

compliance. Postdecompression the patient received staged step down intensive care in the CCU, high dependency unit (HDU), and neurosurgery wards and culminated in the discharge of a functional patient with very little neurological sequelae.

Conclusion: A high index of suspicion and a close watch on the anesthesia monitor goes a long way in detecting the occurrence of and ameliorating the effects of VAE during the intraoperative period in neurosurgical patients. Though rare, the embolic event has the potential to cause ischemic injury to the brain which, though commonly arterial, can also lead to an insidious venous infarct.

Keywords: venous air embolism, venous infarct, decompressive hemicraniectomy

References

1. Suri V, Gupta R, Sharma G, Suri K. An unusual cause of ischemic stroke - cerebral air embolism. *Ann Indian Acad Neurol* 2014;17(1):89-91
2. Giraldo M, Lopera LM, Arango M. Embolismo aéreo venoso en neurocirugía. *Rev Colomb Anestesiol* 2015;43:40-44

A021 Incidental Detection of Takayasu Arteritis Presenting as Cerebral Aneurysm with SAH: A Case Report

Shailesh Gupta,¹ Sanket Agrawal,¹ Hemant Bhagat,¹ Komal Gandhi,¹ Navneet Singla¹

¹Department of Anesthesia and Critical Care, PGIMER, Chandigarh, India

Introduction: Twenty percent of Takayasu arteritis cases present with central nervous system (CNS) involvement. When CNS disease is present, it typically manifests as cerebral ischemia or stroke. There are rare reports of intracranial aneurysms in adults with Takayasu arteritis. We report the anesthetic management of a patient with Takayasu arteritis with cerebral aneurysm with subarachnoid hemorrhage (SAH) grade 1.

Methodology/Description: A 16-year-old female patient weighing 42 kg posted for emergency craniotomy and clipping for ruptured left internal carotid artery (ICA) communicating segment and ICA bifurcation aneurysm with SAH grade 1. Patient presented with sudden severe headache with vomiting. Preoperatively right upper limb NIBP was persistently above 220/110 mm Hg, so lower limb NIBP reading was noted suspecting coarctation of aorta, which was significantly lower (90/60 mm Hg). On auscultation, grade 2 pansystolic murmur was heard in aortic area. Cardiology consultation was taken before proceeding for emergency clipping with the goal of maintaining cerebral hemodynamics and oxygenation, reducing ICP and maintenance of lower limb perfusion to avoid spinal cord ischemia. Intraoperatively, patient's blood pressure was managed with vasodilators and case went uneventful. Postoperatively patient underwent CTA thorax and was diagnosed with Takayasu arteritis grade 4. Patient was discharged with Glasgow Coma Scale (GCS) of E4M6VT with right hemiplegia (MCA territory infarct).

Conclusion: Coarctation of aorta or Takayasu arteritis should be suspected in patients with multiple intracranial aneurysms. The goal of anesthesia should be focused on minimizing hemodynamic changes to prevent cerebral ischemia and adequate tissue perfusion to prevent peripheral ischemia.

Keywords: Takayasu arteritis, cerebral aneurysm, SAH

References

1. Kerr GS, Hallahan CW, Giordano J, et al. Takayasu arteritis. *Ann Intern Med* 1994;120(11):919-929
2. Takano K, Sadoshima S, Ibayashi S, Ichiya Y, Fujishima M. Altered cerebral hemodynamics and metabolism in Takayasu's arteritis with neurological deficits. *Stroke* 1993;24(10):1501-1506

A022 ILMA-Guided Flexible Bronchoscopic Intubation Is Associated with Reduced Cervical Spine Motion when Compared to Video Laryngoscopic Intubation

Amlan Swain,¹ Hemant Bhagat,² Vivek Gupta,³ Seelora Sahu¹

¹Department of Anaesthesia and Critical Care, Tata Main Hospital, Jamshedpur, Jharkhand, India

²Department of Anaesthesia and Intensive Care, Post Graduate Institute of Medical Education and Research, Chandigarh, Chandigarh, India

³Department of Radiodiagnosis and Imaging, Post Graduate Institute of Medical Education and Research, Chandigarh, Chandigarh, India

Introduction: The study of cervical spine mechanics during airway interventions is a gradually evolving realm of scientific study in an attempt to limit cervical spine movement during endotracheal intubation. In a similar pursuit, we compared the cervical spine motion during orotracheal intubation using intubating laryngeal mask airway (ILMA)-guided flexible bronchoscope with intubation aided by video laryngoscope.

Methodology: Forty consenting patients without any history of known cervical spine abnormalities posted for elective neuroradiological procedures in the angiography suite were enrolled in the randomized crossover trial. All patients were randomized to both ILMA-guided flexible bronchoscopic and video laryngoscopic-guided intubation. The cervical spine motion was examined using continuous cinefluoroscopy at the following regions: occipital bone, C1, C2, C3, C4, C5 vertebra, the occiput-C1, C1-C2, C2-C3, and C4-C5 junction. The combined craniocervical motion from occiput to C5 between the two intubation techniques was the primary outcome of the study.

Results: Analysis of combined craniocervical movement from occiput to C5 revealed lesser movement (62% less) by the ILMA flexible bronchoscopy-guided technique as compared with video laryngoscopy-guided intubation (17.55 ± 14.23 vs. 28.95 ± 11.58 degrees, $p < 0.001$). The ILMA flexible bronchoscopy-guided technique produced significantly lesser movement as compared with the video laryngoscopy at the occiput-C1 (9.75 ± 8.59 vs. 15.00 ± 10.48 degrees,

$p = 0.000$) and C1-C2 level (3.95 ± 7.51 vs. 7.53 ± 9.1 degrees, $p = 0.003$).

