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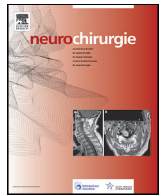

Clinical case

Unexpected ruptured aneurysm during posterior fossa surgery

Rupture inattendue d'anévrisme pendant une chirurgie de fosse postérieure

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ABSTRACT

Background and importance. – Surgery is the recommended treatment for unique significant cerebellar metastasis, particularly in cases of hydrocephalus. Complications of posterior fossa surgery are associated with high risk of morbidity and mortality. We present a unique case of unexpected peroperative rupture of a cerebellar superior artery aneurysm during posterior fossa surgery.
Clinical presentation. – During posterior cranial fossa surgery, severe arterial bleeding occurred in front of the medulla oblongata. Immediate postoperative computed tomographic (CT) angiography revealed a fusiform aneurysm from a distal branch of the left superior cerebellar artery.
Conclusion. – To our knowledge, this is the first reported operative case of unexpected infratentorial ruptured aneurysm during posterior fossa surgery.
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Mots clés :
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RÉSUMÉ

Introduction. – En règle générale, le traitement de la lésion métastatique cérébelleuse unique est l'exérèse, surtout si cette lésion est de gros volume ou en cas d'hydrocéphalie sus-jacente. Ce type de chirurgie associe un risque important de morbidité et de mortalité per- et postopératoire. Nous présentons un cas unique de rupture inattendue peropératoire d'un anévrisme de l'artère cérébelleuse supérieure pendant une exérèse de métastase de fosse postérieure.
Presentation clinique. – Au cours de l'exérèse d'une métastase cérébelleuse de cancer du sein, un important saignement artériel survenait à la face ventrale de la moelle allongée. L'angioscanner cérébral postopératoire immédiat montrait un anévrisme fusiforme distal d'une branche de l'artère cérébelleuse supérieure gauche.
Conclusion. – D'après la littérature, il s'agit du premier cas décrit de rupture inattendue d'anévrisme infratentoriel pendant une chirurgie d'exérèse de tumeur de fosse postérieure.
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1. Introduction

Brain metastases often have a poor overall prognosis, primarily if they are located in the posterior cerebral fossa, due to the risk of acute hydrocephalus [1]. Surgical resection must be considered as the first option as it increases the median survival time for the patients who are clinically eligible [2].

Complications during posterior fossa surgery have been described and are well known: bradycardia and hypotension by direct stimulation of the trigeminal nerve [3,4] or by surgical compression of the medulla oblongata [5]; gas embolism following hydrogen peroxide irrigation of the surgical field [6] or reverse brain herniation by an intraventricular shunt [7].

Early postoperative complications for this type of surgery include cerebrospinal fluid leakage, haematoma and seizures [8]. Haematoma is associated with a high risk of morbidity and mortality.

We present a unique case of an aneurysmal subarachnoid haemorrhage during posterior fossa surgery caused by an unknown ruptured superior cerebellar artery aneurysm.

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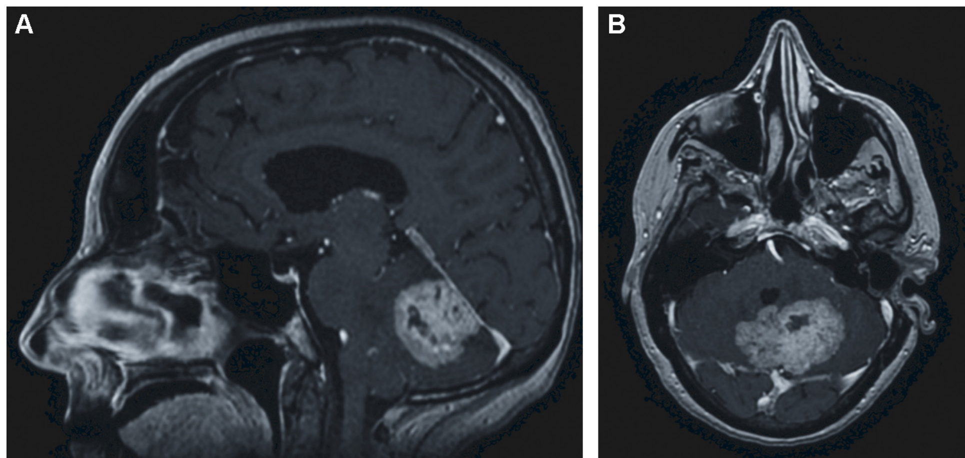

Fig. 1. Sagittal MR imaging (1A) and axial (1B), T1 sequence with gadolinium enhancement, showing an unique cerebellar tumour. Note: a small supracerebellar infratentorial vein behind the tumour and in front of the torcular herophili.
IRM séquence T1 avec gadolinium, coupes sagittale (1A) et axiale (1B) montrant la tumeur cérébelleuse. Notez : une petite veine supracérébelleuse infratentorielle est située entre la tumeur et le torcular.

