International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2019): 7.583

Anesthetic Management for Excision of Cerebral Abscess with Uncorrected Truncus Arteriosus in a25 Year Old Male Patient

Dr. L. Chemanthi[1], Dr. Murali Prabhakar[2], Dr. R. Konda Reddy[3]

[1]Post graduate, Department of Anesthesiology and Critical Care, Kurnool Medical College and GGH

[2]Assistant Professor, Department of Anesthesiology and Critical Care, Kurnool Medical College and GGH

[3]Associate Professor, Department of Anesthesiology and Critical Care, Kurnool Medical College and GGH

Abstract: ***Truncus arteriosus has been known as common arterial trunk(CAT) and is an uncommon congenital cardiac defect presenting in about 1-3% congenital heart diseases. The presence of congenital heart disease increases the morbidity and mortality of patients undergoing non-cardiac surgery. Here we discuss successful management of a case of 25 year old male with uncorrected truncus arteriosus posted for an emergency craniotomy and excision of intracerebral abscess and its anesthetic implications.***

Keywords: Truncus arteriosus, general anesthesia, craniotomy, cerebral abscess

1. Introduction

Truncus arteriosus is a rare cyanoticcongenital cardiovascular anomaly characterized by a single arterial vessel(truncus) with one valve arising from the heart. The truncus overrides a large peri-membranous ventricular septal defect and receives mixed blood from both ventricles and supplies blood to the pulmonary, systemic and coronary circulation.

The anomaly is divided into four types according to Collett and Edwards classification on the basis of the origin of the pulmonary arteries from the truncal artery.

In truncus, the goal is to balance the circulation to obtain QP:QS=1 to maintain reasonable oxygen saturation as well as adequate organ perfusion.

Careful titration of anesthetic agents and meticulous monitoring of their hemodynamic effects and appropriate measures to adjust pulmonary and systemic vascular resistances and cardiac performance are probably more important than the selection of a particular anesthetic agent. Events that trigger a hypertensive crisis such as hypoxia, hypercapnia, acidosis, pain, airway stimulation must be avoided.

2. Case Report

A 25 year old male patient brought to emergency department with chief complaints of headache and projectile vomiting. The glasgow coma scale was 14 and CT brain done. CT brain revealed left frontal abscess, measuring 5.2*4.4cm with extensive perifocal edema and patient was posted for emergency craniotomy and excision of intracerebral abscess. The patient had a known heart disease confirmed by echocardiography and CT cardiac angiography.

3. History and Examination

3.1Preoperative Evaluation

On examination,the patient had central cyanosis and severe clubbing(grade 4) and had both systolic and diastolic murmurs. The heart rate was 86 beats per minute, blood pressure 120/70mm of hg, SPO2-84% on room air.

ABG analysis on room air

Ph	7.45
PaO2	121 mm of hg
PaCO2	23 mm of hg
HCO3-	20.4 mmol/l
SPO2	88%

Preoperative laboratory values

Parameters	Laboratory Values
Hemoglobin	14.5g/dl
Hematocrit	59%
Blood sugar	93mg/dl
Blood Urea	23mg/dl
Serum Creatinine	0.7mg/dl
PT	16sec
INR	1.2
PTT	24sec
Sodium	143mmol/L
Potassium	3.5mmol/L
Chloride	104mmol/L

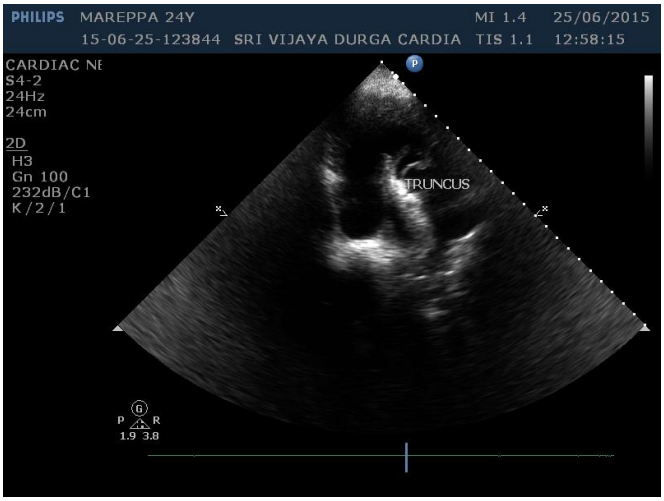

Image showing Truncus arteriosus

Preoperative Preparation
A 18 gz IV cannula was secured over right hand, inj ceftriaxone 1000mg iv and inj metronidazole 500 mg iv given 60 mins prior to surgery, all monitors connected to the patient.

Monitoring
Patient was monitored with Pulse oximetry, ECG, ETCO2, Temperature, CVP and IBP CVP monitoring was done by cannulating right IJV, IBP monitoring was done by right radial artery cannulation.

