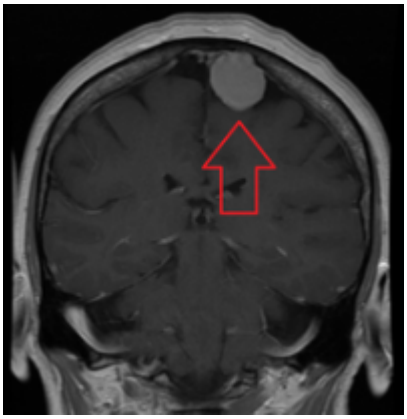
Meningioma differential diagnosis



1. multiple meningiomas: suggests neurofibromatosis type 2 (NF2).

2. pleomorphic xanthoastrocytoma (PXA): may mimic meningiomas since they tend to be peripherally located and may have a dural tail

3. Gliosarcomas, especially ones that are predominantly carcinomatous

4. Rosai-Dorfman disease: especially if extracranial lesions are also identified. A connective tissue disorder with sinus histiocytosis and massive painless lymphadenopathy (most have cervical lymphadenopathy). Usually in young adults. Isolated intracranial involvement is rare. MRI: dural-based enhancing mass with signal characteristics similar to meningioma, may have a dural tail. Most common intracranial locations: cerebral convexities, parasagittal, suprasellar, cavernous sinus. Pathology: dense fibro collagenous connective tissue with spindle cells and lymphocytic infiltration, stains for CD68 & S-100. Histiocytic proliferation without malignancy. Foamy histiocytes are characteristic. Surgery and immunosuppressive therapy not effective. Low-dose XRT may be the best option.

see also Parasagittal Meningioma Differential Diagnosis.

The differential for dural lesions is extensive and includes [1]:

Dural metastases (e.g. breast cancer)

Solitary fibrous tumor/hemangiopericytoma (SFT/HPC) and meningioma exhibit similar radiographic features, however, they differ in their prognoses. Preoperative differentiation between them is important for determining the treatment and follow-up plan.

Age and myo-inositol level calculated from MRS are useful factors for distinguishing SFT/HPC from meningioma preoperatively [2].

Leiomyosarcomas

Melanocytomas

Hodgkin lymphoma

Plasmacytomas

Inflammatory pseudotumors

Neurosarcoidosis

Plasma cell granulomas

Castleman disease

Xanthomas

Rheumatoid nodules

Tuberculomas

In the setting of hyperostosis consider:

Paget's disease

Fibrous dysplasia

Sclerotic metastases (e.g. prostate and breast carcinoma)

Specific location differentials include:

Cerebellopontine angle

Vestibular schwannoma

Pituitary region:

Pituitary macroadenoma.

Craniopharyngioma.

Base of the skull

Hypertrophic pachymeningitis.

Extramedullary hematopoiesis.

Chondrosarcoma.

Chordoma.

References

1)
Johnson MD, Powell SZ, Boyer PJ, Weil RJ, Moots PL: Dural lesions mimicking meningiomas. Hum Pathol 33:1211–1226, 2002
2)
Ohba S, Murayama K, Nishiyama Y, Adachi K, Yamada S, Abe M, Hasegawa M, Hirose Y. Clinical and radiographic features for differentiating solitary fibrous tumor/hemangiopericytoma from meningioma. World Neurosurg. 2019 Jun 21. pii: S1878-8750(19)31646-8. doi: 10.1016/j.wneu.2019.06.094. [Epub ahead of print] PubMed PMID: 31233926.