

Tuberculosis Spondylitis (Pott's Disease) in Iran, Evaluation of 40 Cases

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Abstract

Objective: Because of increased incidence of tuberculosis (TB) in recent years, infective spondylitis is still a major problem in the world. Symptoms of spinal TB are often nonspecific, and clinicians should be aware of this entity.

Patients and methods: In this study, epidemiologic aspects, clinical manifestations, laboratory tests and radiologic studies of cases with documented tuberculosis spondylitis in Lohman Hospital were evaluated.

Results: Of our patients, 25 (62.5%) were men and 15 (37.5%) were women. The oldest was 77 and the youngest was 17 years old. Average of age was 47 years. Involved vertebrae were as follow: cervical 10%, thoracic 37.5%, thoracolumbar 27.5% and lumbar 25%. Accompanying diseases were pulmonary TB (72%), TB pleural effusion (18%), paraspinal abscess (18%) and renal TB (2.5%). Clinical manifestations were back pain in 100%, anorexia in 100%, fever in 90%, cough in 53% and limb paralysis in 2.5% of patients. Erythrocyte sedimentation rate between 80-125 mm/h was detected in 40%, between 50-79 mm/h in 35%, between 20-49 mm/h in 15% and less than 20 mm/h in 10% of patients.

Conclusion: Prompt diagnosis and treatment of skeletal TB are important to prevent serious bone and joint destruction and severe neurologic sequels.

Keywords: tuberculosis, spondylitis, Pott's disease

Introduction

Tuberculosis (TB) is a common disease worldwide that is caused by *Mycobacterium tuberculosis* (1). It is a rare but serious clinical condition which may lead to severe deformity and early or late neurological complications (2). Tuberculous spondylitis is the most common form of musculoskeletal TB and accounts for about 50% of cases (3).

The diagnosis of musculoskeletal tuberculous infection remains a challenge to clinicians and requires a high index of suspicion. The combination of indolent onset of symptoms, positive tuberculin skin test, and compatible radiographic findings strongly suggest the diagnosis. TB, however, must be confirmed by positive culture or histologic proof from the aspiration of synovial fluid or biopsy of the bone or synovium (4). We designed this study to evaluate the incidence of TB spondylitis in our region and also correlation with clinical signs and symptoms and its relation to laboratory tests and radiological findings.

Patients and Methods

In a retrospective study we evaluated 40 cases with documented tuberculosis spondylitis in Lohman Hospital, Tehran, Iran, during 8 years. Medical records were used to collect data. Tuberculosis spondylitis was diagnosed by biopsy or imaging evaluation. Biopsy samples were evaluated by pathologist for histopathology evaluation and also smear, culture and PCR of tuberculosis. For some of patients with strong evidence of documented tuberculosis such as smear positive pulmonary TB, radiologic evaluation such as vertebral CT scan and MRI was basis of decision-making for diagnosis of tuberculosis spondylitis. Gold standard of diagnosis in our study was vertebral biopsy, but in cases with documented tuberculosis, imaging was used for diagnosis of spondylitis.

For all patients with documented TB spondylitis, four-drug treatment regimen was started and 12-month treatment for all of the patients was scheduled.

Epidemiologic aspects, clinical manifestations, laboratory tests and radiologic studies were evaluated in this study.

Results

In this study, 25 patients (62.5%) were men and 15 (37.5%) were women. The oldest was 77 and the youngest was 17 years old. Average of age was 47 years. Involved vertebrae were as follow: cervical 10%, thoracic 37.5%, thoracolumbar 27.5% and lumbar 25%. In our

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study 50% of patients had Afghan nationality. Accompanying diseases were pulmonary TB 72.5%, TB pleural effusion 17.5%, paraspinal abscess 17.5% and renal TB 2.5%. One of our patients (2.5%) was HIV and HCV positive. Scoliosis was seen in 2.5% of patients as well. Clinical manifestations were back pain in 100%, anorexia in 100%, fever in 90%, cough in 50% and limb paralysis in 2.5% of patients. All of patients had positive (more than 10 mm) tuberculin skin test. Erythrocyte sedimentation rate (ESR) between 80-125 mm/h was detected in 40%, between 50-79 mm/h in 35%, between 20-49 mm/h in 15% and less than 20 mm/h in 10% of patients. All of patients had destructive lesions in anterior part of vertebrae which were detected in CT scan and MRI. For those who underwent vertebral biopsy granulomatous changes were reported by pathologist, 35% of whom had positive culture for tuberculosis. Smear was positive in 25% and PCR was positive in only 20% of patients. Four-drug treatment regimen (isoniazid, rifampin, pyrazinamide, ethambutol and vitamin B6) was started for all of them. Only for 8 cases (20%) surgical intervention were performed according to neurosurgeon's opinion.

