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Unique Case of Spontaneous Basilar Artery Stroke in an Operated Child with Craniopharyngioma

Krishna Shah[1] Shrey Jain[1] Ajit K. Sinha[1]

[1] Department of Neurosurgery, Sir Ganga Ram Hospital, New Delhi, India

Address for correspondence Krishna Shah, MBBS, DNB, Department of Neurosurgery, Sir Ganga Ram Hospital, Old Rajinder Nagar, New Delhi, 110060, India (e-mail: crishna.shah@gmail.com).

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Abstract

Craniopharyngiomas are the most commonly presented nonglial tumors in child patients. They cause significant morbidity and mortality, both before and after surgery. The most common immediate postsurgery complications are attributable to pituitary insufficiency. Neurovascular complications account for only 2.7 to 2.9% surgical cases, and usually involve the vessels of the Circle of Willis. Thrombosis or vasospasm of the vessels of posterior circulation is unheard of. Here, we are reporting a unique case of a child with craniopharyngioma who developed acute spontaneous basilar artery thrombosis and posterior circulation stroke 6 days after surgery.

Keywords

- craniopharyngioma
- basilar artery
- thrombosis
- posterior circulation stroke
- vascular complication

Key Messages

A posterior circulation stroke can also be a rare but possible postoperative complication of craniopharyngioma surgery, and one should be on the vigil for prodromal symptoms of a posterior circulation stroke in the immediate and the early postoperative periods.

Introduction

Craniopharyngiomas are rare tumors arising from remnants of the Rathke pouch (craniopharyngeal duct) and are associated with significant morbidity and mortality. It is a rare type of brain tumor of uncertain behavior that occurs at a rate of 1.3 per million person years.[1] The most common complications are due hormonal imbalances caused by damage to the pituitary or hypothalamus. Neurovascular complications after surgery are very rare, with only a few documented cases being reported in literature including fusiform dilatation of the carotid artery,[2] carotid artery laceration,[3] or delayed vasospasm secondary to vessel handling or cyst rupture.[4] No case of thrombosis of posterior circulation vessels has been reported in literature. Here the authors describe a case of acute posterior circulation stroke due to basilar artery thrombosis as an early postoperative complication.

Case Presentation

A 13-year-old obese boy presented with complaints of progressive deterioration of vision and progressive intermittent holocranial headache for the past few months. Contrast-enhanced magnetic resonance imaging (CEMRI) brain (►**Fig. 1**) was done suggestive of solid cystic craniopharyngioma in the sellar–suprasellar region with a small cystic component extending in the posterior fossa in the prepontine cistern. The child underwent right frontotemporal craniotomy and complete excision of lesion via interoptic and opticocarotid routes. Intraoperatively, there was handling of only right internal carotid artery (ICA) with sparing of all other vessels. Perforators were preserved. The prepontine cystic component of tumor along with rest of the tumor with

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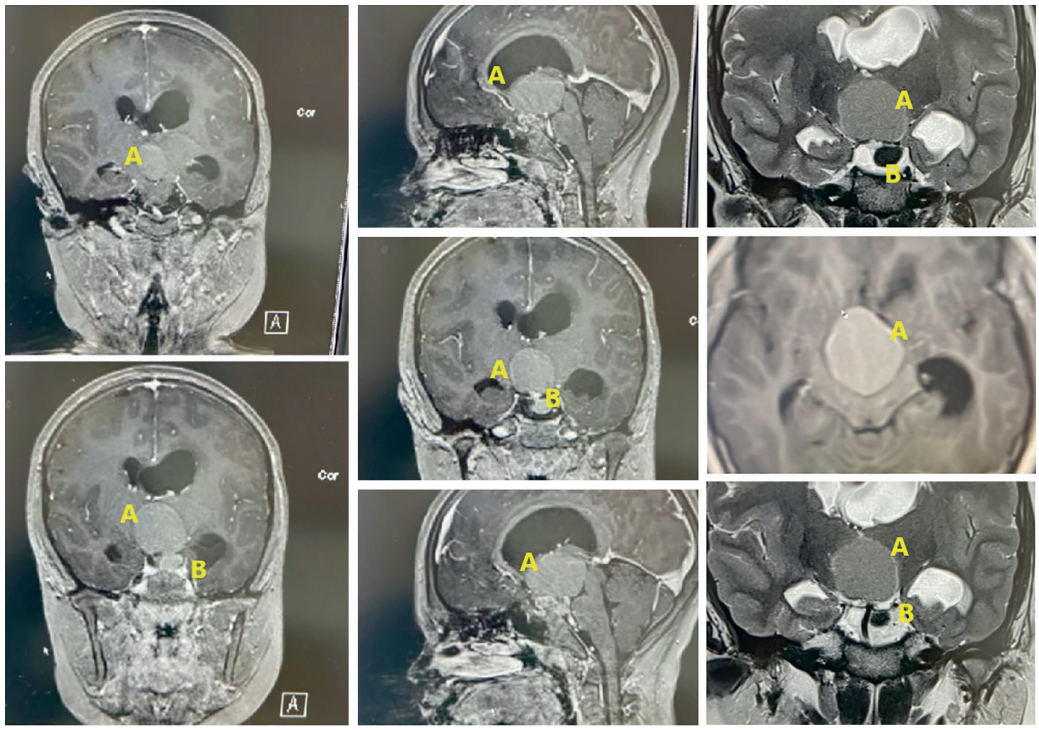

