Original Article

CASE REPORT ON TETRALOGY OF FALLOT (TOF) WITH DOUBLE OUTLET RIGHT VENTRICLE (DORV)

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Abstract

Background: The most prevalent cyanotic congenital cardiac condition is the tetralogy of Fallot (TOF). A congenital heart defect is a flaw in the structure of the heart that is present at birth. The normal flow of blood through the heart is disrupted by this type of cardiac defect. It accounts for about 6% to 10% of all congenital heart defects. The congenital heart condition double outlet right ventricle (DORV) occurs when two blood arteries do not attach to the heart. It can affect 1 to 3% of people with congenital cardiac disease. Case Presentation: A newborn male child was brought by her parents to the paediatric ward with a chief complaint of shortness of breath, cyanosis, hypoglycaemia, and convulsion. In the case of Tetralogy of Fallot with Double outlet right ventricle. The primary therapeutic interventions were given to the newborn patient and he was treated with antibiotics and vasodilators. Conclusion: The newborn male old child with complaints of shortness of breath, cyanosis, hypoglycaemia, and convulsion and diagnosed with tetralogy of Fallot with double outlet right ventricles. After the proper therapeutic interventions and treatment, the client's condition is improved. He has been able to maintain oxygen saturation up to 88-94% and reduced hypoglycaemia and convulsion, cyanosis.

Keywords: Double Outlet Right Ventricle, Tetralogy of Fallot, Ventricular septal defects.

INTRODUCTION

One of the most prevalent congenital heart abnormalities is the tetralogy of Fallot (TOF). Because Tetralogy of Fallot (TOF) results in an adequate flow of blood to the lungs for oxygenation, this illness is classed as a cyanotic cardiac problem (right to left shunt)(1). The name Tetralogy of Fallot (TOF) is derived from Louis Arthur Fallot, who was not the first to notice the disorder(2). In 1672, Stensen was the first to describe it, but it was Fallot who precisely defined the clinical and pathologic features of the abnormalities(3).

A combination of four anomalies, such as pulmonary stenosis, ventricular septal defects, overriding or extraposition of the aorta, and right ventricular hypertrophy, describe (4). Boys and girls of all ethnic and racial backgrounds can develop TOF.

It is linked to several genetic disorders, such as trisomy 21 (Down syndrome), and deletions on chromosome 22, and it is also possible that it will result in other birth defects such as cleft lip and palate. Other family members' children have a higher-than-normal chance of developing TOF if a parent or sibling has it (5).

DORV (dual outlet right ventricle) is a cardiac abnormality that affects only a few people. The pulmonary artery joins the right lower chamber, known as the right ventricle, and the aorta joins the left lower chamber, known as the left ventricle, in a normal heart(5).

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When both the pulmonary artery and the aorta connect to the right ventricle, it is known as a double outlet right ventricle. These blood vessels can be transposed, or altered, from their typical placements on occasion. This means that instead of oxygen-rich blood, oxygen-poor blood is pushed into the body(6). About 1 in every 10,000 babies will be born with a Double outlet right ventricle(7).

Case presentation

A newborn male child was brought by her parents to the paediatric ward with a chief complaint of shortness of breath, cyanosis, hypoglycaemia, and convulsion. Primary preventive measures were taken by the physician. After the delivery within 2 hours, he shows symptoms of convulsion and hypoglycaemia and the admitted to the neonatal intensive care unit in the civil hospital. Then he was shifted to another hospital but he was unable to maintain his oxygen saturation. So, then he should refer to a multispecialty hospital for further treatment.

On physical examination, shortness of breath, cyanosis, hypoglycaemia and convulsion are observed. On checking vital signs, the oxygen saturation is reduced (86%) so the oxygen saturation is provided. The patient was moved to the neonatal intensive care unit (NICU).

Upon arrival to neonatal intensive care, the patient was administered intravenous antibiotics like piptazolum twice a day, injectable amikacin once a day of 28 mg and injectable Alprostadil 1 ml in 9 mg normal saline 0.1ml/hrs as a vasodilator. In laboratory investigations Serum bilirubin total, and serum protein is increased whereas the total White blood cells are increased and total platelets are decreased. X-ray of the chest is done. After hospitalization the patient vitals are stable. Medical management continued and the patient's prognosis was good. Where the patient's condition was improved as a result of treatment and proper interventions. He has been able to maintain the oxygen saturation up to 88-94% and reduced hypoglycaemia and convulsion, cyanosis.

