INTRODUCTION

CNS tuberculoma is a rare complication in a patient with cyanotic congenital heart disease. Patients with cyanotic heart disease present with the right to left shunt resulting in cyanosis. We report the case of an 11-year boy with uncorrected TOF, presenting symptoms similar to brain abscess. The patient showed no signs of improvement on conservative management. Later, computed tomography suggested CNS tuberculoma, following this patient was managed with antitubercular therapy. We report this case to focus on the importance of early diagnosis, challenges to reach the diagnosis in a low-resource setting, and management that may result in a better prognosis of the patients.

Brain abscess is a collection of pus in the brain parenchyma due to infection. It occurs in 11% of the population with CHD.4 We report the case of a young boy with TOF with brain abscess to focus on the importance of early diagnosis, challenges to reach the appropriate diagnosis in a low-resource setting, and hence, the management that may result in a better prognosis of the patients.

CASE REPORT

An 11-year boy was admitted to our hospital with the chief complaints of fever for 4 days, vomiting, and headache for 2 days. Fever was continuous and associated with sweating without chills and rigor. The patient had vomiting around six times daily and vomitus was non-bilious and non-projectile. He had a non-productive cough which aggravated at night. There was weakness in his left proximal upper limb. He had been diagnosed with TOF with pulmonary atresia with inoperable Major Aortopulmonary Collateral Artery (MAPCA) at the age of five when he...
presented with the symptoms of palpitation and exertional dyspnea.

During the initial visit, he was not oriented to time, place, and person, Glasgow Coma Scale 14/15. On general physical examination, clubbing was present, but there was no cyanosis, edema, icterus or pallor. His body temperature was 97°F, blood pressure was 100/90 mm of Hg, heart rate was 78 beats per minute, and respiratory rate was 24 breaths per minute. Swelling measuring 3*2 cm was noted in the right forearm, which was tender on palpation. Apex beat was felt in the left fifth intercostal space in the midclavicular line and a prominent right ventricular impulse and a systolic thrill was present. Power was 1/5 in the shoulder abduction and adduction, elbow flexion and extension, and wrist flexion and extension of left hand. There was neck rigidity and both Kernig sign, and Brudzinski sign was positive. Cardiomegaly with a typical boot-shaped heart was found on chest X-ray posterioranterior view (Figure 1).

Laboratory examination revealed hemoglobin 14.4 gm % and hematocrit 47.3% suggesting no polycythemia. His total leukocyte count was 17,330 cells/mm³, neutrophil 83%, lymphocyte 8%, and platelet count 472,000 cells/mm³. Gram-positive Staphylococcus aureus was isolated in blood culture. Cerebrospinal fluid (CSF) analysis showed total leucocyte count of 5 cells/mm³, predominant lymphocytes (95%), protein, and glucose levels were within the normal range. Patient was managed conservatively for suspected bacterial meningitis with antibiotics (intravenous vancomycin 75 mg 6 hourly, metronidazole 30 mg/kg/day, and ceftriaxone 75 mg 12 hourly), dexamethasone 0.4 mg/kg 12 hourly, and iv manitol 1.5 g/kg body weight as per CSF analysis for 5 days but the symptoms did not improve.

Contrast-Enhanced Computed Tomography (CECT) scan of the brain showed bilateral multiple ring-enhancing lesions scattered throughout bilateral cerebral hemispheres largest measuring 16*14 mm in size in the right frontal lobe with perilesional edema and right lateral ventriculitis which was suggestive of tuberculoma (Figure 2). He was then started on anti-tubercular therapy (ATT) and the patient showed improvement within 10 days of ATT treatment. Blood culture showed no growth of a microorganism after 2 weeks. He improved clinically as well and was discharged on oral anti-tubercular therapy HRZE [75/150/275/400 mg] two tab per oral OD for 4 months and HR (75/150 mg) two tab per oral for 7 months and upon follow-up, after 2 months he had no neurologic deficits.

3 | DISCUSSION

A patient with TOF with right-to-left-sided shunt presents with cyanosis in early childhood and hence called cyanotic heart disease. Cyanosis is caused when deoxygenated blood from right enters to the left side of the heart through the septal defect and finally into the systemic circulation bypassing the lungs. The common complications of TOF include delayed developmental milestones, secondary polycythemia, and infective endocarditis. Brain abscess is a rare complication occurring in almost 11% of congenital cyanotic heart disease and among them it is most commonly seen in the TOF. Tuberculoma of the brain is a rare lesion in patients with congenital cyanotic heart disease. Moorthy et.al and Ray et.al reported brainstem tuberculoma in an adult patient and tuberculoma in a child with cyanotic heart disease, respectively. Tuberculoma in the brain may have been as a result of hematogenous spread or rupture of tubercles in the brain. CNS tuberculosis occurs in 10% of miliary tuberculosis. Physicians have to keep tuberculoma of the brain in the differential diagnosis in the patients with underlying congenital cyanotic heart disease despite having no family history and no risk factors suggestive of tubercular origin.

Round or lobulated nodule with moderate to marked edema and either solid or ring enhancement lesion if found on CECT is suggestive of intracranial tuberculomas according to study by Vengsarkar et.al and Saber et.al. CECT showed the similar features of tuberculoma which changed our modality and basis of treatment. Mycobacterium tuberculosis can grow from multiple and large volumes of CSF but it may take up to 6 months for identification. The sensitivity
of this culture is 56% on the first sample and may be up to 83% if four samples are cultured.\textsuperscript{13} If diagnosis is not conclusive, tissue biopsy or excision is done to rule out differential diagnoses. However, the most minimally invasive approach possible is preferred. The sensitivity and specificity of CT scan in CNS tuberculomas is found to be 100% and 85.7%, respectively.\textsuperscript{14} The sensitivity of imaging features of basal enhancement, hydrocephalus, basal ganglia infarct, classic tuberculoma, and vasculitis are higher in diagnosis of Tubercular bacterial meningitis.\textsuperscript{14}

Our patient had similar features of classic tuberculoma with perilesional edema, basal ganglia infarct, and ventriculitis, but without hydrocephalus. Patients with Neurocysticercosis (NCC) present with similar clinical features involving mostly cerebral cortex and cerebellum and should be ruled out from computed tomography (CT) scan of head. Similarly, ring-enhancing brain lesions on radiological findings may mimic necrotic brain metastasis.

4 | CONCLUSION

CNS tuberculoma, although rare, should be kept as differentials to brain abscess in a patient with cyanotic congenital heart disease. In a low-resource setting, where tissue biopsy and excision is required to confirm the diagnosis of CNS tuberculoma, CT scan plays an important role in making the diagnosis and changing the treatment modality.

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CONFLICT OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

SS wrote the original article, reviewed and edited the manuscript. RC reviewed and edited the original article. SS, RC, BR, RD, BK and BSP were reviewed the manuscript and management of the patient.

ETHICAL APPROVAL

We took written informed consent from the patient for publication of the case report in anonymous way.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in the article.

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FIGURE 2 Computed tomography of brain showing bilateral multiple ring-enhancing lesions with perilesional edema and right lateral ventriculitis
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