Fig. 1 Preoperative contrast enhanced magnetic resonance images showing sellar–suprasellar lesion (**A**) extending into posterior fossa (**B**) suggestive of craniopharyngioma.

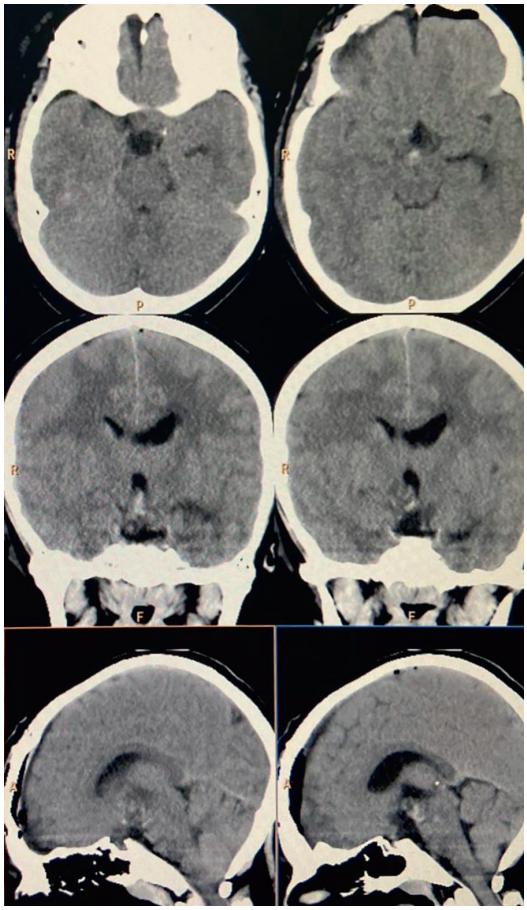

Fig. 2 Postoperative computed tomography scan of the head showing complete excision of the lesion (*A*).

no manipulation needed in posterior fossa. Basilar artery was visualized and was intact. There was no evidence of vasospasm of vessels intraoperatively. There was no significant blood loss during surgery and pituitary stalk was undamaged. Postoperatively, after a night of elective ventilation, the child was extubated and was neurologically intact with Glasgow coma scale of 15 of 15. Patient developed transient type of diabetes insipidus (DI) on postoperative day (POD) 2 for which correction was done using desmopressin spray and adequate hydration. The next day, the child was found to be drowsy with decreasing sensorium. Electrolyte and hormonal profile was suggestive of hypopituitarism for which hormone replacement therapy was initiated with oral thyroxine and corticosteroids. Postoperative noncontrast computed tomography (NCCT) head scan done which showed satisfactory postoperative changes (►**Fig. 2**). DI was stabilized and the child was doing well and was planned for discharge.

