Case Report

Tubercular Osteomyelitis – Rare Presentation of MDR-TB in a Child: A Case Report

Microbiology Section

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ABSTRACT

Abstract: Tuberculosis is a major public health problem in the world. As such, the scenario is quite alarming and it has further been complicated by the spread of the Human Immunodeficiency virus (HIV), as well as by the increased drug resistance. We report here about a child who was previously treated for pulmonary tuberculosis and later on developed skeletal tuberculosis, who did not respond to the first line anti tubercular drugs. Later on, genotyping was done and the diagnosis was found to be Multi Drug Resistant Tuberculosis (MDR-TB). She was started on the 2nd line of anti tubercular drugs since 6 months and is doing well.

Key Words: Tubercular osteomyelitis/ Child/ MDR- TB

KEY MESSAGE

- Tuberculosis in a child of three months indicates the burden of endemicity in our country. Tubercular osteomyelitis comprises only 10-15% of the extrapulmonary tuberculosis cases. MDR-TB is no longer a rarity and always has to be looked for and to be diagnosed early to prevent its transmission.

INTRODUCTION

The WHO (2008) – estimate reveals 9.4 million incident cases of tuberculosis globally with 11.1 million prevalent cases, 0.5 million cases of MDR-TB and 0.15 million deaths which are associated with MDR-TB. There are about 50,000 cases of extensively drug resistant TB (XDR-TB) and 30,000 deaths are associated with XDR-TB. The emergence of drug resistance has become a serious problem worldwide; more efforts are needed to tackle this deadly disease which may become a global emergency [1]. Drug susceptibility tests are a must for all the re- infection/treatment failure cases, as MDR-TB and XDR-TB are more likely to occur in patients who have been previously treated for tuberculosis.

CASE REPORT

An apparently healthy looking, active child of the age of 1yr 6mths from West Bengal came to a medical college hospital in White Field, Bangalore, with a history which was given by her mother as a swelling in the right posterior aspect of the elbow, measuring about 4x4cms in size and it was non-tender and non-mobile. The child complained of pain since 2 days. Next day, redness was seen over the swelling, with no restriction of her movements.

Past history-when the child was 3.5 months old, she had fever on and off, with rashes all over her body. All the routine investigations were normal except the Mantoux test which was strongly positive at 25mm, her ESR was 90mm/hr and her chest X-ray was normal. The patient was started on anti tubercular treatment for 9 months (INH, Rifampicin, Ethambutol and Pyrizinamid). The child was fine for 6 months. Later on (4/6/ 2009), she had continuous fever and pain in the right leg and after a few days, she was unable to stand properly on the right leg, following which she was taken to the Child Health Hospital in Kolkata. MRI and bone biopsy of the right tibia was done.

MRI report of the right leg showed the features of possibility- 1. Chronic recurrent multifocal osteomyelitis, 2. Multifocal pyogenic/ tubercular osteomyelitis, 3. Infiltrative disease like leukaemia/ histiocytosis.

Bone marrow biopsy showed interlacing trabacule of the lamellar bone with osteoblasts and osteoid material which were embedded in the fibrous stroma. The marrow spaces showed fibrous and scattered haemopoitic cells. No granuloma was seen. There was no morphological evidence of malignancy or infiltrative disorder.

The child was on a course of antibiotics for 2 weeks. Later on, she developed a swelling on the right elbow, for which she and her parents came to Bangalore.

Family history- both the parents were educated and healthy. None of the family members were suffering from tuberculosis. Her siblings were healthy. Natal history- healthy female child weighing 4.2 kg, delivered by caesarean section. Immunization –BCG scar was seen, DPT and OPV was received. The child had normal milestones.

Her head to toe examination was normal, except for a POP **cast over her right leg** and a **swelling over her right elbow**. There was no organomegaly. Her systemic examination was normal.

Investigations which were done-FNAC from the right elbow swelling yielded 1.5 ml of purulent material which showed cellular deposits, large number of neutrophils, degenerated cells, few lymphocytes and histiocytes.There was minimum necrotic debris in the background. No granuloma or epitheloid cells were seen.

