CASE REPORT

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Intracranial Abcess Presenting as Persistent Headache in a Patient of Tetralogy of Fallot (TOF)

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Abstract

Tetralogy of Fallot, the commonest cyanotic congenital heart disease, may be fraught with various life-threatening complications. Infective neurological complications are well known, but their prevalence has significantly reduced in developed countries, consequent on early diagnosis and prompt surgical correction of the congenital heart defect. Here we have discussed a similar case scenario of a 25 years male diagnosed as TOF and consequently presenting with intracranial abscess. Early intervention and excision of abscess saved the life of the patient.

Key words: Tetralogy of Fallot, life-threatening complications, intracranial abscess.

Introduction

Tetralogy of Fallot (TOF) is a congenital cardiac malformation that consists of an interventricular communication, also known as a ventricular septal defect, obstruction of the right ventricular outflow tract, override of the ventricular septum by the aortic root, and right ventricular hypertrophy. TOF occurs in 3 of every 10,000 live births. It is the commonest cause of cyanotic cardiac disease in patients beyond the neonatal age, and accounts for up to one-tenth of all congenital cardiac lesions[1]. The incidence of brain abscess in the population with congenital heart disease (CHD) varies from 5 to 18.7%[2]. Despite improvements in imaging techniques, surgical and medical management with newly developed antibiotics, the mortality rate for brain abscess associated with cyanotic CHD continues to be over 13% even in the CT era[3]. Here we are discussing a similar complication of TOF.

Case report

A 25-year-old male, student by occupation, unmarried presented in our casualty. According to attendants, since birth, he had complaint of shortness of breath (SOB); with growing age complaint of breathlessness increased. He had occasional episodes of headache, which persisted and were relieved on its own. He took some oral medication for the same but no relief was achieved. Finally, he presented to our institute with dyspnoea that had progressed to grade 3 according to NYHA classification. He had associated complaint of vomiting also, which was preceded by nausea and was non-projectile. He underwent thorough examination and investigation, which revealed peripheral as well as central cyanosis and grade 3 clubbing. Systemic examination revealed systolic murmur in tricuspid and mitral area without any radiation. Other systemic examination revealed no significant abnormality. He was admitted and underwent all routine investigations and echocardiography. Complete blood counts revealed hemoglobin of 22.4 g/dl, and raised hematocrit of 79%. A provisional diagnosis of hyperviscosity syndrome was made. Consequently, he was subjected to phlebotomy for the same. Echocardiography revealed features suggestive of TOF [with a Submembranous VSD of 18 mm with bidirectional shunt (Figs. 1 & 2)[$], and overriding of aorta, pulmonary stenosis, and right ventericular hyper trophy]. As there was no other neurological symptom and he became symptomatically better (no residual headache or dyspnoea) with phlebotomy, he was managed conservatively with a diagnosis of Tetralogy of Fallot and associated hyperviscosity syndrome. He was discharged satisfactorily on oral treatment.

He presented again in our emergency after 10 days of discharge with complaints of severe headache, and weakness of right upper limb. NCCT head was done, which showed "large thin walled hypodense cystic area in left fronto-parietal region with mass effect" (Fig. 3)[$]. The differentials considered were abscess and mitotic pathology. He was admitted and underwent left frontal lobe burr hole with needle aspiration of the cystic Lesion, which was sent

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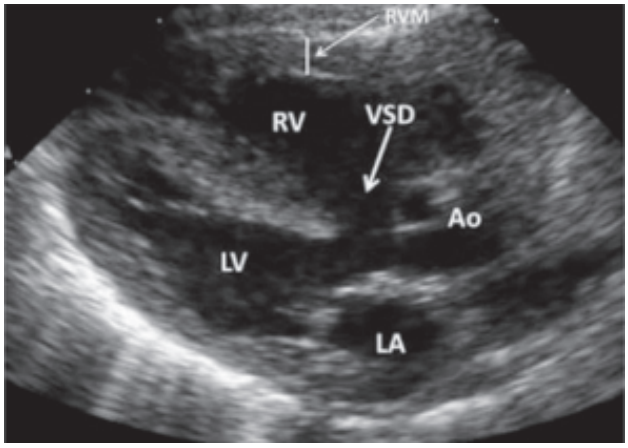

Fig. 1:

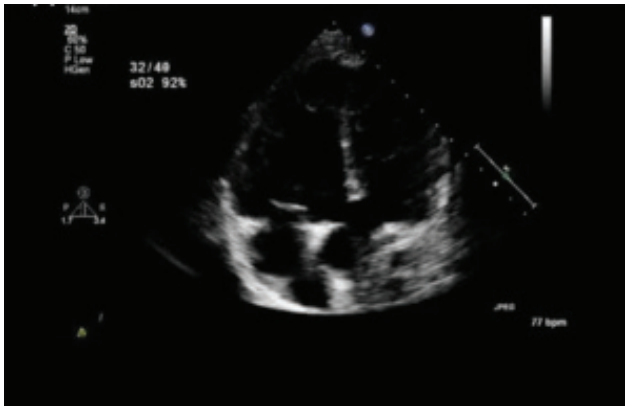

Fig. 2:

for histopathological analysis. This showed features of inflammation and abscess. Consequently, he was subjected to left frontal craniotomy for excision of abscess (Fig. 4)[$].

