

Case Report

Liver metastasis from a non-recurrent atypical cranial meningioma: a case report

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Summary

Extracranial metastases from atypical meningioma are rare, and even more so in the liver. We report a case of a 68-years-old patient with atypical meningioma, treated with partial surgical resection in 2012, and gamma knife radiotherapy in 2014 in another hospital, exhibiting a liver metastasis 6 years after the initial surgical resection.

Key words: meningioma, metastasis, atypical, liver, histology

Introduction

Meningiomas are the most common central nervous system tumors in adults, constituting more than 30% of all intracranial tumors ¹. They are typically benign solitary intracranial neoplasms, generally found at the skull base or over the convexity of the brain ².

The World Health Organization classification divides meningiomas into three grades, based on tumor differentiation and mitotic activity: benign (WHO grade I), atypical (WHO grade II), and anaplastic/malignant (WHO grade III) ³.

WHO grade II and III meningiomas (20-25% and 1-6% of the total number respectively) ¹ are characterized by more aggressive behavior and a higher risk of recurrence, fluctuating between 29% and 52% and 50% and 94%, respectively ⁴.

The best treatment option for patients with malignant meningioma is still surgical resection; however complete resection is not always possible, depending on the location and size of the lesion. The surgery can be followed by radiotherapy if the lesion is grade II or III ⁵.

Despite being a locally aggressive entity (even benign meningiomas often invade the adjacent structures) the rate of extracranial metastases is very low (1:1000 cases) and are almost always associated with WHO grade III meningiomas ¹. Most common locations of spread are lung, liver, bone, and skin ⁶.

Case report

A 68-years-old patient was diagnosed with a 50 mm hypoechoic liver nodule in the 8th segment, within a liver affected by steatosis. Magnetic resonance imaging (MRI) showed the nodule was suspicious for focal

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Conflict of interest

The Authors declare no conflict of interest.

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nodular hyperplasia. The nodule was later considered suspicious for malignancy after CT. Consequently, a positron emission tomography (PET) showed increased uptake in the liver nodule and in the sigmoid colon. A subsequent colonoscopy was negative.

An ultrasound-guided biopsy, performed in another hospital, reported an initial diagnosis of sarcomatoid hepatocellular carcinoma. The patient was referred to our hospital for surgery. A segmentectomy was then performed and postoperative course was uneventful.

Today the patient is well, without recurrence from the primary meningioma or other metastatic lesions.

Pathological findings

At pathology, examination of the specimen disclosed a grayish mass, with clear cut margins, measuring 6 cm in diameter.

Microscopically, the tumor consisted of epitheliomorphous cells (Fig. 1), with diffuse nuclear pseudoinclusions (Fig. 2). The cells showed a predominant glomeruloid growth pattern (Fig. 3), admixed with extensive trabecular, solid and myxoid areas. A delicate and well-developed vascular network (CD34+) was present between the cells (Fig. 4).

