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Image Report

Remote supratentorial intraparenchymal bleed after posterior fossa surgery: A rare occurrence

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ABSTRACT

Background: Intraparenchymal hemorrhage at the operative site is one of the major complications of brain surgery. It is unusual to occur at a site remote from the operative site, but when it happens, it may cause significant morbidity and mortality.

Case Description: We report the case of a 27-year-old male who presented with complaints of paresthesias over the left side of his face and decreased hearing from the left ear for two years. His radiology was suggestive of a large left cerebellopontine angle epidermoid cyst. The patient underwent left retro mastoid suboccipital craniotomy and near-total excision of the epidermoid cyst. The immediate postoperative non-contrast computed tomography scan of the brain was suggestive of no hematoma at the operated site but a remote left parafalcine frontoparietal intraparenchymal bleed, which was managed conservatively. At two months follow-up, he had no neuro deficits, and magnetic resonance imaging of the brain was suggestive of near-total excision of the epidermoid cyst with resolving left parafalcine frontoparietal bleed.

Conclusion: We report this case due to the unique case observation of an intracranial bleed at a remote site rather than at the operated site.

Keywords: Cerebellopontine (CP) angle epidermoid, Intraparenchymal bleed, Posterior fossa surgery, Remote, Supratentorial

INTRODUCTION

Intraparenchymal hemorrhage at the operative site is one of the major complications of brain surgery. It is unusual to occur at a site remote from the operative site, but when it happens, it may cause significant morbidity and mortality.

CASE DESCRIPTION

We report the case of a 27-year-old male who presented with complaints of paresthesias over the left side of his face and decreased hearing from the left ear for two years. Neurological examination revealed horizontal nystagmus, gait ataxia, and mild left sensorineural hearing loss. His radiology was suggestive of a large extra-axial lesion in the left cerebellopontine

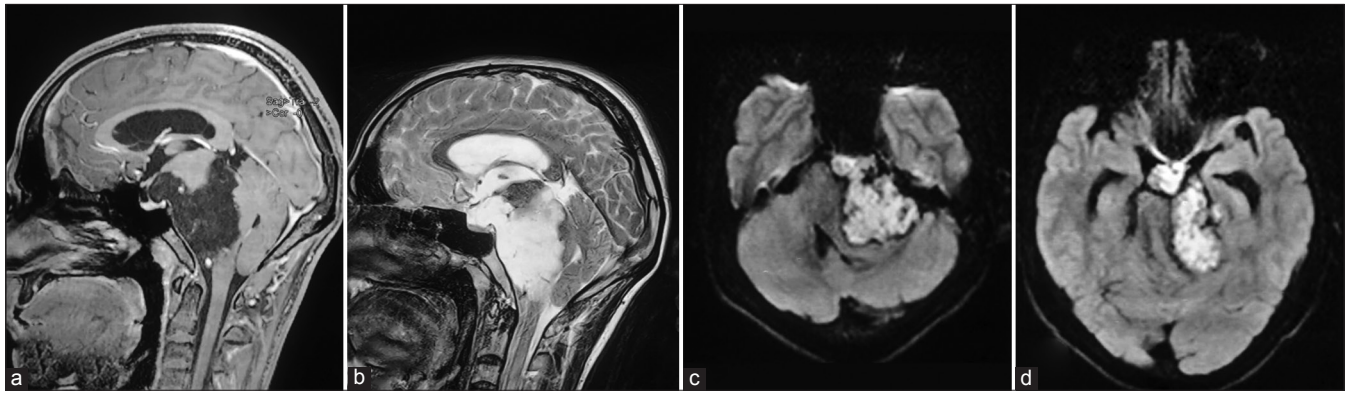

Figure 1: Preoperative magnetic resonance imaging of the brain revealed (a) T1 hypointense, (b) T2 hyperintense lesion in the left cerebellopontine angle cistern with (c and d) diffusion restriction and extensions into the ambient, quadrigeminal, and suprasellar cisterns with no postcontrast enhancement suggestive of epidermoid cyst.

