

A deeply located anterior falicine mass lesion

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A 35-year-old female patient was admitted to our hospital after complaining about a progressively severe headache for the last six months. Neurological examination revealed no obvious abnormality except for a slight short-term memory disturbance, emotional instability and apathy. Her cranial contrast enhanced magnetic resonance imaging is seen in the figures 1 A and 1 B.

Questions:

1- What are the possible etiologies of the lesion? (Differential diagnosis)

This is a dural-based, bilaterally extending, enhancing mass, 2 x 2.5 x 2 cm in diameter, invaginating into the medial aspects of both right and left hemispheres and compressing the adjacent brain tissue, but without perifocal edema. The most probable diagnosis is a meningioma. There are almost no durably attached intracranial tumors that can be mistaken for meningioma. The other rare possibilities are dural metastasis, granuloma (sarcoid, tuberculosis), idiopathic hypertrophic pachymeningitis and extramedullary hematopoiesis, and hemangiopericytoma.

2- What are the next examination steps?

Cerebral angiography can provide essential information delineating the tumor's arterial feeding pattern. Additionally, it can provide crucial information on the course, displacement and possible encasement of the anterior cerebral arteries, pericallosal arteries and callosomarginal arteries. The venous phase of the angiogram is also vital for determining the patency of superior and inferior sagittal sinuses and the degree of collateral circulation.

3- What are the treatment options?

1- *Observation:* An incidental meningioma that has been definitely asymptomatic may be observed with neuroimaging at appropriate intervals, which should be 6 months in young adults and up to a year in patients over 70. The intervals will be adjusted according to the emerging growth characteristics.

2- *Microsurgery:* Therapy for meningiomas is mostly surgical. Resection of meningiomas with Simpson grade I resections should lead to a definitive cure in most cases.

3- *Radiosurgery:* Radiosurgery is used as a primary modality or in combination with surgery. However, in this specific localization stereotactic radiosurgery procedure carries an increased risk of adverse radiation effects, particularly brain edema and peritumoral imaging changes. This is because of crucial and vulnerable local venous drainage.

4- *Superselective complete embolisation* of meningioma

4- The patient was operated on using a frontal anterior interhemispheric approach. The bilateral tumoral mass was excised totally with its dural attachments. Histopathological diagnosis was a meningothelial meningioma WHO grade 1. Post-operative contrast enhanced T1-weighted MR scans and diffusion weighted MR scans are shown in the figures 2 A and 2 B. After surgery, the patient made an uncomplicated recovery and discharged on the 7th day after surgery without any neurological deficits.

What are the important points during the surgery?

As the tumor resected, the surgeon should be careful of the branches of the anterior cerebral artery, including the pericallosal and callosomarginal arteries. The surgeon should be meticulous in preserving surrounding cortical veins in order to avoid potentially devastating neurological injuries. The anterior pericallosal veins, which are the largest tributaries of the inferior sagittal sinus, should be spared also. It should be kept in mind that mechanical stimulation of the falx could induce a trigeminocardiac reflex (TGR), which could result in bradycardia and even cardiac asystole.

5- What are the major clinical factors in recurrence?

The single, most significant clinical factor in recurrence is the extent of the resection.

References

1. DeMonte F, McDermott MW, Al-Mefty O (eds) (2011) Al-Mefty's meningiomas. Thieme Medical Publishers, Inc New York
2. Louis DN, Ohgaki H, O.D. W, Cavanee WK (eds) (2007) WHO classification of tumours of the central nervous system. International Agency for Research on Cancer Lyon
3. Lumenta CB, Di Rocco C, Haase J, Mooij JJA (eds) (2010) Neurosurgery. Springer-Verlag Berlin Heidelberg
4. Osborn AG (2004) Diagnostic imaging. Brain. Amirsys Inc Salt Lake City, Utah
5. Pamir N, Black PM, Fahlbusch R (eds) (2010) Meningiomas: A comprehensive text. Saunders Elsevier Philadelphia, Pennsylvania
6. Quiñones-Hinojosa A (ed) (2012) Schmidek & Sweet Operative Neurosurgical Techniques: Indications, methods, and results. Elsevier Saunders Philadelphia
7. Reinert M, Babey M, Curschmann J, Vajtai I, Seiler RW, Mariani L (2006) Morbidity in 201 patients with small sized meningioma treated by microsurgery. Acta Neurochir (Wien) 148:1257-1265; discussion 1266

8. Sindou M (ed) (2009) Practical handbook of neurosurgery. Springer Wien New York
- 9- Tanaka M, Imhof HG, Schucknecht B, Kollias S, Yonekawa Y, Valavanis A (2006) Correlation between the efferent venous drainage of the tumor and peritumoral edema in intracranial meningiomas: superselective angiographic analysis of 25 cases. J Neurosurg 104:382-388
10. Yano S, Kuratsu J (2006) Indications for surgery in patients with asymptomatic meningiomas based on an extensive experience. J Neurosurg 105:538-543
11. Yaşargil MG (ed) (1996) Microneurosurgery: Microsurgery of CNS tumors. Georg Thieme Verlag New York