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Clinical case

Brainstem melanomas presenting as a cavernous malformation

Mélanomes du tronc cérébral mimant un cavernome

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ABSTRACT

Background. – Melanoma lesions in the brainstem can be difficult to distinguish radiographically and clinically from cavernous malformations. However, the treatment modalities and clinical course of these two diseases differ considerably. We report two cases of melanoma presenting as brainstem hemorrhages.
Case description. – A 69-year-old male was found to have a hemorrhagic lesion of the right dorsal midbrain. After a repeat hemorrhage, the lesion was resected and found to be hyperchromatic. Nonetheless, the patient suffered rebleeding and died 3 months later. A 62-year-old female was similarly found to have an acute pontine hemorrhage. After resection of the lesion, she underwent whole-brain radiation therapy but ultimately died 5.5 months later. The histopathology of both lesions was consistent with melanoma.
Conclusions. – Melanoma in the brainstem can mimic cavernous malformations. While management of these lesions includes stereotactic radiosurgery, whole-brain radiation, and surgical resection, metastatic brainstem melanoma follows an aggressive clinical course with a poor prognosis.

Mots clés :
Tronc cérébral
Mélanome
Malformations caverneuses du système nerveux central et de la rétine

RÉSUMÉ

Contexte. – Les lésions de mélanome localisées au tronc cérébral peuvent être difficiles à distinguer cliniquement et radiologiquement des malformations caverneuses. Toutefois, les modalités de traitement et l'évolution clinique de ces deux maladies sont très différentes. Nous rapportons deux cas de mélanome se présentant comme des hémorragies du tronc cérébral.
Descriptions de cas. – Un homme de 69 ans était atteint d'une lésion hémorragique du mésencéphale dorsal. Après un deuxième épisode hémorragique, la lésion a été réséquée et était hyperchromatique. Pourtant le patient a présenté une récidive hémorragique et est décédé 3 mois plus tard. Une femme de 62 ans a présenté une hémorragie pontique aiguë. Après résection de la lésion, elle a subi une radiothérapie pan-cérébrale mais est décédée 5,5 mois plus tard. L'examen histopathologique des deux lésions était compatible avec un mélanome.
Conclusions. – Les mélanomes localisés au tronc cérébral peuvent imiter les cavernomes. Alors que le traitement de ces lésions comprend la radiochirurgie stéréotaxique, la radiothérapie du pan-cérébrale et la résection chirurgicale, le mélanome métastatique du tronc cérébral est de mauvais pronostic.

Abbreviations: CNS, Central nervous system; CT, Computed tomography; CTA, CT angiogram; MRI, Magnetic resonance imaging; SRS, Stereotactic radiosurgery; WBRT, Whole-brain radiation therapy.

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1. Introduction

Melanoma represents the third most common type of cancer to metastasize to the brain. Malignant metastases to the brainstem are rare, accounting for only 3–5% of all brain metastases [1]. Given their tendency to hemorrhage, metastatic melanoma lesions of the brainstem may mimic cavernous malformations, which likewise present as focal brainstem hemorrhages [2]. The clinical course of melanoma of the brainstem is decidedly more aggressive than that of cavernomas with a median survival of only four months [3]. Accordingly, melanoma should be considered in the differential diagnosis of brainstem hemorrhages in the appropriate clinical setting. Here, we report two cases of melanoma presenting as brainstem hemorrhages and review the management of these rare lesions. In one patient, no primary lesion was identified, raising the possibility of a primary CNS lesion.

2. Case report

2.1. Case 1

A 69-year-old right-handed male with a previous medical history that included hypertension and prostate cancer presented with acute dizziness and diplopia. On physical examination, his cranial nerve testing was significant for bilateral sixth nerve palsies and upgaze restriction. Pupils were 3 mm on the right and 3.5 mm on the left and reactive. Sensorimotor examination revealed full strength in all extremities but left-sided drift and sensory extinction. Initial head CT revealed a 1.3-cm right dorsal midbrain hemorrhage (Fig. 1A). A CT angiogram (CTA) was negative for vascular lesions, however a magnetic resonance angiogram preformed at this time confirmed a hemorrhagic lesion in the subacute methemoglobin phase that was thought to be a cavernous malformation (Fig. 1B and C). A CT of the chest, abdomen, and pelvis revealed only a known, benign mass of the left kidney.