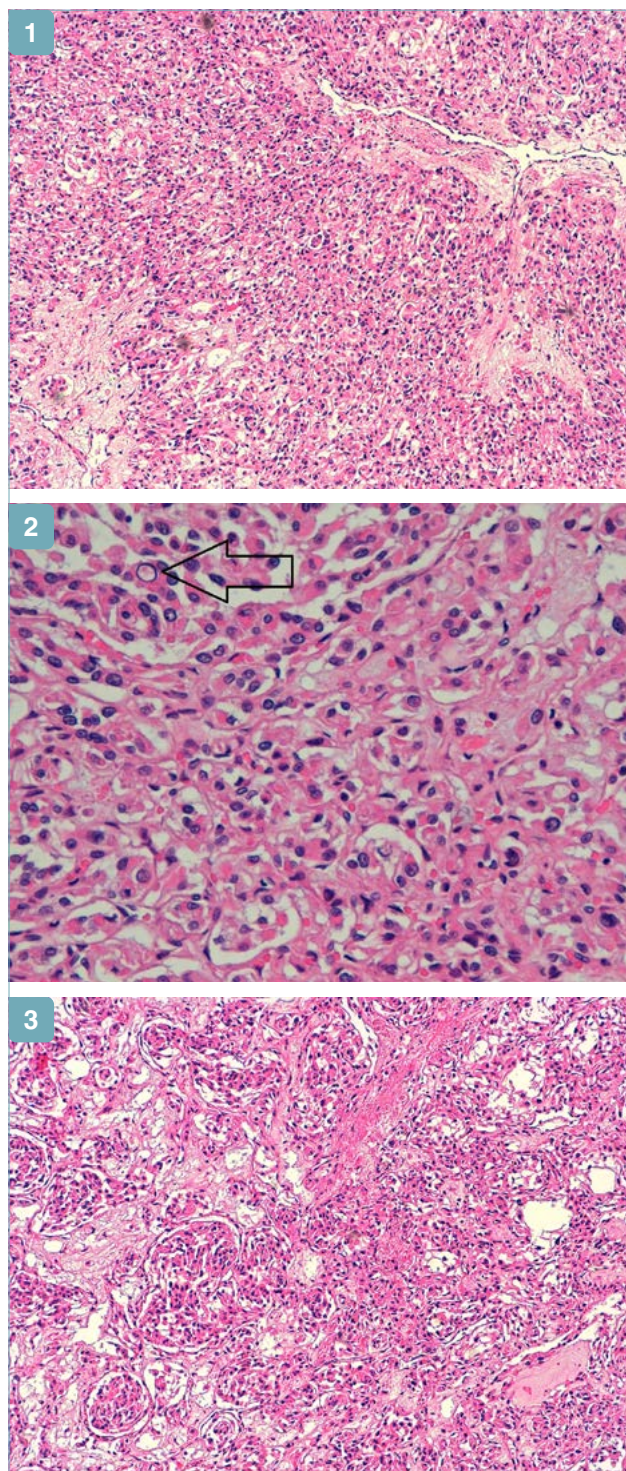
Immunohistochemistry

Immunohistochemical findings were as follows: vimentin +, epithelial membrane antigen (EMA) + (Fig. 5), CK AE1/AE3 + (perinuclear and cytoplasmatic) (Fig. 6), hepatocytic specific antigen (HSA/Hep Par 1) -, CK7 -, chromogranin A -, desmin -, S-100 -, HMB-45 -, Melan A -, TTF-1 -.

In the light of the clinical history of the patient, the morphological and immunohistochemical data, the case was diagnosed as secondary localization of atypical intracranial meningioma.

Discussion

Clinical presentation, radiological and biopsy findings were originally mostly consistent with an hepatic origin of the lesion, especially since the patient was free from recurrence after the radiation therapy in 2014. Only an extensive use of immunohistochemistry and a careful examination of the clinical history (the information about the previous meningioma were not available at all, since the surgery was performed in a different hospital) revealed the lesion as a metastatic disease



Figures 1-3. The tumor is composed of epithelioid cells (image 1), with prominent nuclear pseudoinclusions (Image 2); the cells are organized in a glomeruloid pattern (H&E, 100x, 400x).

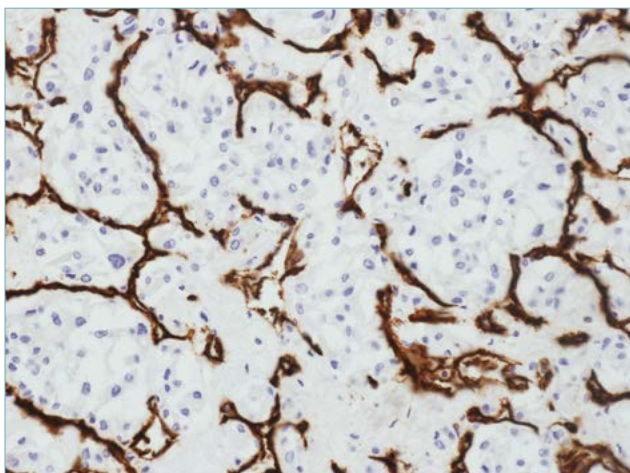


Figure 4. Vascular network (CD34, 200x).

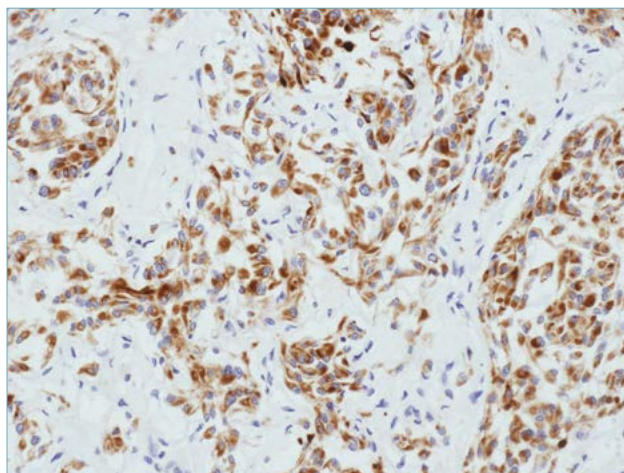


Figura 6. Cytokeratin AE1 / AE3, perinuclear and cytoplasmatic staining (CK AE1/AE3, 200x).

