Correspondences are rare and there is no necrosis or vascular invasion. All lesions show a population of cells with vacuolated cytoplasm resembling the physaliferous cells found in chordoma [4,5].

Conflict of interest statement

None.

References


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MR imaging of metastatic renal cell carcinoma to a meningioma

IRM d’une métastase d’un carcinome rénal dans un méningiome

A 61-year-old man had undergone resection of left renal cancer in 1999. In May 2005, he developed a continuous headache and MRI showed a left frontal convexity meningioma, 25 × 15 mm in size, with typical imaging features (Fig. 1). The mass was homogeneously isointense to the gray matter on T1- and T2-weighted images, with strong and homogeneous enhancement after gadolinium administration and a typical ”dural tail sign”. There was no edema of the adjacent white matter and imaging findings were unchanged at follow-up MRI in March 2006. In November 2006, the patient developed progressive motor aphasia together with changes in behavior. MRI showed enlargement of the mass, whose size reached 30 × 41 mm, with marked peritumoral edema and a mild midline shift (Fig. 2). The signal intensity became inhomogeneous on T2-weighted images with appearance of intra- and peritumoral flow voids. T1-weighted images showed an irregular enhancement with a cystic-necrotic center. A malignant transformation of the meningioma was hypothesized and a left frontal craniotomy was performed. Pathologic examination demonstrated clear cell carcinoma with widespread necrosis occupying the majority of the lesion, indicating brain metastasis (Fig. 3). Meningothelial meningioma was recognizable only at the peripheral rim. Subsequent exam-

Figure 1 First MRI. (A) T2W axial section; (B) Postcontrast T1W coronal section. Left frontal meningioma (arrow), isointense to the cortex in T2-W images without perifocal edema, characterized by strong and homogeneous enhancement after gadolinium administration. On the basis of absent neurological signs and symptoms, surgery was not indicated.
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Figure 2  Follow-up MRI after 17 months, when the patient developed aphasia and behavioral changes. (A) T2W axial section; (B) Postcontrast T1W coronal section. The meningioma has enlarged, with appearance of a necrotic center, flow voids (arrowhead) and vasogenic edema (arrow).

Metastasis of one tumor to another tumor is a rare pathological entity. Meningioma is the most frequent recipient tumor type and the majority of metastases arises from breast and lung cancers. Metastases from renal cancers to intracranial meningiomas are especially rare. Chambers et al. proposed the criteria for the diagnosis of a true tumor-to-tumor metastasis and for the exclusion of collision tumors [1]. Only five reported cases of metastasis from tumors of kidney, including ours, meet the criteria [2,3]. The preoperative diagnosis of metastasis to meningioma is challenging. Two authors described MR findings of markedly enhancing peripheral portions of the tumor with a necrotic core [2,3]. These patterns are, however, nonspecific and could be due to areas of calcification, foci of cystic degeneration or hemorrhage. One case had intra- and peritumoral flow voids like in our case [3]. Apart from ours, only one other case was reported with follow-up imaging, consisting of meningioma enlargement with development of peritumoral edema and inhomogeneous enhancement with irregular margins [4]. Malignant transformation of meningiomas, although rare, must be taken into account in the differential diagnosis [5]. Imaging findings can be quite similar and an accurate distinction from intrameningioma

Figure 3  (A) Macrospecimen (H & E stain) and (B) microspecimen (H & E stain, 10×) of the tumor. Dura is seen in the upper part of the specimen with no infiltration (arrows). Meningothelial meningioma is identifiable at the peripheral rim of the specimen (arrowheads), where lobules and whorls of round-polygonal cells with small regular nuclei and eosinophilic cytoplasm are surrounding clear cell carcinoma (asterisk). Dilated vessels are spread around with thickened hyaline walls. Immunohistochemistry stainings for CD10 and EMA outlined the two different neoplastic components (not shown).
metastasis is difficult to obtain. Multimodality MR imaging has become the preferred approach to characterize brain tumors. MR spectroscopy was so far applied to one case of intracerebral metastasis, but the differential diagnosis with malignant transformation of meningioma could not be established [6].

In conclusion, atypical MRI features of meningiomas may suggest the possible occurrence of an intratumoral metastasis in patients affected by a systemic cancer, especially when significant changes are detectable on follow-up imaging.

**Conflict of interest statement**

None.

**References**


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