North Bengal Medical College Journal
Vol 1 No 1 July 2015

Case Report

Multiple Brain Abscess in a Young Boy with Acyanotic Tetralogy of Fallot: A Case Report

Md. Shariful Haque[1], Shushanto Kumar Sarker [2]

Abstract

Tetralogy of Fallot is the most common congenital cyanotic heart defect during infancy. It is composed of a ventricular septal defect, an overriding aorta, obstruction of right ventricular outflow, and right ventricular hypertrophy. Most patients experience cyanosis at birth and die in childhood without surgical intervention. Patients with congenital cyanotic heart disease (with a right-to-left shunt) are at risk for developing a brain abscess. A 10 years old boy with previously diagnosaed as acyanotic Tetralogy of Fallot was presented with headache and irregular fever for 2 months in Shaheed Ziaur Rahman Medical College Hospital, Bogra, Bangladesh. Ultimately the cause of headache and irregular fever were multiple brain abscesses revealed in CT scan. In most series of patients from developed countries, cyanotic heart disease is the most commonly identified risk factor for development of brain abscess in immunocompetent patients. Cyanosis may be absent if right ventricular out flow obstruction is mild.

Keywords: *Brain Abscess, TOF*.

NBMC J 2015; 1 (1): 44-47

Introduction

Tetralogy of Fallot (TOF), was first described in 1888 by the French physician Etienne-Louis Arthur Fallot, is one of the most common types of cyanotic congenital heart defects, with an estimated incidence of 5% in patients with congenital heart disease.[1-4]

The original anatomic description of TOF included tetra-malformations, namely, ventricular septal defect (VSD), right ventricular outflow tract obstruction (RVOTO), aorta overriding the ventricular septum and RV hypertrophy (RVH).

1. *Assistant professor of Nephrology, Shaheed M. Mansur Ali Medical College, Sirajganj.*
2. *Assistant Professor of Neurosurgery, Shaheed Ziaur Rahman Medical College, Bogra*

Correspondence *MD Shariful Haque, Email: sharifuldr@gmail.com*

TOF is the most common cyanotic heart defect seen in child en beyond infancy. The VSD in TOF is a perimembranous defect with extension into the subpulmonary region. Additional muscular VSDs may be present. The right ventricular (RV) outflow tract obstruction (RVOTO) is most frequently found in the form of infundibular stenosis (45%) and rarely only at the level of the pulmonary valve (10%).[5-8]

Case report

Selim, a 10 years old young boy from Sirajgonj, a known case of TOF for 2 years admitted through emergency department of Shaheed Ziaur Rahman Medical College Hospital, Bogra. He had headache and irregular fever for last 2 months which became continued for last 10 days. He was obtunded for last 10 days and became unconscious and nonresponsive for last 2 days. Physical examination revealed growth retarded febrile and acyanotic patient with grade I clubbing, pulse 68/min, BP 110/80. No oedema was present. History of cyanotic spell, squatting was absent. Hb 11.0 gm/dl, ESR 45 mm, TC-WBC 15000 with 90% neutrophils. There was left parasternal heave, early ejection systolic murmur along left sternal edge at 3 and 4 intercostal spaces; and soft single S_2 without any obvious murmur or thrill at pulmonary area. Plantar reflex was extensor. X-ray chest revealed oligaemic lung fields with less prominent pulmonary artery and acute cardiophrenic angle suggestive of pulmonary stenosis and RVH respectively.

