

Pediatric Tubercular Monoarthritis: A Rare Manifestation. A Case Report

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ABSTRACT

Tuberculosis (TB) has always been a burden in developing nations like India. Both pulmonary and extra-pulmonary manifestations of TB have been seen widely in the pediatric age group with the specific age-wise distribution. We hereby report a case of a 15-month-old male child who was brought with complaints of localized pain in the left knee and was initially diagnosed to have juvenile-onset oligoarthritis. As the symptoms progressed and a cystic swelling was observed in the left popliteal fossa, he was investigated and aspiration of the cyst was done. Mantoux test done in the child was strongly positive and pus aspirated from the cyst was positive on cartridge-based nucleic acid amplification testing (CBNAAT) for *Mycobacterium tuberculosis* with rifampicin sensitivity. He was promptly started on 4 drug anti-TB therapy. The pus grew acid-fast bacilli in a culture medium which confirmed the diagnosis. Very young age (15 months) of presentation with cystic lesion from a joint is an unusual presentation of tubercular arthritis.

Keywords: Extra-pulmonary manifestations, Pediatric, Tuberculosis.

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INTRODUCTION

Tuberculosis (TB) has proved to have a significant impact on all age groups mainly in the developing nations of the world. Despite the emergence of various newer antitubercular drugs, it has been found out that approximately one-third of the total world's population are said to be silent carriers. According to the WHO report of 2015, a total of 10.4 million new cases of TB were diagnosed worldwide out of which around 1 million were of the pediatric age group.^{1,2} Extra-pulmonary TB accounts for up to one-third of all cases.^{3,4} Pediatric age group have a higher predilection to an extra-pulmonary manifestation of TB as compared to adults. This is accompanied by higher morbidity and mortality rates.⁵ The lack of reliable TB diagnostic tests for the pediatric population has become the most challenging hurdle in disease control. Both tuberculin skin test (TST) and interferon-gamma release assay (IGRA) fail to differentiate latent from active TB.⁶

CASE DESCRIPTION

A 15-month-old male child was referred to our hospital with complaints of progressive limping of the left lower limb for the past 2 months which was associated with restriction of knee flexion and pain on movement of the knee joint. For these complaints, he was initially diagnosed in an outside hospital to have juvenile-onset oligoarthritis and was started on oral steroids and non-steroidal anti-inflammatory drugs for the past 1 month. As there was no improvement in complaints, he was referred for further detailed workup. On examination, the child was found to have a 3 × 3 cm cystic, mobile, fluctuating mass with no overlying scar or sinus (Figs 1 and 2). Ultrasonography of the mass confirmed the cystic nature of the mass and hence aspiration was planned. Aspiration of the cyst drained approximately 3 mL of purulent fluid which was sent for cartridge-based nucleic acid amplification testing (CBNAAT) for *Mycobacterium tuberculosis* along with pus culture in Löwenstein–Jensen medium. Hemogram done showed lymphocytic predominance and CBNAAT report for acid-fast bacilli

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was positive and the strain grew was rifampicin sensitive. Tuberculin skin test done with 2 TU was strongly positive (16 × 17 mm) and chest X-ray done showed right-sided perihilar infiltration (Fig. 3). Gastric lavage was sent which did not grow any acid-fast bacilli and was negative for Gene X-pert. The child was immediately started on