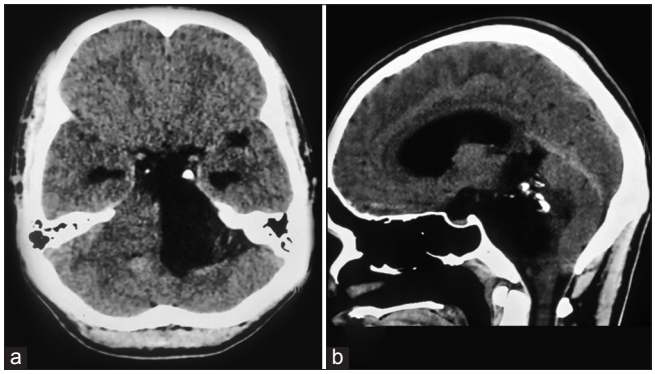

Figure 2: (a and b) Preoperative computed tomography scan of the brain suggestive of a hypodense lesion in the left cerebellopontine angle with peripheral calcifications.

(CP) angle with diffusion restriction. The lesion was encasing the cisternal segment of the left 7th–8th cranial nerves and was indenting the left middle cerebellar peduncle. Superiorly, the lesion was extending into the left half of the ambient and quadrigeminal cisterns and anteriorly, the lesion was bulging into the suprasellar cistern. His imaging was suggestive of a left CP angle epidermoid cyst [Figures 1 and 2]. The patient underwent left retro mastoid suboccipital craniotomy in the park bench position and near-total excision of the epidermoid cyst. In the immediate postoperative period, a non-contrast computed tomography scan of the brain was suggestive of no hematoma at the operated site but a remote left parafalcine frontoparietal intraparenchymal bleed resulting in weakness of the right upper and lower limbs (power 3/5) [Figure 3]. The patient's coagulation profile was normal. As the bleed was small with no significant mass effect, it was managed conservatively, and gradually, the patient's right hemiparesis improved. At two months follow-up, he had no neuro deficits and magnetic resonance imaging of the brain was suggestive of near-total excision of the epidermoid cyst with resolving left parafalcine frontoparietal bleed [Figure 4]. Magnetic resonance venography was suggestive of a patent superior sagittal sinus [Figure 4].

DISCUSSION

Haines *et al*., in their paper, reported the incidence of supratentorial hemorrhage after posterior fossa surgeries was 0.6%.[5] There are various theories regarding the etiology of remote supratentorial bleed after posterior fossa surgery.

1. The sitting position during surgery can reduce arterial blood flow, resulting in ischemia.[4] Hyperperfusion of blood occurs once the patient is brought back to the supine position, leading to intraparenchymal hemorrhage.[4] Even subcortical veins can burst and cause intraparenchymal hemorrhage through the same mechanism.[4]
2. Excessive drainage of cerebrospinal fluid during surgery (probable pathophysiology in our case) and also through the Romo Vac drain from a small dural leak after surgery can lead to intracranial hypotension and remote site bleed.[3]
3. Supratentorial bleeds after posterior fossa surgery can occur secondary to a rapid elevation of the arterial pressure.[2,4] For example, handling of the brainstem during tumor resection can lead to labile hypertension.[4]
4. There is the possibility of dural venous sinus thrombosis due to sinus injury leading to venous hypertension and parenchymal bleed.[6] Control of bleeding from venous sinuses due to the avulsion of emissary veins