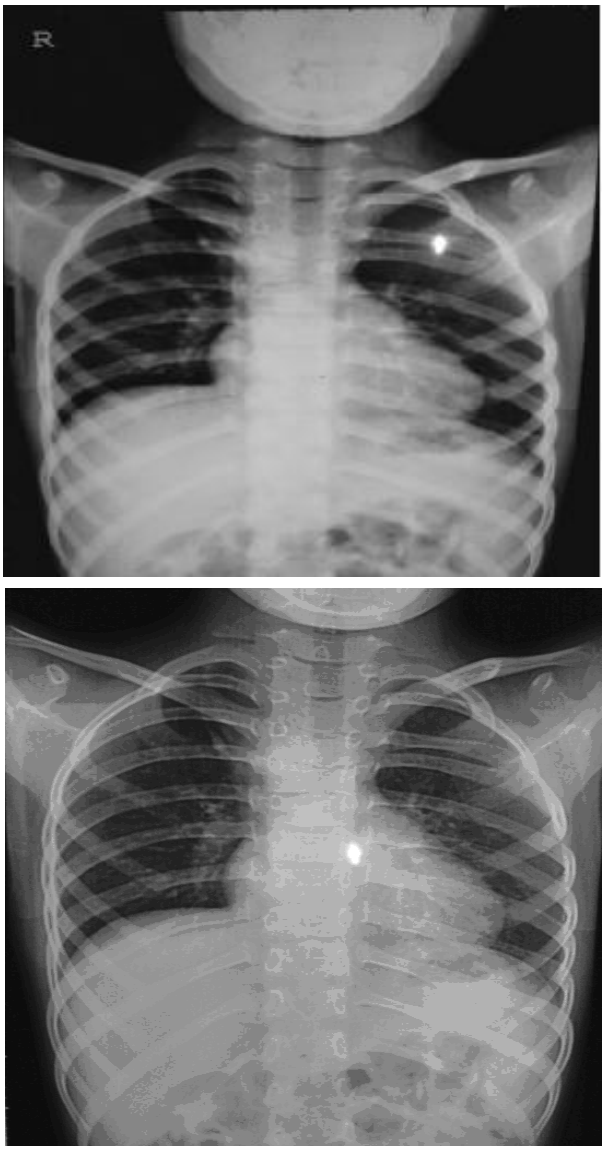


Figure: 1 (a, b): X-ray chest P/A View: Borderline cardiomegaly, acute cardiophrenic angle, concave pulmonary bay and mild oligaemia.

Echo cardiography showed Perimembranous interventricular septal defect (6mm), normal aorta with overriding of about 40%, pulmonary stenosis with narrow pulmonary artery and intact Interatrial septum.

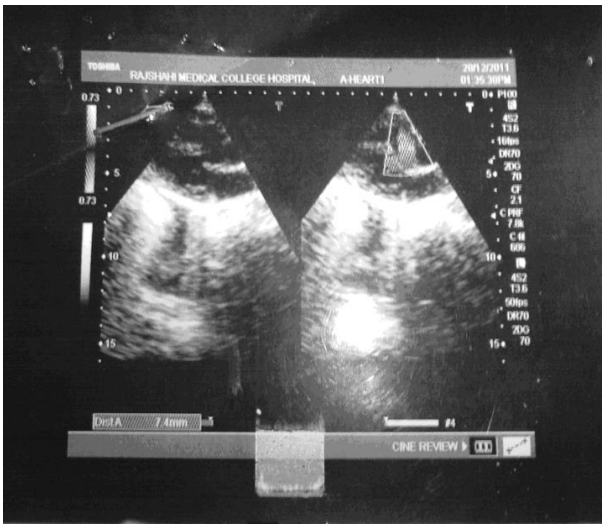
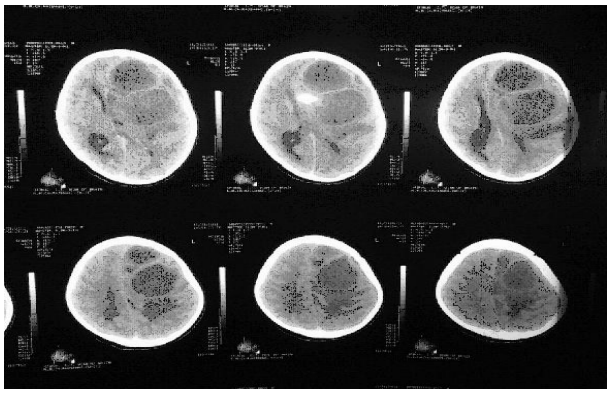


Figure-2: M-Mode & 2D echo.

CT Scan of brain revealed two hypodense area of about 53×45 mm and 45×35 mm in left temporo-parietal and left frontal region respectively having marked perifocal oedema. Left lateral ventricle was effaced.Midline shift was noted towards right. Left sided brain abscess with mass effect was diagnosed.



