within the Radiation Therapy Oncology Group and the European Organisation for Research and Treatment of Cancer consortia, and Phase III studies are being developed. However, at present, there are no completed prospective, randomized trials assessing the role of either surgery or radiation therapy. Successful completion of future studies will require a multidisciplinary effort, dissemination of the current knowledge base, improved implementation of WHO grading criteria, standardization of response criteria and other outcome end points, and concerted efforts to address weaknesses in present treatment paradigms, particularly for patients with progressive or recurrent low-grade meningioma or with high-grade meningioma. In parallel efforts, Response Assessment in Neuro-Oncology (RANO) subcommittees are developing a paper on systemic therapies for meningioma and a separate article proposing standardized end point and response criteria for meningioma.

KEYWORDS: CGE = cobalt gray equivalent; EBRT = external beam radiation therapy; EORTC = European Organisation for Research and Treatment of Cancer; GTR = gross-total resection; MEN1 = multiple endocrine neoplasia Type 1; NF2 = neurofibromatosis Type 2; PFS = progression-free survival; RANO = Response Assessment in Neuro-Oncology; RTOG = Radiation Therapy Oncology Group; SRS = stereotactic radiosurgery; STR = subtotal resection; meningioma; oncology; outcomes; radiotherapy; surgery

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