Discussion

Tuberculosis is still a major cause of significant morbidity and mortality despite universal availability of effective chemotherapy (5). Musculoskeletal TB is a rare manifestation of TB comprising 1%-3% of all cases (6). Vertebral TB is the most common form of skeletal TB (7) and accounts for approximately 50% of cases (8). Symptoms of spinal TB are often nonspecific, and the clinician should be aware of this entity. Active investigation including microbiological and histologic examination is of utmost importance to avoid any delay in correct diagnosis and specific treatment (9). Spinal TB mostly involves the thoracic level (10). In our study 10% of our patient had cervical spine, 37.5% had thoracic spine, 27.5% had thoracolumbar spine and 25% had lumbar spine involvement. The posterior spinal element, specifically the pedicle is not uncommonly involved in spinal TB. Pedicle involvement is part of the disease process and usually associated with relatively severe vertebral body and disc destruction, wide prevertebral abscess, and severe kyphosis. (10). TB may involve the intramedullary, extramedullary intrathecal compartment, or the extrathecal vertebral compartment in the form of an arachnoiditis, abscess, and spondylitis, respectively, often with unusual imaging presentations (11). In Guo's study tuberculous symptoms and local pain of vertebral volume were obvious in all patients before chemotherapy, with average ESR 65.3 mm/h and average CRP 37.4 mg/L (12). Another study showed the average ESR was 79.4 mm/h, and the average CRP was 44.3 mg/L before chemotherapy, indicating active tuberculosis focus. This shows that the level of ESR and CRP are high in active

spinal tuberculosis and low when focus controlled. ESR and CRP are reliable parameters in evaluation the treatment and prognosis of spinal tuberculosis (13). In our study 40% of our patients had ESR 80-100 mm/h, 35% had ESR 50-79 mm/h, 15% had ESR 20-49 mm/h and 10% had ESR less than 20 mm/h. Early diagnosis and new medical treatment can reduce the incidence of serious skeletal sequelae and number of surgical procedures in spinal TB (14). Patients with early detection only on the imaging showing vertebral lesions, without obvious sequestrum, abscesses, can be selected for conservative anti-tuberculosis treatment. Patients combined with abscess, vertebral destruction on light degree and not affected the stability of the spine can be removed by simple surgery to obtain better efficacy. Patients with abscesses, sequestrum, spinal vertebral instability leading to heavy damage associated with spinal cord or nerve function impairment, will need surgical removal of lesions of tuberculosis, give graft and spinal fixation at the same time (15). Early diagnosis and prompt treatment are mandatory to prevent serious destruction of joints and skeletal deformity. However, due to the nonspecific and often indolent clinical presentation, the diagnosis may be delayed. Radiological assessment is often the first step in the diagnostic workup of patients with musculoskeletal TB and further investigations are decided by the findings on radiography (8). The rapid diagnosis of spinal TB demands a high index of suspicion and expertise regarding the appropriate diagnostic procedures. Due to the devastating consequences of a missed diagnosis, *Mycobacterium tuberculosis* should be considered early in every case of spondylitis, intraspinal or paravertebral abscess. The presence of certain alarm signals like a prolonged history of progressive back pain, constitutional symptoms or pulmonary nodules on a chest radiograph, particularly in the upper lobes, may guide the clinical suspicion (16). Surgery in spinal tuberculosis is indicated for diagnostic dilemma, neural complications, and prevention of kyphosis progression (17). Prompt diagnosis and treatment of skeletal TB are important to prevent serious bone and joint destruction and severe neurologic sequelae in case with spinal involvement (2). Tuberculosis spondylitis should be considered by physicians in every patient with chronic low back pain or pain in vertebral column in endemic areas.

Conclusion

TB spondylitis is more frequent in men than women. Thoracic and thoracolumbar are the most involved regions of spine. PPD, ESR, CRP and other laboratory test are not useful enough to diagnose while spine biopsy is also necessary for diagnosis.

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