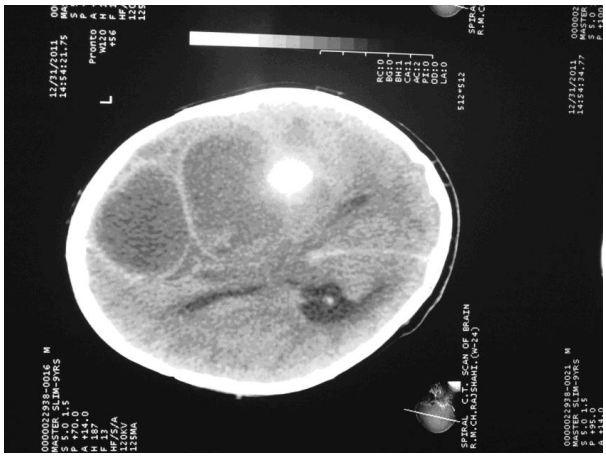


Figure-3 (a, b): CT scan of brain shows two abscess on left side with perifocaloedema and midline shift.

Patient was treated initially with impirical parenteral Ceftriaxone, Flucloxacillin, Metronidazole. Burr-hole operation was done under local anaesthesia as he was not fit for G/A due to low O_2 saturation. Aspiration of abscess was done on two occasions. Pus was sent for culture. Patient became afebrile on 4th post operative day and consciousness was improved. Inj. Amikacin was added after culture yielded Staphylococcus aureus. Patient was discharged fully conscious with oral cefuroxime, flucloxacin; and metronidazole.

Discussion

TOF is a leading cause of cyanotic congenital heart disease and forms about 10% of total congenital heart diseases and constitutes 13-

70% of all brain abscess.[1] In present case the patient had Perimembranous interventricular septal defect, normal aorta with overriding of about, pulmonary stenosis with narrow pulmonary artery; and intact Interatrial septum. These findings were consistent with the echo findings of previous studies.[3, 4, 5] Present case had no cyanosis although TOF is a cyanotic congenital heart disease. The incidence of brain abscess in patients with cyanotic heart disease has been reported to range between 5 and 18.7 %.[3, 4] Most brain abscesses are single, but 10-27% are multiple and may involve more than one lobe.[3] In current case the patient had multiple abscesses involving the left cerebral hemisphere. Previous studies revealed the organisms for brain abscess were Streptococcus milleri, Staphylococcus, other Streptococcus spp; and Haemophilus.[5] Studies in Malaysia [6,7] and Srilanka[8] found Streptococcus milleri as commonest organism. In our case the organism was Staphylococcus aureus. Howvere, multiple organisms had also been isolated in some patients.[4]

References

1. Ghafoor T, Amin MU. Multiple brain abscesses in a child with congenital cyanotic heart disease. J Pak Med Assoc. 2006; 56: 603-605.
2. Shahzad K, Hamid H, Khan A, Malik N, Maqbool S. Brain abscess in children. J Coll Physicians Surg Pak 2005; 15:609-611.
3. Pandian JD, Moosa NV, Cherian PJ, Radhakrishnan K. Brainstem abscess complicating tetralogy of Fallot successfully treated with antibiotics alone. Neurol India 2000; 48:272-725.
4. Takeshita M, Kagawa M, Yonetani H, Izawa M, Yato S, Nakanishi T, et al: Risk factors for brain abscess in patients with congenital cyanotic heart disease. Neurol Med Chir 1992; 32: 667–670.
5. Atiq M, Ahmed US, Allana SS, Chishti KN. TOF: A clinical review. Indian J Pediatr 2006; 73 (5): 401-404.
6. Pit S, Jamal F, Cheak FK. Microbiology of cerebral abscess: a four year study in Malaysia. J Trop Med Hyg 1993; 96(3): 191-196.
7. Puthucheary SD, Parasakthi N. The bacteriology of brain abscess: a local experience in Malaysia. Trans R Soc Trop Med Hyg 1990; 84(4): 689-692.
8. Sineviratne RS, Navasivayam P, Perera S, Wickremasinghe RS. Microbiology of brain abscess at a neurosurgical unit of the National Hospital of Sri Lanka. Ceylon Med J 2003; 48(1): 14-16.