The material was **AFB positive- it was reported as -tubercular abscess.**

The sputum AFB was negative, the liver function tests were normal, the serum electrolytes were normal and the routine urine analysis was NAD

All the haematological parameters were within the normal range except, **haemoglobin which was 6.8gm/dl and ESR which was 96mm/hr.**

The tests for HIV were negative, C-reactive protein – was .92mg/dl (normal-<0.75mg/dl), the abdomino- pelvic scan was normal, the CD4 count was 1065, the CD8 count was 587 and the ratio was 2.7:3.

Chest X-ray [Table/Fig. 1] showed –right mid zone perihilar patchy consolidation - ? Pneumonia/ pulmonary Koch's, X-ray [Table/Fig. 2] of the right elbow showed-Soft tissue swelling in the posterior aspect of the upper forearm. Upper end of the ulna showed mixed lytic and sclerotic lesions with periosteal multiple layers of new bone formation -? osteomyelitis, ?neoplastic (Ewing's). X-rays [Table/Fig. 3] of the right leg and knee-1. Lytic lesion with surrounding sclerosis at the metadiaphysis junction of the lower end of the femur. 2. Large lytic lesion in the upper shaft of the tibia with minimal periosteal new bone formation.

Microbiology-Aspiration pus was sent for culture and sensitivity- it yielded no aerobic bacterial growth. Acid fast bacilli were present. On L J medium, culture growth was seen after 3 weeks and the niacin test was positive. The aspirate was sent for genotyping to a diagnostic laboratory in Bangalore. The genotyping test was done for the *rpo* gene, the *kat* gene, the *inh* gene, the *gyr* gene, the *rrs* gene and the *emb* gene- the report indicated that the organism which was isolated was *Mycobacterium tuberculosis* which was resistant to isoniazid (INH), rifampicin and aminoglycosides/ cyclopeptide and sensitive to fluoroquinolones and Ethambutol.

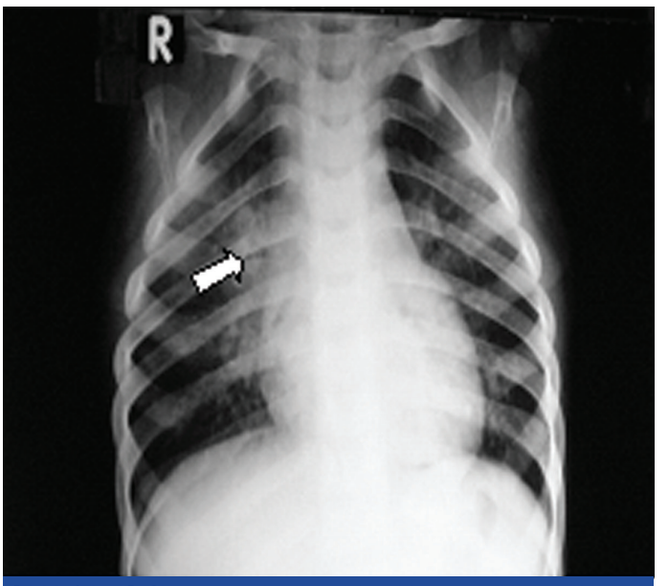
On the basis of these reports, the child was again started on the first line anti tubercular drugs.

The child was taken back to its native place- CMRI, Kolkata. There, she was started on a cocktail of the second line of antitubercular drugs - ethambutol, ciprofloxacin, ofloxacin, ethionamide and pyrazinamide. The lesion healed by one month. The child is on medication and is doing well. The father gave this information.