After one week, the patient improved neurologically as the hemorrhage was resolving, and he was discharged. Three months later, the patient presented again with acute loss of consciousness. CTA revealed a marked change in the colliculus lesions, with a 2.6×3.4 cm brainstem hemorrhage extending into the inferior left thalamus (Fig. 2). Given the patient's deteriorating condition and lack of other treatment options, he underwent microsurgical resection of the hemorrhagic brainstem lesion via a right occipital transtentorial approach. Intraoperatively, the brainstem in the area of the lesion was noted to be darkly discolored. Histopathology showed a well-vascularized tumor with hyperchromatic nuclei and faint eosinophilic cytoplasm (Fig. 3). Immunohistochemistry was positive for S100 and negative for glial fibrillary acidic protein (GFAP), keratin, and cd20. All findings were consistent with a diagnosis of melanoma. Three months after surgery, he suffered a further hemorrhage and was placed on comfort care. No primary site other than the observed lesion was identified, raising the possibility of a primary CNS melanoma.

Fig. 2. Axial non-contrast CT image showing enlarged $2.1 \times 2.6 \times 3.4$ cm hemorrhage extending into the medial inferior aspect of the thalamus.
Image de tomodensitométrie axiale sans contraste montrant une hémorragie s'étendant à la face inférieure interne du thalamus.

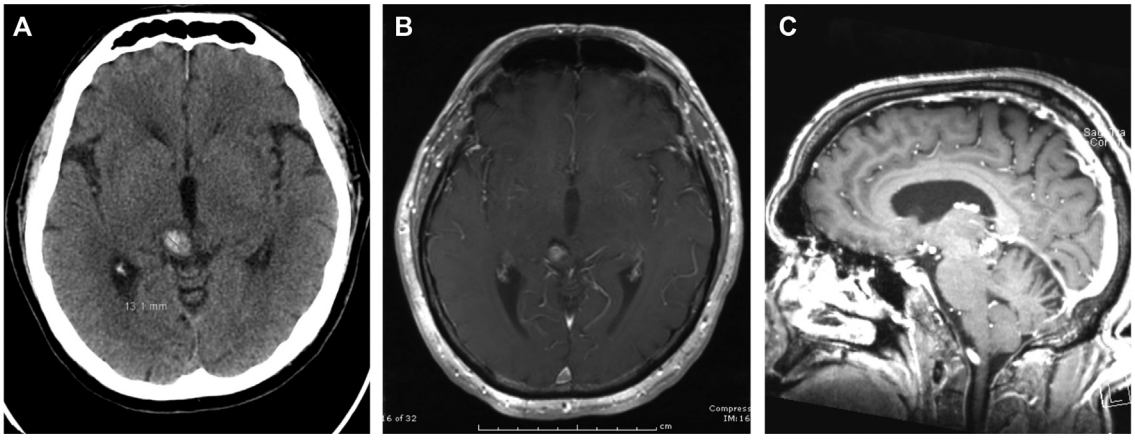

Fig. 1. A. Axial non-contrast CT image showing a 1.3 cm brainstem hemorrhage. B. Axial gadolinium-enhanced T1-weighted MRI demonstrating a non-enhancing hyperintense lesion centered within the superior colliculus consistent with a subacute hemorrhage from a previously presumed cavernoma. C. Sagittal gadolinium-enhanced T1-weighted MRI showing the lesion in the dorsal midbrain.
A. Scanner en coupe axiale sans contraste montrant une hémorragie de 1,3 cm de diamètre dans le tronc cérébral. B. IRM en séquence T1 avec gadolinium montrant un hypersignal centré dans le colliculus supérieur compatible avec une hémorragie subaiguë du cavernome présumé. C. IRM en T1 avec Gadolinium en incidence sagittale montrant la lésion dans le mésencéphale dorsal.

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