The patient recovered well. The power of his right upper limb improved significantly, complaint of headache subsided gradually. Currently, he is asymptomatic and being followed-up in the OPD.

Discussion

TOF, the commonest cyanotic congenital heart disease, may be fraught with various life-threatening complications, ranging from hypercyanotic spells to cerebrovascular events. Infective neurological complications are well known, but their prevalence has significantly reduced in developed countries, consequent on early diagnosis and prompt surgical correction of the congenital heart defect. Cyanotic heart disease accounts for 12.8 - 69.4% of all cases of brain abscesses with identified risk factors in several series, with the incidence being higher in children[6,7]. TOF is the most common cardiac

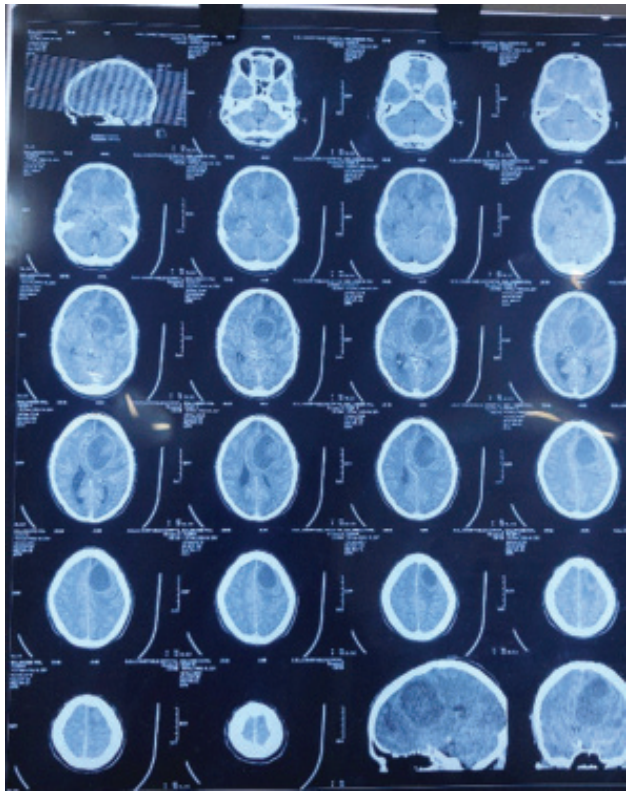

Fig. 3:

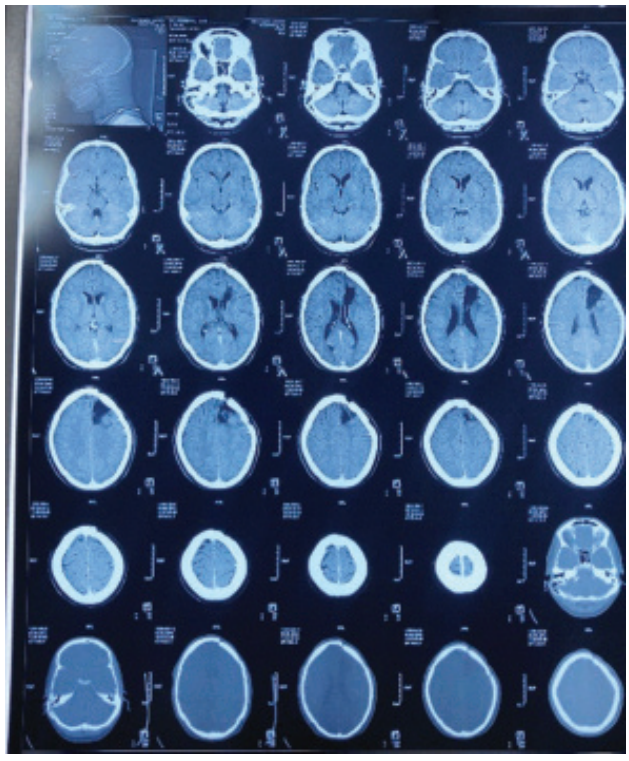

Fig. 4:

anomaly associated with brain abscess.

Various factors play a role in the pathogenesis of brain abscess in patients with cyanotic CHD.The filtration of blood through the pulmonary circulation, where bacteria are intercepted by phagocytosis, is bypassed via an intracardiac right to left shunt. This may allow direct entry of the organisms to cerebral circulation[2,4,5]. In addition, in these patients, the brain may also have minute low-perfusion areas due to increased blood viscosity resulting from compensatory polycythaemia leading on to tissue hypoxia and metabolic acidosis[2]. Shunted blood containing microorganisms may be seeded in such areas, forming a cerebral abscess.

Conclusion

Congenital heart diseases have well known complications. Early detection and timely, appropriate treatment can save lives. In patients of TOF presenting with fever, and acute neurological features including headache, limb weakness or seizures, a high index of suspicion of brain abscess must be kept, as early detection and prompt antibiotic treatment reduce morbidity and mortality with complete resolution of lesion, if required by surgery too. Patients should also be encouraged to undergo corrective surgery as early as possible for a nearly normal life and prevention of further, potentially fatal complications.

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