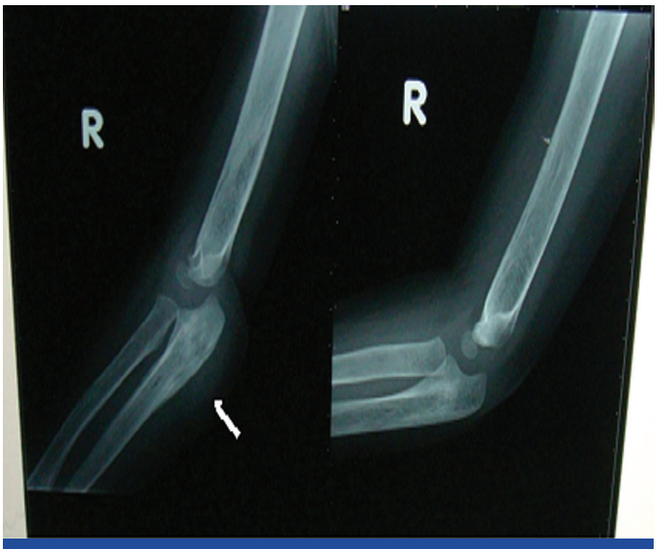
DISCUSSION

Though pulmonary TB is the common mode of presentation, MDRTB is usually seen in the already treated cases. Here, we are presenting a case with involvement of the skeletal system, extensively than any other system, with involvement of the long bones of both the upper and the lower limbs on the right side. Tuberculosis of the skeleton comprises 10%-15% of all the extra pulmonary tuberculosis cases [2-4]. Goldblatt and Cremin [5] studied a series of 271 patients with skeletal tuberculosis, who were within 10 years of age and found that six (2.2%) patients had involvement of the long bones without involvement of the joint space. Rasool [6], in his study on 42 children with tubercular osteomyelitis, found an incidence of 20% with associated chest involvement.

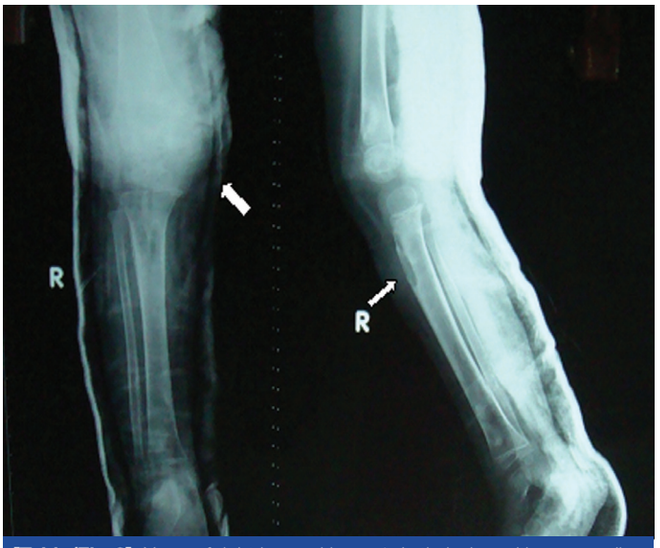
In this case with a past history of tuberculosis, TB should have been the first in the list of the differential diagnosis. After the anti TB treatment, the child developed a swelling in the elbow, which



[Table/Fig-1]: Chest x-ray showing–right mid zone perihilar patchy consolidation



[Table/Fig-2]: X-ray of right elbow shows-Soft tissue swelling in the posterior aspect of upper forearm.upper end of ulna shows mixed lytic and sclerotic lesion with periostealmultiple layers of new bone formation.



[Table/Fig-3]: X-ray of right leg and knee-1. Lytic lesion with surrounding sclerosisat meta diaphysis junction of lower end of femer.2. large lytic lesion in the upper shaft of tibia with minimal periosteal new bone formation.

meant dissemination in a patient who was failing on the treatment. In this case, drug resistance should have been suspected and MDR-TB should have been the diagnosis [7]. After susceptibility testing, the second line of the anti TB drugs should have been the choice of therapy. According to the WHO (18th march 2010), it had been estimated that 440000 people had MDR-TB and that one third of them died, out of which 50% of the cases occurred in India and China [8]. The failure rates, even after complete treatment with cat1 and cat 2, are 2% and 6% respectively [9].

Sushil Jain from Hinduja hospital examined 3904 lab samples and found that 1274 were positive for MTB. Of these, 32% were MDR-TB, out of which 8% were XDR-TB. TB can affect many sites in the body, but the common location is the lungs [10].

The treatment of a patient with MDRTB is a daunting challenge. INH and rifampicin are the most potent anti tubercular drugs, but by definition, they are ineffective in MDRTB and the second line of drugs are less efficacious, more toxic and more costly [11]. In a patient who is failing on the treatment, drug resistance must be considered. The drug susceptibility tests should include all the available second line drugs to guide the therapy. Though high mortality and morbidity are associated with MDRTB and XDRTB, they remain as treatable diseases, as has been recently reported in the literature [12-13].

Genotyping detects the resistance to the antiTB drugs. It was found to have high specificity and a positive predictive value [14]. This case highlights the potential problem of MDRTB to XDRTB. The rapid identification of drug susceptibility is virtually important in endemic countries where MDRTB and XDRTB can exist.

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