Fig. 1: Swelling of left knee joint



Fig. 2: Cystic mass in the left popliteal fossa

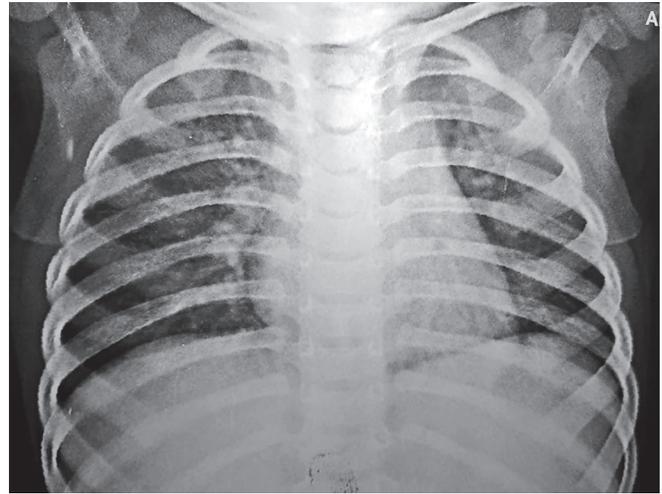


Fig. 3: Chest X-ray—right perihilar infiltration

4 drug anti-tubercular drug regimens and was advised follow-up to check for a response. The pus grew acid-fast bacilli in culture medium at the end of 4 weeks which confirmed the diagnosis. The child responded to AKT treatment. On follow-up after 4, 8, and 12 weeks, the cystic lesion seemed to significantly reduce in size.

DISCUSSION

Isolated monoarthritis caused by *M. tuberculosis* (in the absence of clinical pulmonary disease) is not a common presentation in age groups <2 years. Chronic monoarthritis is a relatively common pediatric problem, with the differential diagnosis being juvenile rheumatoid arthritis (JRA), trauma, viral arthritis, reactive arthritis, Lyme disease, foreign body synovitis, pigmented villonodular synovitis, malignancies, sarcoidosis, and other chronic infections.⁷ In our case, the child had no pulmonary complaints to start with. The child had received BCG immunization at birth along with all the necessary vaccines according to the government schedule. There was no contact of TB patient or history of any chronic disease in the past.

The main pathogenesis involved in tubercular arthritis, as well as tubercular osteomyelitis, is the re-activation of tubercular bacilli which is embedded in the bone during primary infection. The main reason for these bacilli to be affecting the spine and major large joints may be explained by rich vascular supply to these areas. Infrequently, the bacilli may travel from the lung to distant bones by hematogenous or lymphatic modes. Hematogenous dissemination may occur in immunocompromised patients as in individuals with AIDS or transplant recipients.

Tubercular arthritis is most frequently observed in weight-bearing joints as seen in our case.⁸ Arthritis with TB may be a result of direct infection of the joint or “reactive” arthritis secondary to visceral disease (i.e., Poncet’s disease). Delayed diagnosis is not uncommon in children <2 years of age. The main complaints of TB arthritis include pain, stiffness, effusion, and low-grade fever. The characteristic insidious chronic course of this disease makes it difficult to distinguish from other forms of chronic arthritis.^{8,9} Synovial fluid is typically inflammatory with a total leukocyte count ranging from 10,000 to 20,000 cells/mm³ and polymorphonuclear cell predominance. Protein in >3.5 g/dL and glucose levels are

normal. Radiological findings depend on the stage of arthritis. Early features include soft tissue swelling and periarticular osteopenia which later progresses to the blurring of the subchondral bone surface and marginal erosion with joint narrowing and frank destruction of bone.

Most cases of TB arthritis (including our case) have no pulmonary symptoms.

Tuberculosis monoarthritis is to be considered as a primary case and the treatment schedule should be planned accordingly. The regimen includes 2 months of 4 drug intensive therapy; isoniazid, rifampicin, pyrazinamide, and ethambutol which is to be followed by a continuation phase of 4 months with isoniazid, rifampicin, and ethambutol (according to NTEP 2020). Compliance with medication is of utmost importance in the prevention of medication failure and the emergence of drug resistance.

CONCLUSION

Pediatric tubercular monoarthritis is a rare entity in the age group <2 years. The absence of any other systemic features of TB makes it difficult to come to a final diagnosis and hence we should have a low threshold for diagnosing TB, especially in endemic regions.

INVESTIGATION

Hemogram: Hb—10.6 g/dL.
 TLC—13,500/mm³ (Neutrophil—37%, Lymphocytes—58%).
 Platelet—4.45 lac/mm³.
 ANA (immunofluorescence)—weak positive.
 Mantoux test—16 × 17 mm.
 Gene X-pert—rifampicin sensitive AFB detected.
 Rapid TB culture of Pus—AFB seen.

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