Teaching about health maintenance and follow-up according to the level of understanding and child's problem is important. Instructing the parent about adequate diet, rest, immunization, prevention and control of infections, and regular medical and dental check-ups is important. Teaching the family members about signs and symptoms of complications and emergency care, especially in hypoxic spells, dehydration, pulmonary oedema, cardiac arrest, etc. should be done.

Discussion

A similar study shows that mortality rates for the different types of double outlet right ventricle were as follows: Ventricular Septal Defect-type 0%, Fallot-type 6%, ncVSD-type 9%, and TGA-type 11 %. Double outlet right ventricle can occur on its own or in conjunction with cardiac or extracardiac abnormalities. The incidence has been observed to range from 0.03 to 0.14 per 1000 live births. It accounts for around 1% of all congenital heart disease cases(8). Tetralogy of Fallot is a condition that affects three out of every 10,000 live infants. It is the most common cause of cyanotic cardiac disease in adults older than newborns, accounting for up to a tenth of all congenital cardiac abnormalities. The aorta becomes more devoted to the right ventricle than to the left ventricle with strong aortic override, resulting in the ventriculoatrial connection of the double outlet right ventricle in many cases. Although the physiology at the time of presentation may not be altered, the surgical correction has substantial implications. The newly constructed left ventricular outflow tract, which is established by the patch that repairs the ventricular septal defect while tunnelling the left ventricle to the aorta, is more likely to develop an obstruction in patients with the aorta coming largely from the right ventricle. This patch must be significantly longer than when the aorta emerges primarily from the left ventricle(9-20).

Cyanosis, hypoxic episodes, and other consequences linked with the tetralogy of Fallot should be addressed. The importance of oxygen therapy, rehydration, antibiotic therapy, supportive nursing care, and continual monitoring of the child's condition cannot be overstated. Hypoxia spell should be managed by placing the baby in knee-chest position, oxygen therapy, sedatives, IV or oral prolonged therapy, IV fluids, treatment of acidosis and administration of IV vasopressors. Phenylephrine and methoxamine can be used to increase systematic vascular resistance(21-30).

Surgical procedures can be planned as palliative surgery or as a one-stage repair with definitive correction. In cases with aberrant coronary artery distribution, multiple VSDs, hypoplastic branching of the pulmonary arteries, and small infants weighing less than 2.5 kg, one-stage surgery may be contraindicated. Palliative surgery is carried out using a variety of procedures, including the Modified Blalock-Taussig (BT) shunt, Potts' operation, and Waterson's operation(11). Direct vision open heart surgery is used to accomplish definitive repair for patch closure of the VSD and relieve of right ventricular blockage. Surgery is frequently used to treat a double outlet right ventricle. The surgery's purpose is to seal the hole in the heart and connect the aorta and pulmonary arteries to the proper lower chambers(31-35).

Nursing management aims at early diagnosis and management of the problems with prevention of complications and genetic counselling. Detail history of present complaints, family history and development history is especially significant. Anthropometric assessment help to assess the severity of problems and associated growth failure. Measurement of weight, length/height, head, chest and arm circumference are essential aspects of assessment to be done and recorded. Assessment of vital signs, oxygen saturation, skin colour (pink, cyanotic, mottled), mucous membrane (dry or cyanotic), peripheral pulse (rate, symmetry, quality),

oedema, capillary refill, cold to touch, clubbing, chest wall deformity, level of activity and consciousness, respiratory pattern, heart sound, feeding behaviour, intake and output, sleep pattern, etc. are all important to plan and implement nursing care. Laboratory findings and other investigation reports should be reviewed to identify the problem(36-38).

Conclusion

Tetralogy of Fallot with Double outlet right ventricle is a common form of congenital heart disease found among children, it is very important to diagnose in the early stage so that the child will not develop complications from the disease like a hypoxic spell, Tet spell, polycythaemia. It is also very important to take preventive measures like antenatal screening and giving genetic counselling is very important. The child shows improvement after getting the treatment and the treatment was still going on till my last date of care.

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