Conclusion: The use of ILMA-guided flexible bronchoscopic intubation is associated with significantly reduced craniocervical and upper cervical spine movement when compared with intubation aided by video laryngoscopy.

Keywords: flexible bronchoscopy-guided technique, video laryngoscopy-guided intubation, ILMA

References

1. Sawin PD, Todd MM, Traynelis VC, et al. Cervical spine motion with direct laryngoscopy and orotracheal intubation. An in vivo cinefluoroscopic study of subjects without cervical abnormality. *Anesthesiology* 1996;85(1):26-36
2. Turkstra TP, Craen RA, Pelz DM, Gelb AW. Cervical spine motion: a fluoroscopic comparison during intubation with lighted stylet, GlideScope, and Macintosh laryngoscope. *Anesth Analg* 2005;101(3):910-915

A023 A Case of Large Frontal Lobe Meningioma Complicated by Massive Intraoperative Hemorrhage

Harvleen K. Bhathal,¹ Mary Samuel¹

¹Department of Anesthesia, Dr. D. Y. Patil Medical College, Hospital and Research Center, Pimpri-Pune, Maharashtra, India

Introduction: A 65-year-old female patient complained of swelling over left side of forehead and scalp for 1 year and protrusion of eyeball since 6 months. She was diagnosed as meningioma in left frontal lobe, with mass effect and midline shift. Meningioma forms on the meninges, often slow growing; 90% are benign. They occur more in women than in men.

Methodology/Description: The swelling increased over 6 months, causing proptosis, ptosis, and squint of left eye. She developed headache and nausea (1 month). There was altered sensorium, irrelevant speech, and slow mentation for 2 weeks. Glasgow Coma Scale (GCS)—14/15 (E₄ V₄ M₆). She was preoxygenated and was premedicated. Induction—inj. thiopentone 250 mg, inj. rocuronium 40 mg. Intubated with flexometallic tube. Maintained on O₂ + N₂O (1:1) and sevoflurane (1-2%) using controlled ventilation on closed circuit volume control mode. Muscle relaxation bolus doses of inj. rocuronium 1 mg (for both surgeries). After first surgery, she was shifted to surgical intensive care unit (SICU), intubated in view of major blood loss, for 3 days on inotropes. Thereafter, she was weaned off ventilator, put on T-piece, and taken for external carotid artery ligation and excision of tumor (second surgery). At the end of second surgery, patient was reversed. She was obeying commands, eye opening was present, and tone and reflexes were normal. She was extubated on table. Phonation was present. Vitals were stable. Patient was shifted to SICU for observation. After 5 days in SICU, she was shifted to the general ward.

Conclusion: Meningioma is highly vascular brain neoplasms, associated with blood loss during resection. The anesthetic and perioperative care requires an understanding of pathophysiology of the tumor, effect of anesthetics, fluid therapy, and hemodynamics.

Keywords: meningioma, thiopentone, vascular

References

1. Hussain T, Shafat M, Bhat JA. Frontal lobe meningioma masquerading as depressive disorder. *J Psychiatr* 2015;18:328
2. Goma H. Anesthetic considerations of brain tumor surgery, diagnostic techniques and surgical management of brain tumors. Abujamra AL, ed. InTech; 2011: 366-384

A024 Intraoperative Hyperthermia: A Harbinger of Hypothalamic Injury?

C. S. Ranganatha Praveen,¹ Ajay P. Hrishi,¹ Karen R. Lionel¹

¹Division of Neuroanaesthesia, Department of Anaesthesia, Sree Chitra Tirunal Institute For Medical Science and Technology (SCTIMST), Trivandrum, Kerala, India

Introduction: Intraoperative hyperthermia portends some of the most dreaded anesthetic emergencies such as malignant hyperthermia, septicemia, neuroleptic malignant syndrome, thyroid storm, and transfusion reactions. However, hypothalamic injury as a central cause of fever should also be considered.

Methodology/Description: A 5-year-old boy with bifrontal headache, double vision, $7.6 \times 7.0 \times 5.2$ cm lesion in suprasellar brain (craniopharyngioma) on MRI with normal preoperative blood and hormone analysis underwent transcranial tumor excision under standard anesthesia care and monitoring. During surgical manipulation of base of tumor, sudden malignant rise of temperature from 36.2 to 39.4°C over 20 minutes and 41°C subsequently with tachycardia and hypertension was seen. All attempts including sevoflurane switchoff (from 0.8 MAC), cooling, intravenous paracetamol, and cold saline were in vain. Normal ABG, potassium, end-tidal CO₂ with serum sodium 150 mEq/L, urine output 25 mL/kg/h (from 2 mL/kg/h), increased serum osmolarity, decreased urine specific gravity pointed toward diabetes insipidus, which was managed with appropriate fluids. The child was extubated in ICU 4 hours after surgery with temperature 38°C and tachycardia and was discharged on seventh postoperative day on intranasal desmopressin. Normal ABG, CPK, thyroid profile, TLC, absent blood transfusion rule out other causes and correlation of hyperthermia to timing of surgery, and diabetes insipidus persisting after pharmacological therapy indicates hypothalamic injury as culprit due to altered control of homeostasis and temperature.

Conclusion: Intraoperative hyperthermia serves as harbinger of hypothalamic injury in suprasellar surgery, which should alert anesthetists regarding other associated ominous problems, such as autonomic dysfunction and diabetes insipidus, which needs urgent attention.

Keywords: intraoperative hyperthermia, hypothalamic injury, diabetes insipidus

References

1. Simon HB. Hyperthermia. *N Engl J Med* 1993;329(7):483-487
2. Herlich A. Perioperative temperature elevation: not all hyperthermia is malignant hyperthermia. *Paediatr Anaesth* 2013; 23(9):842-850