Intracranial meningioma treatment

While there are currently no good adjuvant chemotherapeutic agents available, recent advances in the genomic and epigenomics landscape of meningiomas are being explored for potential targeted therapy [1].

Although the optimal management of meningiomas would provide complete elimination of the lesion, this cannot always be accomplished safely through resection. Therefore, other therapeutic modalities, such as stereotactic radiosurgery (as primary or adjunctive therapy), have emerged [2].

Several options for drug treatment of unresectable, recurrent and/or biologically aggressive high grade meningiomas are currently under evaluation, such as tyrosine kinase inhibition, AKT inhibition and mTOR inhibition. Direct DNA targeting by trabectedin has shown promising in vitro results and is currently being investigated in a large clinical trial (EORTC-1320) [3].

Meningiomas are treated with radiation therapy, stereotactic radio-surgery or surgical resection. At the moment surgical resection is the only definite treatment, and the removal of the tumour also removes the peritumoral edema. Based on the localization of the meningioma, surgery can be complicated.

Due to the strong dependencies between the results from surgical therapy and the localisation of the tumor, it is only possible to derive recommendations on whether or not to perform the surgical therapy with respect to the localisation of the tumor. Only for patients with tumors with a spinal localisation or WHO Grade I meningiomas with a cortical localisation, primary treatment with by means of microsurgery can be suggested. For all other localisations of the tumor, alternative treatment by radiosurgery should be discussed. From the literature identified, a clear recommendation of one or the other therapy however can not be deduced. Thus, there is a strong need for randomised clinical trials or prospective or contrasting cohort studies, which compare rigorously microsurgery with radiosurgery concerning different localisations of tumors [4].

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 [5].

General information

Surgery is the treatment of choice for symptomatic meningiomas. Incidental meningiomas with no brain edema or those presenting only with seizures that are easily controlled medically may be managed expectantly with serial imaging as meningiomas tend to grow slowly, and some may “burn out” and cease growing.

Radiation therapy is considered for patients who are not surgical candidates, for some deep inaccessible tumors, for multiply recurrent meningiomas, or for atypical or malignant meningiomas either after initial subtotal resection or after first recurrence.

Meningioma dural sinus involvement

see Meningioma dural sinus involvement

Intracranial meningioma treatment cost

see Intracranial meningioma treatment cost.

Embolization

see Preoperative embolization of intracranial meningioma.

Surgery

see Intracranial meningioma surgery.

Gamma Knife radiosurgery

see Gamma Knife radiosurgery for meningioma.

Stereotactic Radiosurgery for intracranial meningioma

Stereotactic Radiosurgery for intracranial meningioma.

Hormone therapy in meningioma

Hormone therapy in meningioma.

1)
Huntoon K, Toland AMS, Dahiya S. Meningioma: A Review of Clinicopathological and Molecular Aspects. Front Oncol. 2020 Oct 23;10:579599. doi: 10.3389/fonc.2020.579599. PMID: 33194703; PMCID: PMC7645220.
2)
Mansouri A, Guha D, Klironomos G, Larjani S, Zadeh G, Kondziolka D. Stereotactic radiosurgery for

intracranial meningiomas: current concepts and future perspectives. Neurosurgery. 2015 Apr;76(4):362-71. doi: 10.1227/NEU.0000000000000633. PubMed PMID: 25599213.

3) ISRCTN Registry. ISRCTN.com http://www.isrctn.com/ ISRCTN71502099 (2017).

4) Schmieder K, Engelhardt M, Wawrzyniak S, Börger S, Becker K, Zimolong A. The impact of microsurgery, stereotactic radiosurgery and radiotherapy in the treatment of meningiomas depending on different localizations. GMS Health Technol Assess. 2010 Mar 16;6:Doc02. doi: 10.3205/hta000080. PubMed PMID: 21289875; PubMed Central PMCID: PMC3010884.

5) Rogers L, Barani I, Chamberlain M, Kaley TJ, McDermott M, Raizer J, Schiff D, Weber DC, Wen PY, Vogelbaum MA. Meningiomas: knowledge base, treatment outcomes, and uncertainties. A RANO review. J Neurosurg. 2014 Oct 24:1-20. [Epub ahead of print] PubMed PMID: 25343186.