
CASE REPORTS

PERSISTENT POSTOPERATIVE HYPERTENSION FOLLOWING POSTERIOR FOSSA SURGERY

- A Case Report-

ZULFIQAR ALI*, HEMANSHU PRABHAKAR*
AND GIRIJA P RATH*

Abstract

We report a case of a 20 month old male child who underwent surgery for posterior fossa tumor. Post operatively the child developed persistent hypertension. No active intervention was done as it could have compromised cerebral perfusion pressure. The possible cause is discussed.

Key Words: posterior fossa tumor; postoperative; persistent hypertension; reactionary edema; cerebral perfusion pressure.

Introduction

Postoperative complications are often reported following surgery in the posterior fossa. These are usually of transient nature. They can be devastating if persistent or continue for a long time. We report a case where the patient developed persistent hypertension in the postoperative period.

Case History

A 20-months-old male child, weighing 9 kg presented with persistent vomiting for 4 months, associated with decreased visual acuity and delayed milestones. Computed tomography revealed a large posterior fossa tumor, composed of solid and cystic components, arising from the vermion and extending to supratentorial compartment.

On admission the child was drowsy, had papilloedema and hydrocephalus for which a medium pressure right ventriculoperitoneal shunt insertion was done. A week later, the child was scheduled for elective midline suboccipital craniectomy and tumor decompression.

All routine investigations were within normal limits. Adequate fluids and packed red blood cells were given to replace the blood loss of approximately 700 ml.

The resection of the tumor adherent to brain-stem led to multiple episodes of severe bradycardia with heart rate decreasing from 130 to 64 bpm. These episodes were resolved on cessation of the surgical stimulus. After tumor excision, it was observed that patient's blood pressure gradually increased from systolic 70 mmHg to 135 mmHg and the heart rate decreased from 150 to 110 bpm. Methylprednisolone infusion was started and continued for 24 hours.

* Department of Neuroanaesthesiology Neurosciences Center, 7th floor. All India Institute of Medical Sciences, New Delhi, India.

Address for Correspondence: Dr. Hemanshu Prabhakar, Department of neuroanesthesiology, Neurosciences Center, 7th floor. All India Institute of Medical Sciences, New Delhi, India-110029. Phone no.: +91-11-26588500-4849/4847, Fax: 91-11-26588663, E-mail: prabhakarhemanshu@rediffmail.com.

At the end of an 8 hours surgery, the blood pressure remained high between systolic 130 to 140 mmHg and heart rate in the range of 100 to 110 bpm.

In view of manipulation of brain stem structures, it was decided to electively ventilate the child in the postoperative period with adequate sedation and analgesia. However, the hypertension and relative bradycardia persisted for the next 24 hours. The systolic blood pressure returned gradually to the preoperative values of 70-80 mmHg over next 36 hours. The postoperative course was further complicated by pneumothorax secondary to subclavian venous cannulation on the right side. This was successfully managed by inserting an intercostal drain. Trachea was extubated on the seventh postoperative day. At the time of discharge from ICU, the child had no respiratory problems or any fresh neurological deficits.

Discussion

Surgery on the posterior fossa is attended by *transient* complications related to respiratory and cardiovascular systems in the postoperative period¹. However, such complications if *persistent* occur due to brain stem compression, ischemia, or hematoma². It has been postulated that compression on the pressor centre at the rostral ventrolateral medulla results in stimulation of the sympathetic nervous system, leading

to systemic hypertension³.

A postoperative computed tomographic scan of our patient did not reveal any hematoma. He developed persistent hypertension postoperatively, possibly due to brain-stem edema as a result of intraoperative manipulation. As the edema subsided over the next 36 to 48 hours the blood pressure normalized. Any effort to reduce the pressure could possibly compromise the cerebral perfusion pressure in the presence of edema. In this situation we believe that the increase in blood pressure was a reactionary phenomenon to maintain an adequate perfusion of the edematous brain stem. No active measures to decrease the blood pressure in the postoperative period were taken, as such measures could have resulted in ischemia and infarction of the vital structures of the brainstem. Since such elevated blood pressure could possibly lead to a deranged autoregulation and cerebral hyperemia, hourly neurological examinations were carried out. Fortunately, our patient recovered without any neurological deficit or respiratory or cardiac complication.

In conclusion, we believe that under vigilant monitoring, postoperative hypertensive response following posterior fossa surgery need not be treated aggressively, as this response could be a reactionary response to brain edema.

References

1. ARTRU AA, CUCCHIARA RF, MESSICK JM: Cardiorespiratory and cranial-nerve sequelae of surgical procedures involving the posterior fossa. *Anesthesiology*; 1980, 52:83-86.
2. SMITH DS, OSBORN I: Posterior fossa: Anesthetic considerations. In: Cottrell JE, Smith DS, eds. *Anesthesia and Neurosurgery*. St. Louis: Mosby, Inc., 2001, 335-351.
3. KAN P, COULDWELL WT: Posterior fossa brain tumors and arterial hypertension. *Neurosurg Rev*; 2006, 29:265-269.