Drug Resistant Tuberculous Osteomyelitis of Small Bones of Foot

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Abstract
Drug resistant tuberculous osteomyelitis of small bones of foot is not reported frequently. The case described here had isoniazid resistant tuberculous osteomyelitis of small bones of foot. The probable mechanism was endogenous reactivation of previously disseminated foci of drug resistant bacilli from the primary site in the lung.

INTRODUCTION
Skeletal tuberculosis accounts for 1 to 5 percent of all tuberculous infection and roughly half of them are in vertebral column. Most tubercular infections of the bones are caused by the human strain of Mycobacterium tuberculosis. Infection of the musculoskeletal system is caused by haematogenous spread from a primary lesion of the respiratory tract; it may occur shortly after the primary infection or may be seen years later as a disease reactivation. The tuberculous lesions involving the small bones of the foot are not frequent. Here a case having isoniazid resistant tuberculous osteomyelitis of small bones of foot is described of that, to best of our knowledge, is extremely rare.

CASE REPORT
A 42-year-male, working as a clerk at a university department presented with painful swelling in left foot along with low grade intermittent fever, decreased appetite, weight loss, and a generalized weakness; all for duration of 3 months. There was no history of cough, sputum, haemoptysis, dyspnoea, or any chest pain. He denied any history of trauma / prolonged bed rest / any cardiac symptoms. He had a history of smoking 2-3 cigarettes/day for last 20 years and also occasional consumption of alcohol. There was no history of diabetes, hypertension, or any other significant disease or disorder. He provided a history of pulmonary tuberculosis diagnosed and treated at our Institute 5 years back. His records revealed that he had pulmonary tuberculosis with drug resistance to isoniazid alone. The drug susceptibility at that time was carried out using conventional methods; the samples were processed at New Delhi Tuberculosis Centre, Delhi which is having WHO recommended mycobacterial culture and drug susceptibility testing facilities. He was given 18 months of antitubercular treatment (3SHRZE/15HRZE), had a good compliance for treatment adherence and became symptoms-free within 3 months of initiation of chemotherapy. He remained asymptomatic after that till his present illness started.

On clinical examination, he had average built and good nutrition with stable vital signs. Complete blood count and other biochemical parameters were within normal range. Sputum culture for microbiological pathogens was non-productive. Tuberculin test was positive (an induration of 20 mm). The chest skiagram showed reticular and small linear opacity bilateral upper lung fields compatible with the post-tubercular lesions. Pulmonary functions showed mild airflow obstruction. Roentgenograms of foot could not depict the lesion clearly. Computed tomogram of foot showed osteolytic lesions involving multiple bones. A large osteolytic lesion in navicular bone was also present (Fig. 1). Specimens from the site of lesion were submitted for histopathological examination and also for detection of mycobacterial DNA using polymerase chain reaction along with drug susceptibility testing using genetic probe. The histopathological examination was suggestive of chronic granulomatous infection. Genetic probe detected Mycobacterium tuberculosis resistant to isoniazid alone. The patient was diagnosed to have drug resistant tuberculous osteomyelitis of small bones of foot and was started with anti-tubercular treatment
including streptomycin, isoniazid, rifampicin, pyrazinamide, ethambutol, and ofloxacin. He had good clinical and radiological improvement within 3 months and is currently under treatment.

**DISCUSSION**

The prevalence of drug resistant pulmonary tuberculosis is on rise worldwide. In India, though reliable nation-wide data on drug resistant tuberculosis is not available, the rate of drug resistance found by various workers has been significantly high. However, drug resistance in osteoarticular tuberculosis is rare as the number of tubercular bacilli in these lesions is less than that in pulmonary lesions. It is well known that tuberculous bacilli have spontaneous, predictable rates of chromosomally borne mutation that confer resistance to antimicrobial agents, and the resistance depends on mycobacterial population load.

Tuberculous osteomyelitis of small bones of the foot is rare among patients with skeletal tuberculosis. A concomitant extraskeletal lesion is not always seen, nor is the organism cultured in a majority of the cases. Delay in diagnosis and treatment exist because of equivocal and nonspecific clinical, radiographic, and laboratory findings. Bone pain that does not respond to analgesic medication is often due to infection or neoplasia. In the early stages plain radiographs are normal and magnetic resonance imaging (MRI) or computed tomography (CT) scan may help to localize lesions. On plain radiographs, more advanced lesions may mimic chronic pyogenic osteomyelitis, Brodie’s abscess, tumours or granulomatous lesions. CT scan may show osteolytic bone lesions as seen in present case and may reveal the status of adjoining joint. MRI further helps to detect the extent of lesions particularly the involvement of soft tissues. Since isolated osteomyelitis is usually seen only in the early stages of the disease process which spread to involve the joints, early diagnosis and therapy are imperative to get good long-term results. Osteoarticular tuberculosis must be considered in the differential diagnosis of multiple destructive skeletal lesions particularly in regions where tuberculosis is endemic.

Osteomyelitis can present as an acute, subacute, or chronic orthopedic concern. The definitive diagnosis requires histopathological confirmation of tuberculous granulomatous lesion in specimen from the lesion or isolation of mycobacteria or its DNA from the site. Tuberculin test may provide useful supportive evidence in difficult cases. Treatment is mostly by antitubercular chemotherapy, immobilization is not required, and operative intervention is often limited to the drainage of the large abscesses. A favourable response to chemotherapy may be obtained in up to 92% of the cases.

The present case is being reported due to rarity of drug resistant tuberculous osteomyelitis of small bones of foot. The possible mechanism could have been endogenous reactivation of previously disseminated foci of drug resistant bacilli from the primary site in the lung when the patient had isoniazid resistant pulmonary tuberculosis 5 years back that was treated adequately at that time.

**REFERENCES**


**Announcement**

**HIV Congress 2006**


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**Announcement**

**TOXOCON-1**

The Inaugural Conference of The Indian Society of Toxicology, 28th November 2005. Venue: Amrita Institute of Medical Sciences and Research Centre, Cochin - 682 026.

For further details contact: Dr. VV Pillay, Organizing Secretary, Department of Analytical Toxicology, Amrita Institute of Medical Sciences, Cochin - 682 026.

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