ORIGINAL RESEARCH PAPER

Volume-7 | Issue-4 | April-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

UNCORRECTED D-TGA FOR CEREBRAL ABSCESS DRAINAGE: A CASE REPORT

Anaesthesiology

Sangita Kumawat Resident, Department of Anesthesia And Critical Care, Government Medical College, Kota, Rajasthan, India

Anubhav Sharma* Senior Resident, Department of Anesthesia And Critical Care , Government Medical College, Kota, Rajasthan, India *Corresponding Author

Mukesh Somvanshi Professor, Department of Anesthesia And Critical Care, Government Medical College, Kota, Rajasthan, India

ABSTRACT

Transposition of Great Arteries (D-TGA) is one of the most common cyanotic congenital heart defect in newborn, having atrioventricular concordance with ventriculoarterial discordance where aorta arises from right ventricle and pulmonary artery from left ventricle. The postnatal survival depends on intercirculatory mixing of oxygenated and deoxygenated blood at various levels through atrial septal defect, ventricular septal defect or patent ductus arteriosus. Patients with cyanotic congenital heart disease (cCHD) are prone to develop frequent brain abscesses.[1,2] Anesthetizing children with cCHD and a brain abscess necessitates use of an anesthesia regimen appropriate to both cCHD and intracranial surgery[3].

KEYWORDS

CEREBRAL ABSCESS, UNCORRECTED D-TGA

Introduction

D-TGA accounts approximately 5% to 7% of all congenital heart diseases. Areas of mixing of oxygenated and non oxygenated blood are vital for the survival of the patient.[4] Without mixing, the two circuits remain separate, leading to death from systemic hypoxaemia and acidosis. The possible locations for mixing are via a patent foramen ovale (PFO), atrial septal defect (ASD), ventricular septal defect (VSD), patent ductus arteriosus (PDA), or through bronchopulmonary collaterals. In presence of congenital defect, there is mixing of blood which leads to hypoxia and consequently polycythemia and hyperviscosity. The latter results in sluggish blood flow in cerebral microcirculation, micro thrombi formation and direct entry of organisms, emboli, infected seed to cerebral circulation forming cerebral abscess[5]. We report a case of 5 years old child of TGA with cerebral abscess for emergency drainage.

Case report

A 5 years old male child weighing 15 kg, diagnosed case of a D-TGA presented with generalized seizures since 2 days. Child was operated for correction of TGA 3yrs back (BD GLENN SHUNT).General examination revealed an afebrile patient, central cyanosis with on air O_2 saturation (SpO_2) of 81%, grade 4 clubbing of digits in all four limbs. An ejection systolic murmur in pulmonary area was heard in cardiac examination.

Neurologically he was irritable with Glasgow coma scale (GCS) of 13 (E4M5V4). Laboratory investigations showed Hb-19.8g% with Hct-72.07%, platelets counts-149,000/cmm, total leucocyte count-10500/cmm, random blood sugar- 96mg/dl, serum calcium-9.60 mg/dl with normal liver and renal function tests. Computed tomography (CT) brain scan showed cystic enhancing lesion in the right frontoparietal region. X ray chest showed tubular heart with hyperaemic lung fields. 2D echo was suggestive of complex congenital heart disease, D-TGA bidirectional GLEN shunt , large VSD, with blocked shunt. Prophylactic antibiotics, anticonvulsant were given, inotropes/vasopressors, anti edema drugs were kept ready. After obtaining informed consent from parents, confirming NPO, child was taken in the theatre. After preoxygenation for three min SpO2 increased to 89%.Care was taken to avoid intravascular air. After intravenous premedication wit injection Glycopyrrolate 0.004 mg/kg, anaesthesia induction was carried out with injection fentanyl 2µg/kg and etomidate 0.2 mg/kg and sevoflurane 2% and LMA no 2 was placed. Anaesthesia was maintained on O2 (100%) and 2% sevoflurane with assisted ventilation through Jackson Rees circuit. Intraoperative monitoring included Electrocardiogram, Pulse Oximetry, ETCO2, Non invasive blood pressure (NIBP) Intraoperatively Ringer lactate was given. The surgery lasted for about 30 min. The hemodynamic remained stable with HR 90 to 110/min, BP 80 to100 mmHg systolic, SpO2 ranging between 88–91% and ETCO2 between 30–33 mmHg. Craniotomy with drainage of encapsulated abscess cavity was performed. At the end of surgery, patient was extubated in deep plane and monitored in Neurosurgery ICU for 24 hrs postoperatively. IV Paracetamol 15 mg /kg body weight 8 hourly was used for postoperative analgesia with local infiltrated of bupivicane on scalp.

