TUBERCULOUS SYNOVITIS IN A HIV POSITIVE PATIENT

Tuberculosis of the appendicular skeleton is an uncommon infection by tubercle bacilli. Thirty percent of the skeletal tuberculosis involves joints, the knee being the third most common joint affected. We report a case of tubercular synovitis of the knee joint in a 30-year-old HIV seropositive male. The diagnosis was done by Ziehl–Neelsen stain and culture on Lowenstein Jensen medium, of the synovial fluid along with the X-ray findings of the knee joint. The X-ray of the chest showed findings suggestive of pulmonary tuberculosis. The patient was responding well to the antitubercular treatment at the last follow up.

Key words: HIV infection, knee synovitis, tuberculosis

Today, tuberculosis remains a major public health problem worldwide. According to WHO, 11 million new cases occur worldwide every year.[1] HIV infection, chronic disease, malignancy, transplantation, and other immunosuppressive conditions and aging lead to an increase of patients with tuberculosis.[2,3] Incidence of skeletal tuberculosis is increasing due to the AIDS pandemic. In this group, tuberculosis may present atypically and sometimes with predominant extrapulmonary manifestations that result in delayed diagnosis and treatment.[1-3] In the past decade, there has been a significant increase in extrapulmonary and osteoarticular manifestations worldwide.[1-3] Tuberculosis of the appendicular skeleton is an uncommon infection caused by tubercle bacilli and constitutes 1–3% of all forms of tuberculosis and 7–15% of extrapulmonary cases. In about 50% of the cases pulmonary involvement cannot be detected.[4] Spine is the most common site for skeletal involvement accounting for 50–60% of cases. Joint
Involvement is secondary in frequency and may be secondary to direct invasion from an adjacent focus of tubercular osteomyelitis or even result from hematogenous dissemination. The disease involvement is typically monoarticular (90%) and primarily involves the large weight bearing joints such as hip and knee.[4] Bacteriological diagnosis is essential to establish the early detection so that the specific treatment can be started. It also helps to differentiate tubercular synovitis from other causes such as nonspecific chronic synovitis, pigmented villonodular synovitis, and also rheumatoid arthritis.[3] Tuberculous synovitis is a repeatedly missed diagnosis, mostly in different clinical patterns, when diagnosis is delayed,[4] particularly when there is no involvement of the lungs, which may happen in 51% of the cases. Here, we present a case of tuberculous synovitis of the knee in a 30-year-old HIV seropositive patient, who also showed pulmonary involvement.

Case Report

A 30-year-old male patient presented with gradual swelling of the knee joint, restriction of movements, and joint pain on the 14th of February, 2007. The previous medical reports of the patient revealed that he was seropositive for HIV-1 antibodies. To start with, 15 days back, the patient reported uneasiness of the joint with gradual increase in swelling of the knee joint. There was no previous history of trauma to the joint. There was no recent history of fever, anorexia, weight loss and night sweats, cough, or breathlessness. The patient was vaccinated with BCG vaccine as part of the national immunization schedule but gave a past history of tuberculosis of lungs, four years back, for which he had received antitubercular agents for six months.

Physical examination revealed a swollen and erythematous right knee with reduced flexion movements. There was no sinus tract seen. There was palpable synovial thickening and tenderness was present in the medial, lateral joint line, and patellofemoral segment of the joint. The other joints were normal.

Laboratory examination revealed hemoglobin of 14 g/dl and total leukocyte count of 5400/mm³ with 70% lymphocytes and 30% neutrophils. The ESR was 26 mm/hr. The liver and renal function tests were within normal limits. The patient was nondiabetic, nonhypertensive, with no long-term administration of steroids. X-ray findings of the knee were unremarkable, other than a subtle soft tissue swelling (Fig. 1). Chest X-ray showed findings suggestive of pulmonary tuberculosis (Fig. 2). The patient’s sputum sample was positive for acid fast bacilli (AFB). The synovial fluid was aspirated and sent for microbiological examination. Ziehl–Neelsen staining of the synovial fluid showed few pus cells and scanty, typical beaded AFB (Fig. 3). The synovial fluid was cultured on Lowenstein Jensen medium, which showed rough and buff colored colonies of Mycobacterium tuberculosis after three weeks of incubation (Fig. 4). The secondary smear from the colony showed AFB. The isolate was identified as M. tuberculosis by standard biochemical tests. Following the AFB smear report, the patient was started on first line oral antitubercular drugs 2H₃R₉Z₉E₉ (H: Isoniazid (600 mg); R: Rifampicin (450 mg); Z: Pyrazinamide (1500 mg); and Ethambutol (1200 mg) for two months to which he responded with gradual subsidence of the swelling after one week of starting the antitubercular therapy. Joint pain was also relieved along with the subsidence of the swelling but there was still some restriction of movements. The patient was discharged after three weeks of treatment and was asked to follow up in the OPD regularly.

The patient had shown marked improvement when the last follow up was taken after two months with no recurrence of symptoms and with almost complete recovery of joint movement and was started on the continuation treatment of 4H₃R₃ for a period of four months.

