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REVIEW ARTICLE

ANESTHETIC MANAGEMENT OF CHILD WITH TOF POSTED FOR EXCISION OF BRAIN ABSCESS

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ABSTRACT

Cyanotic Congenital Heart Disease (cCHD) is characterized by intra-cardiac right-to-left shunting resulting in entrance of unsaturated blood into the systemic circulation and arterial hypoxemia. One of the common example of cCHD is TOF. It is characterised by right ventricular outflow tract obstruction, ventricular septal defect, overriding of aorta, right ventricular hypertrophy. Brain abscess is common in patient of right to left shunt. Surgery for brain abscess is preferred to be done under local anesthesia, as the general anesthesia is consider as a risky option. But in uncooperative children, GA is preferred. Major an aesthetic considerations are cyanotic spell, perioperative hemodynamic instability, electrolyte and acid-base imbalance and sudden cardiac arrest. We present a case of 10 year 20 kg child suffering from brain abscess who is known case of TOF, posted for craniotomy and excision of brain abscess. Our aim was to prevent raised intracranial pressure, electrolyte imbalance, dehydration and cyanotic spell. To avoid increase right to left shunt fraction, we avoid the use of propofol, Thiopentone sodium, high concentration of inhalation agent which cause systemic vasodilatation, decrease in systemic vascular resistance and decrease in after load. De-airing of IV line is important to prevent air embolism. If patient develop cyanotic spell, it should be managed with knee-chest position, oxygen, morphine, phenylephrine, Sodium Bicarbonate, volume resuscitation, beta blockers.

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INTRODUCTION

Cyanotic Congenital Heart Disease (cCHD) is characterized by intra-cardiac right-to-left shunting resulting in entrance of unsaturated blood into the systemic circulation and arterial hypoxemia. One of the common example of cCHD is TOF. It is characterised by right ventricular outflow tract obstruction, ventricular septal defect, overriding of aorta, right ventricular hypertrophy. Chronic hypoxia in TOF lead to polycythemia which further leads to cerebral infarct. Brain abscess are secondary to these polycythemia induced cerebral infarction, poor host immunity and bypass of lung phagocytosis. Craniotomy and excisionis done in abscesses which are unresponsive to antibiotics and causing significant mass effect and neurological deficit. Anaesthetic considerations during this surgery are to prevent raised intracranial pressure, dehydration, electrolyte imbalance, cyanotic spell and further increase in right to left shunt fraction.

Case Report

A 10 year 20 kg old female child presented with right temporoparietal abscess who is posted for craniotomy and excision of brain abscess. Pt. was born with full term normal vaginal delivery. No history of NICU admission. Pt. was referred to civil hospital for history of headache and fever since 10 days and 1episode of convulsion before 4 days was diagnosed as brain abscess. On respiratory examination, bilateral air entry was present and clear. On CNS examination, pt. was conscious, following verbal command.On cardiac examination, 2D echo revelled PFO with right to left shunt, large cono-ventricular VSD with bidirectional shunt, severe infundibular, Valvular and supravalvular PS near pulmonary atresia and TOF and confluent hypoplastic branch PAs.CXR PA view was normal. MSCT scan of brain showed thick walled (1.4mm) ring enhancing lesion in right temporo-parietal lobes with peri-lesionaledema suggests brain abscess of approximately 50.5×37.5×30 mm. There is seen mild mass effect in form of compression of right lateral ventricle and minimal mid line shift of 3 mm towards left side. Pt's HB-20.2 gm/dl, WBC count- 11,600/cmm, platelet count 1,20,000/cmm, aPTT- 36.1sec (control – 30.0), PT- 16.3 sec (control-11.1) and INR- 1.468. Her total bilirubin- 0.97 mg/dl, Urea- 27.82, Creatinine- 0.57 mg/gl, Sodium- 134 mEq/L, Potassium- 4.8 mEq/L, Cloride- 99 mEq/L.In the operating room, monitors including pulse oximeter, NIBP, ECG and capnography were employed. She was premedicated with Inj. Ondansetron 0.08mg/kg, Inj.

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Fentanyl 2 µg/kg. Preoxygenation using Bain's circuit. Induction was performed with Etomidate 6 mg iv. Pt. was intubated with 4.5 mm/ pretext/ cuffed tube. Maintenance of anesthesia was done by O2 + sevoflurane and NDMR cis-Atracurium 4 mg loading and 0.5 mg incremental. Intraoperative paracetamol was given. Pt. was reversed with Inj. Glycopyrrolate 8 µg/kg and Inj. Neostigmine 0.05 mg/kg. Post operatively she was vitally stable, maintaining saturation. She was conscious, following verbal command and moving all four limbs. Bilateral air entry was clear and muscle tone power was adequate.