Discussion

Patients with cyanotic congenital heart disease (cCHD) are prone to develop frequent brain abscesses. TGA if uncorrected, has a 30% mortality rate in the first week of life, 45% in the first month and 90% in the first year.Those who survive this period present with the problems of preexisting hypoxia and cyanosis, polycythemia, hypercoagulability, thrombotic complications,coagulopathies[6]. They have higher incidence of systemic infections due to bypass of the filtering of pulmonary capillaries leading to brain abscess. Avoiding prolonged preoperative fasting and maintaining adequate hydration are important to prevent hyperviscosity. Large bore i.v. cannula should be secured, and all lines flushed to avoid air bubbles as these patients are at high-risk of paradoxical embolism due to the presence of bidirectional shunts. Appropriate endocarditis prophylaxis should be administered 30 min prior to skin incision which was done in our case as well with cetriaxone and amikacin.Treatment of brain abscess is with systemic antibiotics. However, abscesses which are larger than 2 cms in diameter, causing midline shift, multiple abscesses require surgical excision under general anaesthesia in small children. Anaesthetic considerations related to TGA with brain abscess are following: maintenance of intravascular volume and preload and avoidance of precursors to acidosis such as hypothermia, hypercarbia, and hypotension. Minimization of intracardiac shunting were typically achieved via avoidance of decrease in systemic vascular resistance and increase in pulmonary vascular resistance.[7] The amount of shunting of blood in dTGA is determined by the ratio of the systemic vascular resistance (SVR) to pulmonary vascular resistance (PVR). challenge for anesthesiologist is to modulate PVR and SVR by pharmacological and ventilatory means in order to achieve a balance between CHF and hypoxia Hence, one should maintain systemic vascular resistance, minimize pulmonary vascular resistance,maintain cardiovascular stability by avoiding endotracheal intubation. We avoided hypovolemia by maintenance of intravascular volume Adequate post operative analgesia is essential as pain increases pulmonary vascular resistance and sudden increase in oxygen demand.Thus, the present case shows that with thorough understanding of pathophysiology and meticulous planning to prevent possible complications, patients with complex CHD may be successfully anesthetized for noncardiac surgery without incident.

Conclusion

Brain abscess is a known complication in patients with cyanotic

congenital heart disease, which must be diagnosed early and treated aggressively.. A carefully administered GA with controlled ventilation, maintaining cardiac output, normal sinus rhythm and keeping PVR relatively lower than SVR along with lax brain is recommended.[8] Preoperatively, an understanding of the patient's underlying pathophysiology, coupled with knowledge of the effects of anesthesia on the anomalous myocardium, is crucial. Although extensive preoperative evaluations by the patient's intensivist, cardiologist, and cardiac surgeon are preferable, they may not be readily available, as were the case with this patient with attention to potential anesthetic interactions, must be considered.

References

1. Aebi C, Kauffmann F, Schaad UB. Brain abscess in childhood-long term experience. European Journal of Pediatrics 1991; 150: 282-6.
2. Prusty GK. Brain abscesses in cyanotic heart disease.Indian J Pediatr 1993; 60:43-51.
3. Mehnaz Atiq, Umair Syed Ahmed, Salman Saleem Allana and Khalid N. Chishti. Brain Abscess in Children. Indian Journal of Pediatrics, 2006:73:401-404.
4. Christensen RE, Reynolds PI, Bukowski BK, Malviya S. Anaesthetic management and outcomes in patients with surgically corrected D-transposition of the great arteries undergoing non-cardiac surgery. Br J Anaesth. 2010;104:12–5.
5. Menghraj SJ. Anaesthetic considerations in children with congenital heart disease undergoing non-cardiac surgery. Indian J Anaesth. 2012;56:491–5.
6. Raha A, P. Ganjoo, A. Singh, M. Tandon. Surgery for brain abscess in children with cyanotic heart disease:an anesthetic challenge. Journal of Pediatric Neurosciences 2012; 7:23-26.
7. Cosgrove MS. Anesthesia for the adult patient with an unrepaired congenital cyanotic heart defect: A case report. AANA J. 2012;80:197–203.
8. S.Routray, K Raut , D. Mishra .Cerebral abscess in 8 years old with uncorrected tetralogy of Fallot:Anaesthetic Challenge. International Journal of Biomedical and Advance Research 2013; 4:843-845.