

Case Report

A case of three year child with uncorrected tetralogy of Fallot for drainage of fronto-parietal abscess

Abhimanyu Rana*, Kishore Kumar Arora, Rashpal Singh Gill

Department of Anaesthesiology, MGM Medical College & M. Y. Hospital, Indore, MP, India

Received: 12 September 2015

Revised: 22 September 2015

Accepted: 05 October 2015

*Correspondence:

Dr. Abhimanyu Rana,

E-mail: manyurana@gmail.com

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ABSTRACT

The Tetralogy Fallot was one of the commonest Right to Left shunting disease in the children. TOF is most common in association with brain abscess (13-70%). This case is of a 3 year old child who had tetralogy of Fallot (uncorrected) and was to be taken for drainage of Fronto-Parietal sub dural abscess via Burr hole. The abscess was drained and patient was shifted with inotropes and ventilator support. In next 24 hours patient improved and supports were gradually withdrawn.

Keywords: Arteriovenous malformations, External carotid artery, Pinna, Traumatic

INTRODUCTION

A 3 year old child known case of uncorrected Tetralogy of Fallot (TOF) presented with History of Fever from past 10 days, had been disoriented from past 7 days and other complains were breathlessness, vomiting 3-5 episodes/day, had developed neck rigidity over past few days. On examination patient was 15 kg body weight, dull, responding to painful stimulus, pale, not cyanosed, tachypnea++. She had PR-120/min, Oxygen saturation 86 % on air; maintained 94 % saturation on 100% oxygen support, B.P. 90/50 (on norad inf @6 mic/min). On auscultation systolic murmur was present over Left Sternal Border in 3rd and 4th space. Her investigations showed Hb- 9.4 g%, TC 13000, platelets -1.43 lacs, INR-1.73, for which PRP transfusion was done pre op. The Echocardiography showed presence of Pulm.to Aortic Pressure gradient to be 64:1, VSD and severe pulmonary valve stenosis. Brain imaging shown 3.2*2.1 cm abscess was present in the fronto-parietal region.

In o.t. for monitoring, she was connected to ECG, NIBP (pre induction), SpO₂ and EtCO₂. Post induction invasive B.P. monitoring was done by using 22G cannula. After

induction with Inj. Fentanyl 2 mic/kg, inj. Propofol 2 mg/kg and relaxant vecuronium 0.08 mg/kg loading dose and 0.01 mg/kg for maintenance dose & sevoflurane, O₂ & N₂O for maintenance.

Procedure was completed uneventfully & patient was extubation not done due to poor respiratory efforts, shifted to PICU on SIMV + PSV (90/14/10/0.5).

After overnight monitoring in PICU patient's efforts improved and mechanical ventilation was withdrawn, her inotropic supports were withdrawn and antibiotics changed after culture & sensitivity reports of pus.

DISCUSSION

Tetralogy of Fallot is the commonest cyanotic congenital heart disease in children above two years age. Anatomically TOF consist of a VSD with Pulmonary valve stenosis associated with obstruction to the Right ventricular outflow.

When associated with Atrial Septal Defect it is known as Pentalogy of Fallot (POF).

The four constituents are:

1. VSD
2. Pulmonic Stenosis
3. Over-riding or Dextroposed aorta
4. Right Ventricular Hypertrophy

As severe is the Pulmonary stenosis, more severe R-L shunt and higher the severity of cyanosis. Of all the patients with brain abscess and cyanotic congenital heart diseases, TOF is the most common in association (13-70% of the cases).^{2,4} Prolonged survival with uncorrected TOF is associated with a well-developed left ventricle, mild to moderate PS with adaptations such as systemic-pulmonary collaterals, persistent Patent ductus arteriosus or Systemic Hypertension.²

Anaesthetic management of patients with cyanotic heart disease requires a thorough understanding of the pathophysiology, events and medications, which alters the magnitude of the right-to-left intra-cardiac shunt. Decreased SVR, increased pulmonary vascular resistance and increased myocardial contractility increase the magnitude of the right-to-left shunt.

Anaesthetic concerns are peri-operative haemodynamic instability, Cyanotic spells, polycythaemia induced coagulation defects, paradoxical air embolism, fluid and acid base imbalances, congestive cardiac failure, infective endocarditis (IE) prophylaxis and maintaining intracranial dynamics.⁵

These patients are vulnerable to cyanotic spells in peri-operative period.

An intraoperative spell is treated with fluid bolus, deepening the plane of anaesthesia, fentanyl, phenyl ephrine and hyperventilation with 100% oxygen to decrease PVR.

Hypoxia, hypercarbia and Acidosis needs to be avoided as it increases pulmonary vascular resistance (PVR). In a case of TOF, PVR needs to be kept lower than systemic vascular resistance (SVR).

In induction of this case Ketamine (Induction agent of choice for TOF) was avoided. We used Propofol for induction because it has short duration of action and anti-epileptic action. The adequate fluid bolus was administered to the patient before induction with propofol to avoid hypotension.

Peri-operative fluid was given as per Halliday & Sanger regimen. Sevoflurane was used for maintenance along with O₂ & N₂O.³ Sevoflurane has advantages of more tolerable aroma (less airway irritation) and without the magnitude of myocardial depression as seen with halothane. N₂O has shown increase in PVR but FiO₂ of 0.5 can be maintained.¹ As it can be offset by slight increase in SVR. Management of such case requires adequate depth of anaesthesia, analgesia and appropriate fluid management. Early extubation helps in preventing early rise of PVR. But in this case the patient required mechanical support post operatively & extubation was done after 24 hrs as patient's efforts improved.

CONCLUSION

Successful management of such case requires thorough understanding of pathophysiology of Tetralogy of Fallot. Our patient required urgent surgery and then post-op mechanical ventilator support, which has to be guided by adequate vital signs monitoring.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Rana A, Arora KK, Gill RS. A case of three year child with uncorrected tetralogy of Fallot for drainage of fronto-parietal abscess. Int J Res Med Sci 2015;3:3430-1.