Discussion

Tuberculosis is no longer confined to undeveloped or developing nations. An increase in the incidence of patients with tuberculosis has been observed even in the developed countries due to the pandemic of HIV viral infection, immigration from endemic areas, alcoholism, chronic kidney diseases, immunosuppressive therapy, drug addiction, intra-articular steroid injections, and systemic illness.[1-7] The incidence of skeletal tuberculosis is increasing due to increase in emergence of multidrug resistant strains of mycobacteria, increase in the number of immunocompromised patients, and the AIDS pandemic. Increased incidence of extrapulmonary tuberculosis has been observed recently, constituting approximately 20% of the tuberculosis cases.[7] The incidence of osteoarticular tuberculosis continues to be approximately 10% of the extrapulmonary tuberculosis and the number of such cases continues to rise.[5-7] Eventually, the incidence of osteoarticular tuberculosis is expected to account for approximately 1–3% of all forms of tuberculosis.[7]

Clinical patterns of skeletal tuberculosis include spondylitis, osteomyelitis, and synovitis. Spine is the most common site of involvement accounting for 50–60% of cases. Peripheral arthritis is responsible for 30% of osteoarticular cases. The weight bearing joints are usually affected, where by involvement of knee and hip accounts for approximately 50% cases of peripheral arthritis.[5-7]

Tubercular arthritis is usually monoarticular, sparing no joint. Lower extremity tends to be involved more commonly. It may present as chronic pain, swelling, local tenderness, warmth, and progressive loss of function. Cold abscess, sinuses, and constitutional symptoms are also seen in many
cases. In the present case, on the contrary, these findings were absent. Musculoskeletal involvement is through hematogenous spread from a primary focus, frequently in the lungs, as might be in the present case. Rarely, the primary focus could be in the kidneys or in the lymph nodes. No pulmonary radiographic changes can be identified in 50% of the patients, but in the present case the chest X-ray showed involvement of the lungs and the patient’s sputum was positive for AFB.

After the bacteria lodge in the joint synovium or metaphysis, there is marked joint effusion and thickening of the synovial membrane as observed in the present case. The ensuing granulation tissue expands inwards from joint periphery causing erosion of the bare area of knee as well as the free surface of the articular cartilage. If left untreated, further erosion can occur and later progress to destruction of articular surfaces. As the cartilage and bone destruction ensue, sequestrum formation occurs, which involves both sides of the joint and hence is called a ‘kissing sequestrum’. Further extension to the periarticular soft tissue may occur with the formation of cold abscess and sinuses.

Plain radiographic findings of tuberculosis are usually seen only after latent period of 2–4 weeks. Joint effusion and soft tissue swellings are the only findings in early stages. In the late stages, classic ‘Phemister triad’ of joint space reduction, juxta-articular osteoporosis, and peripheral osseous erosions are described. The relative preservation of joint space, which is a classical feature, is due to the lack of proteolytic enzymes in *M. tuberculosis*. Another typical feature is lack of sclerosis or periostitis in early stages, except in children in whom a delayed periosteal reaction is seen. The end stage of tubercular arthritis is characterized by severe joint destruction, eventually sclerosis, and fibrous ankylosis but in the early stages the X-ray findings may be unremarkable as observed in the present case.

Tuberculous synovitis is diagnosed by microscopy, culture of the synovial fluid, and histopathological examination. According to Western reports *M. bovis* is responsible for 80% of cases, while almost all cases in India...
are due to human strains, that is, *M. tuberculosis*. Although AFB positivity is observed in approximately 16% cases only, in the present case, we could demonstrate AFB on primary smear of the synovial fluid. Culture positivity varies from 30.4–87% cases. In the Indian scenario, various studies show varying rates of confirmation: 40–80% by Dahl and 87% by Lakhanpal. In the present case, human tubercle bacillus was isolated on LJ medium, which is a significant finding. As the AFB were initially seen directly in the primary smear of the synovial fluid, no histopathological examination was done, but the diagnosis of tuberculosis was confirmed by the culture on LJ medium.

Because of the subtle nature of symptoms, diagnostic evaluations are often not undertaken, until the disease has progressed. The possibility of tuberculous synovitis is often overlooked during clinical examination; therefore, it is necessary to increase clinical awareness to ensure early diagnosis and early treatment. Other differential diagnosis would be pyogenic arthritis, pigmented villonodular synovitis, and rheumatoid arthritis. The microbiological investigations help in correct diagnosis.

To conclude, with the present AIDS pandemic the clinician should be aware of the possibility of musculoskeletal disease due to tuberculosis, in order to treat the patient optimally. Culture is the gold standard because most cases due to *M. tuberculosis* may be sensitive to primary line of antitubercular treatment, while atypical mycobacteria may be resistant and may require secondary line of treatment and that too for a longer duration.

References


K Wanjari, *VP Baradkar, M Mathur, S Kumar
Department of Microbiology, Lokmanya Tilak Municipal Medical College, General Hospital, Sion, Mumbai - 400 022, India

*Corresponding author (email: <vasantbaradkar@yahoo.com>)
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