DISCUSSION

Anesthetizing children with congenital cyanotic heart disease and brain abscess is a major challenge. Patient suffering from congenital cyanotic heart disease are having chronic hypoxia, breathlessness, tiredness, repeated chest infections, delayed milestone, growth retardation, severe metabolic derangement, multiple organ failure and major neurological deficit secondary to vascular stroke or brain abscess. Increase bleeding and abnormal hemostasis are mainly due to deficiency of Vitamin K dependent clotting factors, decrease and defective platelets and accelerated fibrinolysis. Hemodynamic instability can be due to presence of CCF, arrhythmia, heart block and infective endocarditis. Patient with cyanotic congenital heart disease also have recurring bouts of severe cyanosis and hypoxia known as cyanotic spell which triggered by increased sympathetic activity during crying, agitation, fright and result in increase right to left shunting. It can lead to convulsion, syncope, stroke and death. It manifest as abrupt worsening of cyanosis, tachycardia hypotension tachypnea. Treatment of cyanotic spell ismainly sedation (subcutaneous morphine 0.1-0.2 mg/kg or intramuscular ketamine 1-3 mg/kg), phenylephrine (0.1mg/kg iv, 0.1-0.5 µg/kg/min infusion), beta blockers, sodium bicarbonate, oxygen, rapid IV fluids and knee chest position. Gentle separation of children from their parents and avoidance of unnecessary pinprick and prevent excessive crying and precipitation of cyanotic spells. Intra operative goals include maintenance of hemodynamic stability and oxygenation and prevention of cyanotic spells and arrhythmias. GA drugs must be administered slowly and titrated. Ketamine is the ideal drug in TOF but it should be avoided in intracranial surgery. Instead of that high opioid- low benzodiazepine combination or sevoflurane/ isoflurane should be used.Controlled ventilation should be used in respiratory abnormalities. In severe cyanosis, pulse oximetry is less accurate so, ABG monitoring is necessary. Blood transfusion can be deferred till >= 25% of blood volume loss in cCHD patients because of pre-existing polycythemia. In IV lines air filters should be used to prevent air entry into veins because it can cause life threatening paradoxical embolism.

Intraoperatively hypotension, hypovolemia, acidosis, hypoxia and hypercarbia should be avoided because it can lead to increase intraoperative shunting. Due to prolonged ventilation reduction in pulmonary blood flow occur so, early extubation is preferred. Post operative care warranted in the form of good control of pain, intensive monitoring and appropriate fluid management. Children with congenital heart disease especially cCHD who undergo non cardiac surgery shows higher risk of perioperative complications and cardiac arrest, and 30 day mortality as compared to the normal population. A significantly higher mortality has been reported in cCHD patients during brain abscess aspiration because of cyanotic spells, greater midline shift and cerebral edema. Also surgery under LA likely to exaggerate these conditions due to accompanying anxiety, pain and excessive crying. Advanced monitoring, better preparedness for handling emergencies, carefully administered GA with controlled ventilation, safer environment for maintenance of hemodynamics, oxygenation, and ICP and seizure control is necessary for safe anaesthetic outcome of patients.

REFERENCES

Butterworth JF., Mackey DC., Wasnick JD. 2015. Chapter 21 Anesthesia for patient with cardiovascular disease; Morgan and mikhail's clinical anesthesiology 5th edition; McGraw Hill Education (India) Private Limited, New Delhi; 426-427.

Cannesson M., Earing MG., Collange V., Kersten JR. 2009. Anesthesia for noncardiac surgery in adults with congenital heart disease: Editor Riou B: Anesthesiology.; Aug; V 111, No 2: 432-440.

Kulkarni AP., Divatia JV., Patil VP. 2017. Chapter 4 Tetralogy of Fallot; Objective anesthesia review 4th edition: Editors-Agarwal V, Ambulkar R, Desai M; Jaypee brothers medical publishers (P) Ltd. New Delhi. 40-45.

Marianne S. 2012. Anesthesia for the adult patient with an unrepaired congenital cyanotic heart defect: A case report: AANA journal. June; Vol. 80, No. 3: 197-203.

Raha A., Ganjoo P., Singh D. 2012. Surgey for brain abscess in children with cyanotic heart disease: An anesthetic challenge: *J pediatrneurosci.* Jan-Apr; 7(1): 23-26.

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