Continuous measurement of oxygen saturation by pulse oximetry, however is particularly useful as it allows continuous assessment of the adequacy of pulmonary and systemic blood flow. End tidal CO2 monitoring would also be helpful in these type of patients, in addition to intermittent measurement of arterial partial pressure of CO2 by blood sampling, as the pulmonary vascular resistance is sensitive to pH changes particularly in the presence of hypoxia.

Premedication
The following premedication were given
Injection ondansetron 6mg
Injection xylocard 100mg
Injection midazolam 1mg
Injection fentanyl 2mcg/kg,5min before induction

Induction and Intubation
Patient was induced with etomidate 0.3mg/kg(it provides hemodynamic stability in CHD patients) and intubated with vecuronium 6mg and airway secured with 8mm cuffed endotracheal tube and bilateral air entry checked and fixed at No22

Intraoperative Period
INJ MANNITOL is ideally administered in doses of 0.25 to 0.5 g/kg over 15 to 30 mins to reduce ICP.

After mannitol administration, icp reduction occurs within 30 mins, with maximum effects occurring within 1 to 2 hrs and mean arterial pressure was maintained within normal limits by intravascular fluid administration.

Maintenance
Anesthesia was maintained with
Oxygen + Air + Sevoflurane (1-2 %)
and Fentanyl 50micrograms repeated every hour.
Duration of surgery – 2hrs.
SPO2 was maintained above 95% throughout the operation.
All other vital parameters were within normal limits.
Patient was ventilated for 12hrs and vitals maintained in the postoperative period and extubation done.
Pus was sent for culture and sensitivity. Antibiotics were given in postoperative period.

4. Discussion

This report describes the successful anesthetic management of craniotomy in a patient with uncorrected truncus arteriosus.

Truncus arteriosus is a rare cyanotic congenital heart disease accounting for approximately 1-3% of all forms of congenital heart diseases. Death occurs in more than 80% of these patients in first year of life. As the output from both the ventricles enters the common trunk, systemic blood tends to be desaturated and a compensatory polycythemia develops from birth. The presence of CHD increases the morbidity and mortality of patients undergoing non-cardiac surgery.

There are no evidence based recommendations to guide the anesthetic management of patients with CHD undergoing non-cardiac surgery. The anesthetic management must be directed towards maintaining systemic vascular resistance and cardiac output while avoiding situations which increase pulmonary vascular resistance. However, a major objective of intra-operative management is to promote tissue oxygen delivery by preventing arterial desaturation, maintaining a balance between pulmonary and systemic flows and by optimizing hematocrit. Most intravenous agents depress myocardial contractility and decrease systemic vascular resistance and these actions could have an adverse effect on tissue oxygen delivery during induction of anesthesia. Alternatively some evidence suggest that etomidate may provide hemodynamic stability in the CHD patients.Ketamine can be used for iv induction, as it produces minimal changes in pulmonary vascular resistance and does not adversely affect the relative blood flows through the pulmonary and systemic circulation. Attenuation of sympathetic response should be considered during the tracheal intubation. Intraoperatively small doses of fentanyl 1-2mcg/kg are required to blunt hemodynamic changes.

Under normal conditions braintissue, intracranial csf, and intracranial blood have a combined volume of approximately 1200 to 1500 ml. Normal icp is usually 5 to 15 mm of hg, any increase in one component of intracranial volume must be offset by a decrease in another component to prevent an increase in icp. For ICP management the treatment options are, hyperventilation, CSF drainage, administration of hyperosmotic drugs (eg; glycerol, mannitol , urea, isosorbide) diuretics, corticosteroids, and cerebral vasoconstricting anesthetics, and surgical decompression.

Hyperviscosity syndrome is a group of symptoms triggered by an increase in the viscosity of the blood. Types of hyperviscosity syndromes; are serum hyperviscosity, which

may cause neurologic or ocular disorders; polycythemic hyperviscosity, which results in reduced blood flow or capillary perfusion and increased organ congestion; and syndromes of hyperviscosity, caused by reduced deformability of red blood cells, often evident in sickle cell anemia. In hyperviscosity syndrome relatively small degree of controlled hemodilution resulted in near normalization of viscosity.

Author Profile

Dr. L. Chemanthi, Post Graduate, Department of Anesthesiology and Critical Care, Kurnool Medical College and Government General Hospital, Kurnool, Andhra Pradesh.

Dr. Murali Prabhakar, Assistant Professor, Department of Anesthesiology and Critical Care, Kurnool Medical College and Government General Hospital, Kurnool, Andhra Pradesh.

Dr. R. Konda Reddy, Associate Professor, Department of Anesthesiology and Critical Care, Kurnool Medical College and Government General Hospital, Kurnool, Andhra Pradesh.