Neurosurgery Wiki - https://neurosurgerywiki.com/wiki/

## **Recurrent meningioma**

The main goal of meningioma surgery is to obtain the complete tumor resection in order to reduce the recurrence rate while preserving or improving the patient's neurological functions <sup>1)</sup>

In many cases, this is a difficult achievement, because of the risk of damage to arteries, sinuses, cranial nerves, or other neighbors' relevant structures. Surgical morbidity and mortality are mainly related to tumor location and volume <sup>2)</sup>.

One of the most important causes for the recurrence of intracranial meningiomas is residual tumor tissue that remains despite assumed complete resection.

Intraoperative visualization of meningioma tissue by 5-aminolevulinic-acid (5-ALA)-induced protoporphyrin IX (PpIX) fluorescence was reported.

see 5-aminolevulinic acid fluorescence guided resection of intracranial meningioma

see Intraoperative ultrasound in intracranial meningioma.

A comprehensive review of the available literature confirms the poor clinical outcome of recurrent meningiomas that have failed surgery and RT and have been subsequently treated with chemotherapy or other systemic agents <sup>3)</sup>.

All patients treated for recurrent atypical/anaplastic intracranial meningiomas between January 1985 and July 2014 at Memorial Sloan Kettering Cancer Center were screened for intraspinal and vertebral Extracranial meningioma metastases (EMM). Of these patients, 2 were identified as having recurrent meningioma complicated by vertebral or intraspinal EMM. A review of the literature was also conducted. The PubMed database was screened for intraspinal and vertebral EMM cases reported in the literature from 1985 to 2015. Nineteen articles were identified from the literature and included 24 individual cases with a total of 34 vertebral or intraspinal EMM. Forty-two percent (10/24) of patients with vertebral or intraspinal EMM had WHO Grade I tumors. Furthermore, 25% (6/24) of vertebral and intraspinal EMM occurred after the primary tumor but prior to any recurrence. This paper highlights that vertebral and intraspinal EMM can occur in patients with WHO Grade I meningiomas and can occur before tumor recurrence. This challenges the notion that EMM are seen primarily in high-grade atypical and anaplastic meningiomas <sup>4</sup>.

## Treatment

The failure of hormonal and cytotoxic chemotherapy in the treatment of recurrent meningioma and increasing understanding of potential molecular targets in meningioma has resulted in multiple studies utilizing single-agent targeted therapy directed at biologically relevant signaling pathways, such as somatostatin (Sandostatin(®) LAR, SOM230c), PDGF (imatinib), EGF (erlotinib) and VEGF (sunitinib and vatalanib)<sup>5)</sup>.

## **Case series**

The clinical data of 16 patients with large and giant recurrent meningioma in the middle and posterior third part of the superior sagittal sinus with extracranial invasion who underwent surgery in the Department of Neurosurgery of Peking University Third Hospital from May 2019 to May 2022 were retrospectively analyzed. All the patients underwent brain-enhanced magnetic resonance imaging (MRI), magnetic resonance venography (MRV), computed tomography angiography (CTA) and three-dimensional skull computed tomography (CT) before, to evaluate the extent of tumor invasion, the edema of brain tissue, the degree of skull damage, the blood supply of the tumor, and the degree of compression of the superior sagittal sinus, etc, and to formulate an individualized surgical plan. The neurological function of the patients was evaluated 1 week, 1 month, and 3 months after the operation, and the tumor condition was evaluated by brain-enhanced MRI 3 months, 6 months, and 1 year after the operation.

Results: The tumors in the 16 patients were all located in the middle and posterior 1/3 part of the superior sagittal sinus and invaded extracranially. Among them, 8 cases were operated for the second time, 6 cases for the third time, and 2 cases for the fourth time; In the last operation, the bone flap was used to repair the skull in 4 cases, and the titanium mesh was used in 12 cases; Tumor arterials of 3 cases were embolized under digital subtraction angiography (DSA). Tumors of 10 cases were resected at Simpson grade I, and 6 cases at Simpson grade II; 2 cases underwent decompressive craniectomy during operation, and 14 cases underwent cranioplasty at the same time; scalp incisions of 14 cases were directly sutured, and flap transposition was used in 14 cases. When evaluating nerve function after operation, the limb muscle strength was improved compared with that before operation, and the Karnofsky performance scale (KPS) score reached 100 points 3 months after operation. During the follow-up, 1 patient's tumor recurred after 1 year and received Gamma Knife treatment, and the rest of the patients had no recurrence during the follow-up period.

Conclusion: Surgical treatment is the first choice for large and giant recurrent meningiomas near the middle and posterior third part of the superior sagittal sinus with extracranial invading. It is a safe and effective surgical method to take individualized surgical plan after detailed preoperative assessment of cerebral edema, tumor blood supply, venous sinus compression, and scalp invasion <sup>6)</sup>

1)

SIMPSON D. The recurrence of intracranial meningiomas after surgical treatment. J Neurol Neurosurg Psychiatry. 1957 Feb;20(1):22-39. PubMed PMID: 13406590; PubMed Central PMCID: PMC497230.

Altinörs N, Gürses L, Arda N, Türker A, Senveli E, Dönmez T, Sanli M, Bavbek M, Caner H. Intracranial meningiomas. Analysis of 344 surgically treated cases. Neurosurg Rev. 1998;21(2-3):106-10. PubMed PMID: 9795943.

Kaley T, Barani I, Chamberlain M, McDermott M, Panageas K, Raizer J, Rogers L, Schiff D, Vogelbaum M, Weber D, Wen P. Historical benchmarks for medical therapy trials in surgery- and radiationrefractory meningioma: a RANO review. Neuro Oncol. 2014 Jun;16(6):829-40. doi: 10.1093/neuonc/not330. Epub 2014 Feb 4. Review. PubMed PMID: 24500419; PubMed Central PMCID: PMC4022224.

Singh R, Ryan C, Chohan MO, Tisnado J, Hadjigeorgiou GF, Bilsky MH. Intracranial meningioma with vertebral or intraspinal metastasis: report of 2 cases and review of the literature. J Neurosurg Spine. 2016 Jul 15:1-7. [Epub ahead of print] PubMed PMID: 27420397.

Chamberlain MC, Barnholtz-Sloan JS. Medical treatment of recurrent meningiomas. Expert Rev

Neurother. 2011 Oct;11(10):1425-32. doi: 10.1586/ern.11.38. Review. PubMed PMID: 21955199.

Chen SH, Yang J, Chen X, Yang CL, Sun JJ, Lin GZ, Yu T, Yang X, Han YF, Wu C, Si Y, Ma KM. [Surgical treatment of large and giant recurrent meningiomas near the middle and posterior third part of the superior sagittal sinus with extracranial invading]. Beijing Da Xue Xue Bao Yi Xue Ban. 2022 Oct 18;54(5):1006-1012. Chinese. doi: 10.19723/j.issn.1671-167X.2022.05.030. PMID: 36241245; PMCID: PMC9568405.

From: https://neurosurgerywiki.com/wiki/ - **Neurosurgery Wiki** 

Permanent link: https://neurosurgerywiki.com/wiki/doku.php?id=recurrent\_meningioma



Last update: 2024/06/07 02:55