2. Clinical presentation

We reported the case of a 62-year-old woman, who had been monitored for a left breast lobular carcinoma over a 4-year period, with liver, pulmonary and bone metastasis. The lesions of the liver, lung and bone remained stable under tamoxifen/herceptin administration. She also received radiotherapy for both rib and pelvic pains. She had been experiencing a gait disturbance for the previous several weeks. Clinical examination revealed a kinetic and static cerebellar syndrome. Cerebral MRI showed an expansive cerebellar lesion on contrast enhancement and a perilesional oedema. This tumour extended from the left middle cerebellar peduncle and was adherent to the cerebelli tentorium (Fig. 1). Due to this unique symptomatic metastatic cerebellar tumour, surgery was decided.

The operation was performed in the prone position, neck in slight flexion. A left paramedian suboccipital craniectomy permitted a tumour resection until the fourth ventricle under microscopic magnification. Suddenly, a haemorrhage arising from the left laterobulbar cistern occurred. The colour of the bleeding was red. There was no evidence of a venous cause (absence of variation such as oblique occipital sinus). We did not have access to the collicular cistern or ambient cistern to view where the bleeding exactly occurred. Haemostasis was difficult. We used a haemostatic matrix device FLOSEAL® and flushing with Ringer's Lactate solution to stop the arterial bleeding. Just after surgery, the patient unfortunately experienced a left eye mydriasis. She immediately had a CT scan that showed a subarachnoid haemorrhage in the basal cisterns, particularly in the cisterna interpeduncularis (Fig. 2).

During this examination, an associated CT angiography highlighted a dysplastic formation of the distal branch of the left cerebellar superior artery (SCA), its neck measured 2.2 mm. It appeared to be a fusiform aneurysm (Fig. 3). There was an associated obstructive hydrocephalus, because of cisterna magna fourth ventricle bleeding contamination. There was no other associated malformation, except for a fenestration at the origin of the homolateral superior artery.

Due to the mesencephalic topography of the bleeding and immediate postoperative left mydriasis, we proposed no surgical evacuation of the posterior fossa haematoma or external ventricle drainage to prevent rebleeding.

The patient was subsequently transferred to the neurosurgery intensive care unit but died 4 days later.

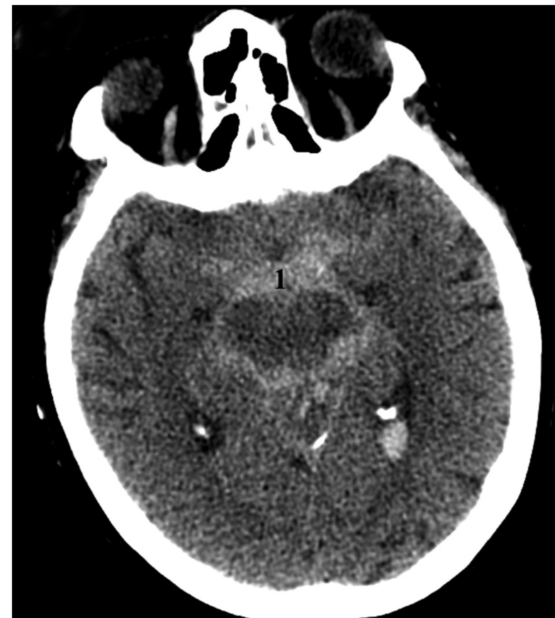

Fig. 2. Axial CT scan without contrast enhancement after surgery showing a subarachnoid haemorrhage in the basal cisterns (1: cisterna interpeduncularis).
Scanner cérébral postopératoire sans injection, montrant l'hémorragie sous-arachnoïdienne dans les citernes de la base (1 : citerne interpédonculaire).

3. Discussion

The main complications of posterior fossa craniectomy are oedema, haematoma, cerebrospinal fluid fistula and meningocele [9]. A retrospective study of 726 patients who underwent this type of surgery showed that 13 patients had seizures (1.8%) in the early postoperative period (1 day to 2 weeks), primarily due to hydrocephaly [8]. Remote supratentorial intracerebral haemorrhage has also been described due to persistent elevation of blood pressure during this stage [10].

In the literature, there is no reported case of unexpected peroperative subarachnoidal haemorrhage during surgery for a cerebellar tumour.

One case was described where a 4-month-old child presented with obstructive hydrocephalus on a huge mass occupying the entire posterior cranial fossa [11]. The patient died 6 hours after

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