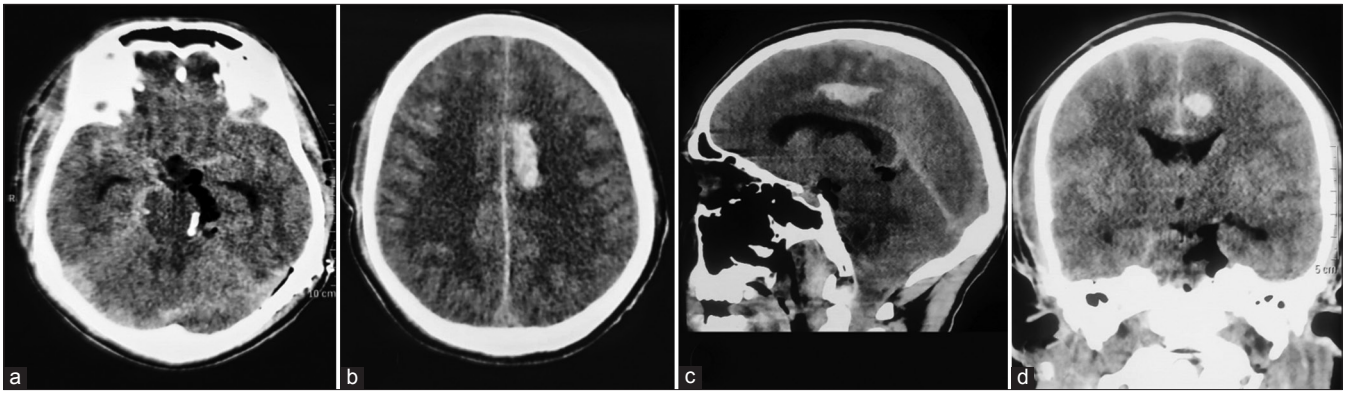

Figure 3: (a-d) Immediate postoperative computed tomography scan of the brain suggestive of no hematoma at the operated site but a remote left parafalcine frontoparietal intraparenchymal bleed.

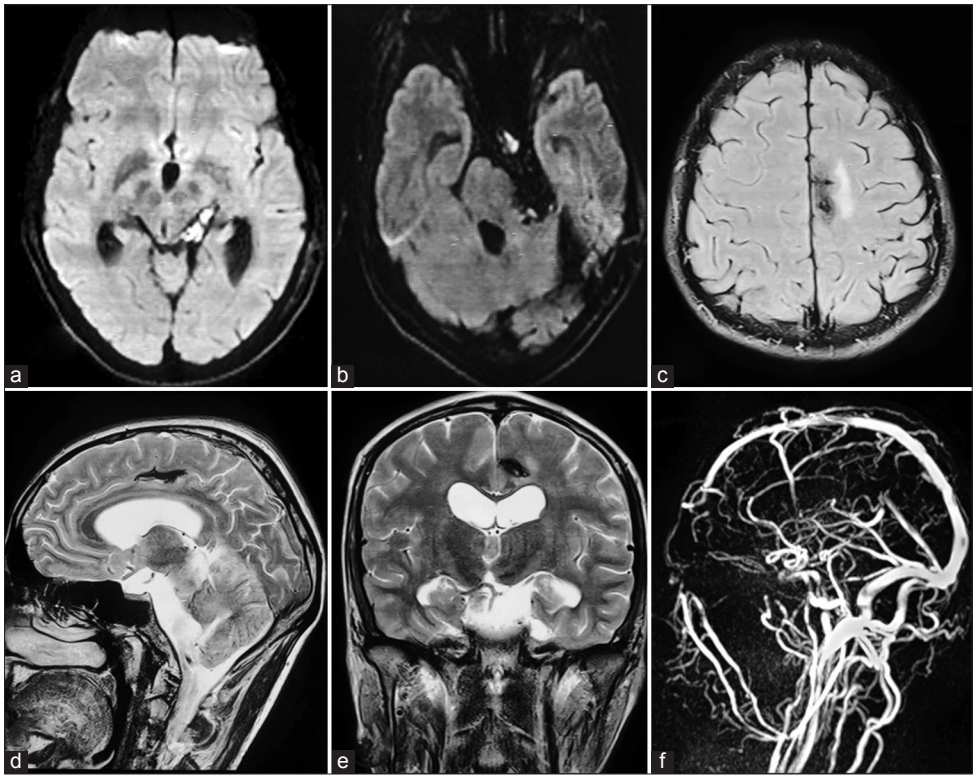

Figure 4: (a-f) At two months follow-up, magnetic resonance imaging of the brain suggestive of near total excision of the epidermoid cyst with resolving left parafalcine frontoparietal bleed. Magnetic resonance venography was suggestive of a patent superior sagittal sinus.

during craniotomy/craniectomy possibly induces sinus thrombosis that may propagate antegrade or retrograde, leading to venous hypertension and intracerebral hemorrhage.[6]

5. There can be occlusion of the internal carotid or vertebral arteries in the neck by improper positioning of the head, leading to intraoperative ischemia and hemorrhage within the infarcted brain after repositioning of the patient.[1]
6. Coagulation disorders can be the cause of remote intraparenchymal bleed and need to be ruled out.[4]

CONCLUSION

We reported this case due to the unique case observation of an intracranial bleed at a remote site rather than at the operated site which in our case, was probably due to excessive drainage of cerebrospinal fluid during surgery.

Ethical approval

The Institutional Review Board approval is not required.

Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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