



ANAESTHETIC MANAGEMENT IN A CASE OF CEREBELLAR HEMANGIOBLASTOMA IN SITTING POSITION

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INTRODUCTION

Hemangioblastomas are tumors of the central nervous system that originate from the vascular system. Hemangioblastomas are most commonly composed of stromal cells in small blood vessels and usually occur in the cerebellum, brain stem or spinal cord. Hemangioblastomas usually occur in adults in less than 2% patients. Men and women are approximately at the same risk. The treatment for hemangioblastoma is surgical excision of the tumor.

History

Here, we present 28 old male patient weighing 55kg, with Complain of headache since 3months, No history of convulsion or head injury, No other medical or surgical history, on examination-Patient was of average built & well nourished, Vital were Pulse-92/min, BP-122/70 mm/hg. Mouth opening was adequate with, Mallampati-grade-I. Systemic examination of respiratory & cardiovascular system was normal including central nervous system without neurological deficit.

All routine Investigations were normal including 2D-Echo and CSF study, except MRI brain showing 29x28x21 mms size homogenous enhancing mural nodule in superior aspect of 4th ventricle with obstructive hydrocephalus, pressure effect over cerebral peduncles and cerebellar tonsillar herniation suggestive of hemangioblastoma.

Day Before Surgery

Patient was explained about Anaesthesia risk of ASA-IV as per location of tumor, bleeding, and chances of embolism, need for ventilatory support in post operative period. Patient was advised to take morning dose of inj. valproate on day of surgery. Considering chances of

major blood loss, blood & blood products were kept ready.

Anaesthetic management

PRE-OPERATIVE

All Monitors were applied including special monitors like invasive BP, EtCO₂, Nasopharyngeal temperature monitoring, NMT monitoring, CVP monitoring, Two large bore iv cannula secured (no.16 intra cathe), Pre-loading done with 1000 ml ringer lactate infusion. Patient was Premeditated with Inj. Ondansetron 2 mg iv, Inj. Glycopyrrolate 0.2 mg iv, Inj. Fentanyl 100 mcg iv. Pre oxygenation was done with Bain s circuit with 100% oxygen for 5 min.

Induction was done with Inj. Thiopenton 5 mg/kg iv, Inj. Vecuronium 0.15 mg/kg iv, Inj. Xylocard 1mg/kg iv. Intubation was done with oral 8.5mm armoured cuffed endotracheal tube. Bilateral air entry was checked & ETco₂ monitoring attached. Maintenance was done with Inj. Vecuronium 0.01mg/kg iv incremental dose and inhalation with 1-1.5% sevoflurane+oxygen (Nitrous oxide avoided as risk of pncemocephalus). Patient was given Sitting position slowly over a period of 30 min with continuous monitoring of intra arterial blood pressure, ETco₂, ECG and loading of intravenous fluid.

Sitting Position

Proper emptying of leg veins by elevation of lower limbs, elastic stockings were applied. (intermittent inflating compression device was not available). Then gradually head & legs elevation were done, Head fixed in pins. 2 finger distance were maintained between the mandible and the sternum. Both the hands were kept on hand rest and tied, horizontally. The knee were slightly flexed. Proper padding was kept at all bony prominences. Eyes were protected by applying neosporine ointment and padding. Patient was covered with warming blanket.

INTRA OPERATIVE

Patient was hemodynamically stable throughout operation which lasted for 6 hours 15 minutes. Intra op fluids given in form of 5000 ml crystalloids, 2unit of P.C.V. & 100 ml Mannitol. Intra op urine output was 2400ml. Analgesia given with Inj. Diclofenac 75 mg iv. patient reversed after making supine position with Inj. Glycopyrrolate 8 mcg/kg iv, Inj. Neostigmine 0.05 mg/kg iv. Extubation was done as per TOF response and adequate tidal volume. Patient was conscious & following verbal commands, vitals were pulse-92/min, BP-

128/78 mm of Hg. Patient was shifted to ICU for observation & O₂ was given through venti mask.

DISCUSSION

Use of sitting position remains controversial and appears to be diminishing because of potential for serious complications. There are chances of malpractice liability claims due to neurological consequences after paradoxical air embolism with sitting position.

Benefits of sitting position are optimum access to midline lesion, improves cerebral venous decompression, lowers intra cranial pressure and promotes gravity drainage of blood and CSF. Surgical benefits are accumulated blood drains out of and away from operative site, more rapid access to bleeding point, cleaner surgical field, technically easier procedure and examine motor response of cranial nerves. Complication related to sitting position are haemodynamic instability, venous air embolism, pneumocephalus, macroglossia, quadriplegia and compressive peripheral neuropathy.

Physiological changes

Cardiovascular system

There are chances of Cardiovascular instability and arterial hypotension with positioning which gets aggravated by depressant effect of iv induction and volatile agents on myocardial contractility and changes in venous return after intermittent positive pressure ventilation. Gravity not only permits drainage of blood and CSF but it also decrease in systemic arterial pressure because of venous pooling in lower extremities Arterial pressure has been reported to be reduced by 0.77 mm Hg for each centimeter gradient above the heart.

Respiratory system Ventilation is unimpeded as diaphragmatic excursion is greater than in horizontal position and consequently airway pressures are lower.

Cerebral perfusion and intracranial pressure: Inadequate cerebral perfusion after placement of anaesthetized patients in sitting position is well recognized.

Complication

Venous air embolism

Conditions favoring venous air entrainment include an open vein, gravitational effect of low central venous pressure and negative iv pressure relative to atmospheric pressure and poor surgical technique. Monitoring techniques include praecordial doppler, right heart catheters,

transoesophageal echocardiography, capnography and oesophageal stethoscope. Transoesophageal echocardiography is most sensitive monitor to detect air in right atrium and paradoxical embolization of air.

Pneumocephalus

Tension pneumocephalus may follow air entry into the epidural or dural spaces in sufficient volume to exert a mass effect with potential for life threatening brain herniation. Nitrous oxide diffuses into an air filled cavity more rapidly than blood thus size of any air filled space or embolus increases so nitrous oxide should be avoided.

Macroglossia

Extreme flexion of the head with the chin resting on the chest and the prolonged presence of an oral airway may promote obstruction of venous and lymphatic drainage of the tongue after procedure performed in the sitting position. Post operative macroglossia has the potential to produce airway obstruction, hypoxaemia, and hypercapnia.

Neurological sequelae-peripheral nerve injuries

These include damage to common peroneal nerve, resulting in foot drop and less commonly, recurrent laryngeal nerve palsy.

Quadriplegia

Acute flexion of the neck in an anaesthetized patient in sitting position may stretch the cord at the level of fifth cervical vertebra. Regional cord perfusion may be compromised, especially if mean arterial pressure is reduced.

CONCLUSION

Proper anaesthetic preparation, intra operative monitoring, managing basic physiologic changes of intra-cranial pressure, proper blood loss management, keeping relative normothermia and due precaution of sitting position give best outcome of such patient.

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