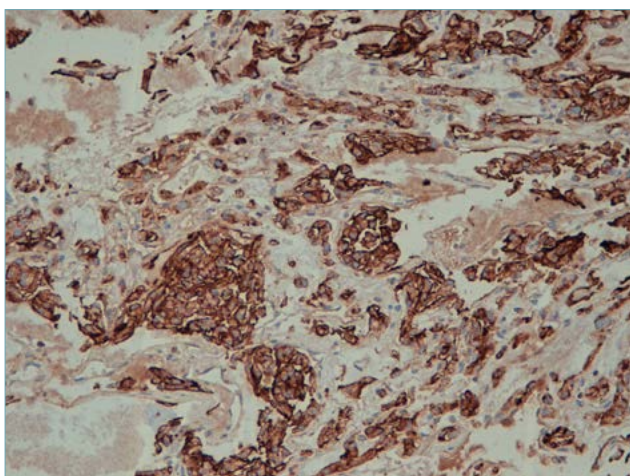
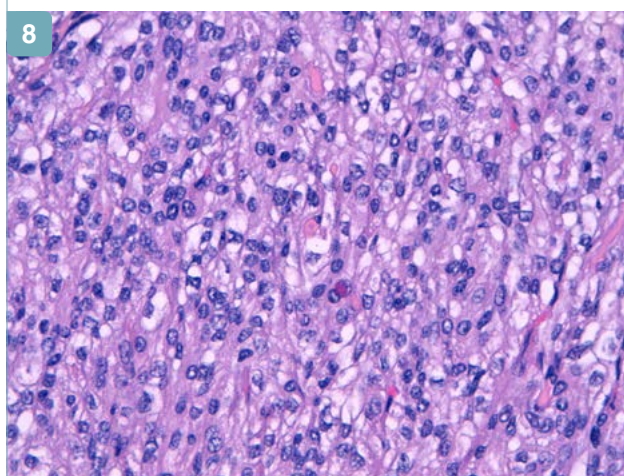
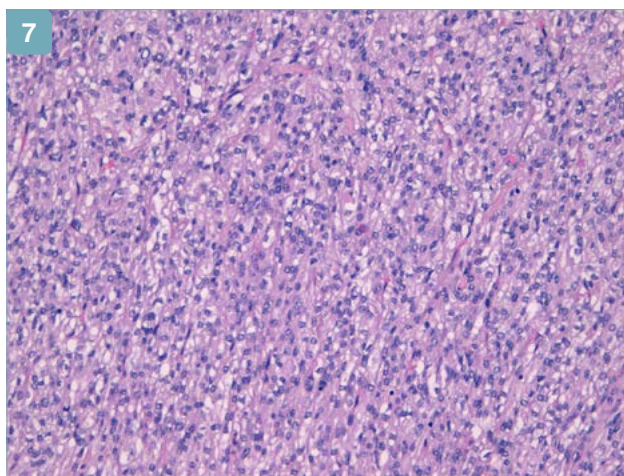


Figura 5. Epithelial membrane antigen, diffusely positive (EMA, 200x).



Figures 7, 8. Images from the primary (2012) lesion. (H&E, 200x, 400x).

derived from the previously treated atypical meningioma (Figs. 7-8). The slides of the original operation and pre-surgical biopsy were reviewed and compared by two pathologists (FL and LS). Morphology was the same in all the specimens.

Only three other cases of atypical meningioma (WHO Grade II) metastatic to the liver have been reported in the literature^{7,8}, and of those, one⁷ had already transformed in an anaplastic meningioma (WHO Grade III) at the time of the metastasis. All the reported cases, contrary to our patient, had a long history of recurrent disease and underwent multiple surgeries and radiation therapy before the metastasis.

Conclusion

In conclusion we report a case of a 68-years-old patient with a liver metastasis from an atypical meningioma occurred 6 years after the first diagnosis, with no evidence of intracranial recurrence. At present, the patient is well and free from any sign of recurrence from the original tumor.

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