On POD-9, patient complained of vertigo with no cerebellar signs. His vertigo was controlled by supportive medications, and there were no other complaints, so we chose to observe. However, child developed tonic–clonic seizures along with deterioration in sensorium at night. The seizures were persistent despite multiple intravenous (IV) antiepileptics. CEMRI brain was done which revealed multiple acute cerebellar, pontine, and midbrain infarcts with thrombosis of basilar artery (►**Fig. 3**). Magnetic resonance (MR) angiogram of the neck and brain was obtained which revealed thrombosis of the basilar artery with poor flow in the right posterior cerebral artery with normal neck vessels (►**Fig. 4**). There was no evidence of any vasospasm or vessel dissection. Anticoagulant therapy was started immediately

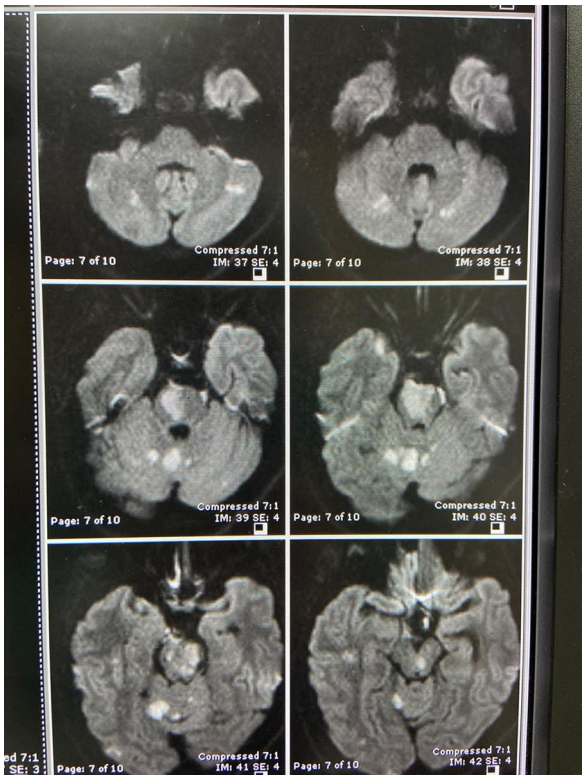

Fig. 3 Magnetic resonance images of the brain showing acute multiple cerebellar, pontine, and midbrain infarcts.

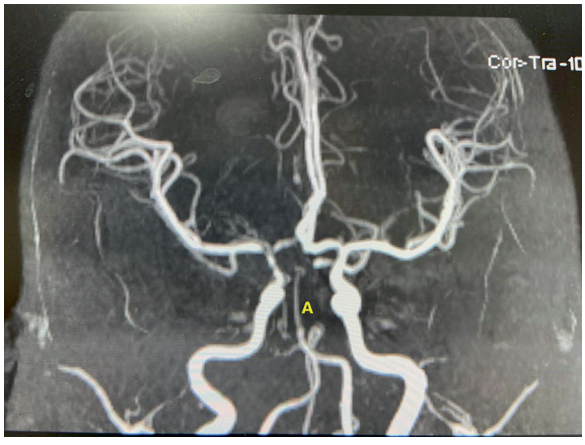

Fig. 4 Magnetic resonance angiogram of the brain showing basilar artery thrombosis with poor flow in right posterior cerebral artery (*A*).

in the form of subcutaneous low molecular weight heparin. Laboratory reports of coagulation profile were within normal limits and echocardiography also did not reveal any abnormality. No evident cause was found for the basilar artery thrombosis. The child did not respond to therapy and passed away.

Discussion

Vascular complications are very rare postoperative complications for craniopharyngioma. Of these, most commonly reported are those that occur due to trauma during surgery or vessel handling, such as fusiform dilatation of the ICA or vasospasm of vessels of the anterior circulation. Thrombosis of the vessels of posterior circulation is unheard of. Pediatric arterial ischemic stroke (PAIS) has an incidence of 3.3 cases per 100,000 children/year (with the vertebrobasilar territory involvement seen in up to 36% of cases); however, the incidence of isolated childhood basilar artery occlusion (BAO) and stroke (BAS) is unknown.[5] The most common cause of acute BAO in children is vertebral artery dissection caused due to trauma.[6] In our patient, there was no evidence of arterial dissection in the neck or brain vessels. Coagulation profile, echocardiography, and thrombophilia panel were also within the normal range. There was no evidence of any vasospasm. The authors conclude that if prodromal symptoms such as vertigo and nausea were taken into consideration at an earlier stage and had posterior circulation involvement been suspected, proper imaging could have been done sooner and appropriate measures could have been taken to save the child. If the posterior circulation stroke was diagnosed in time, then mechanical thrombectomy could have been done. With timely intervention, it may have been possible to save the child.

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Conflict of Interest
None declared.

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