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CASE REPORT

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Isolated focal pyomyositis of teres minor: an unusual presentation of tuberculosis

Ramesh Kumar SEN, Sujit Kumar TRIPATHY, Chenthuran DEIVARAJU, Ashim DAS

Department of Orthopedics, Postgraduate Institute of Medical Education and Research, Chandigarh, India

Atypical and unusual presentations of tuberculosis have become a major diagnostic problem for health professionals. We describe a 30-year-old male patient with a tuberculosis abscess in the teres minor muscle. The patient was initially misdiagnosed due to this unusual presentation and the definitive diagnosis was only made after the histological examination of the drainage material. The patient responded to the anti-tuberculosis therapy and there was no recurrence after 4 years.

Key words: Pyomyositis; teres minor; tubercular abscess; tuberculosis.

Tuberculosis infection of the musculoskeletal system is generally confined to bones and joints. The surrounding soft tissue is secondarily infected due to direct spread or by hematogenous dissemination. Tuberculous bursitis, tenosynovitis and primary pyomyositis are rarer manifestations of the disease, comprising 1% of all cases of musculoskeletal tuberculosis.[1] Of these, primary tuberculous pyomyositis is probably the rarest entity and is seldom reported in the literature.[2,3] Some of the effected muscle groups reported in literature are the thigh muscles,[4] gluteal muscles,[5] forearm muscles,[2,3] soleus,[6] rectus abdominis,[7] brachialis and biceps brachii,[8] and temporalis.[9] We report a case of tuberculous pyomyositis of the teres minor in an immunocompetent individual. To the best of our knowledge, this is the first case of tubercular infection of the teres minor muscle ever reported in English literature.

Case report

A 30 year-old active male patient presented to our medical service with a history of intermittent low-grade fever and weight and appetite loss over the previous 15 days. He had a vague pain in his right shoulder that he initially attributed to carrying a heavy object. He was admitted to the infectious disease ward and was evaluated by clinical, radiological and laboratory investigations. No abnormalities in any organs were found. A radiograph of his right shoulder and scapula was normal. Laboratory tests revealed an elevated erythrocyte sedimentation rate (ESR= 55 mm/hr by Westergren method) with normal cell counts. Liver, renal and thyroid function tests were normal. Chest x-ray, abdominal ultrasonography and sputum, urine and blood examinations and cultures did not reveal any disease pathology. The infectious disease specialist prescribed antipyretics and a trial of antibiotics, as sometimes urinary tract and respiratory infection have uncommon manifestations. Empirical treatment with ofloxacin 200 mg b.i.d. and anti-malarial therapy (due to the fact that malaria is endemic in this region and has a variable presentation) was started. No resolution of the symptoms was achieved, however. The physicians then diagnosed the patient with ‘pyrexia of unknown origin’. Further tests such as

Correspondence: Ramesh Kumar Sen, MD. Department of Orthopaedic Surgery, Postgraduate Institute of Medical Education and Research, Pgimer, Chandigarh-160012, India. Tel: 91 9914209744 e-mail: senrameshpgi@yahoo.in

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high-resolution computed tomography (CT) scan of the chest, CT scan of the abdomen, cerebrospinal fluid analysis, serological tests for autoimmune diseases and malignancy, endocrine and rheumatological parameters did not identify any disease pathology in any major visceral organs. While undergoing these tests, the patient received stronger antibiotics (cefepime, teicoplanin) and anti-fungal therapy and lost about 6 kg of weight over two and half months. However, the pain over the right shoulder joint had decreased significantly.

Finally, an orthopedic consultation was sought for a complete musculoskeletal assessment. While evaluating the right shoulder joint, a small, fluctuant, non-tender mass was found over the dorsal aspect of the scapula in the infraspinous fossa at the lateral border. Clinical examination revealed a mild restriction of the external rotation of the shoulder joint with tenderness at the greater tuberosity and lateral margin of scapula. Ultrasound revealed a 3x2 cm mass by the teres minor. Needle aspiration under ultrasound guidance was attempted twice. The first attempt failed and a small amount of thick purulent fluid was aspirated during the second attempt. However, no organisms were isolated after staining (gram stain and Ziehl-Neelsen stain) and culture for both fungus and bacteria (pyogenic and tuberculous bacilli). A CT scan and magnetic resonance imaging (MRI) of the right shoulder and scapula clearly delineated a 7x2.5x3 cm abscess in the infraspinous fossa, at the junction of the muscle belly and tendon of teres minor. MRI scan also showed increased muscle intensity, suggestive of myositis. Though there was no joint effusion, there was evidence of some synovial effusion and capsular thickening of the right shoulder joint which was best described as reactive synovitis. The proximal humerus was normal (Figs. 1 and 2). The decision was then made to drain and debride the abscess. The material obtained from the debridement was sent for histopathological analysis, which revealed the presence of epitheloid granulomas (Fig. 3). A stain for acid fast bacilli (AFB) was positive. A polymerase chain reaction (PCR) for *Mycobacterium tuberculosis* was also positive. No other areas of tuberculosis infection could be identified (lungs, lymph nodes, gastro-intestinal tract and skeleton including spine) by clinical and radiological examinations. The patient was given a 12 month course of anti-tubercular therapy (ATT), after which he had an uneventful recovery except for a temporary increase in the size of the submandibular lymph nodes. Four years after the completion of treatment the patient has not shown any evidence of relapse.

Discussion

Approximately 1 to 3% of all patients with tuberculosis have musculoskeletal involvement, mostly spondylitis, osteomyelitis or arthritis. In the retrospective study by Farer et al., out of the 60,606 cases

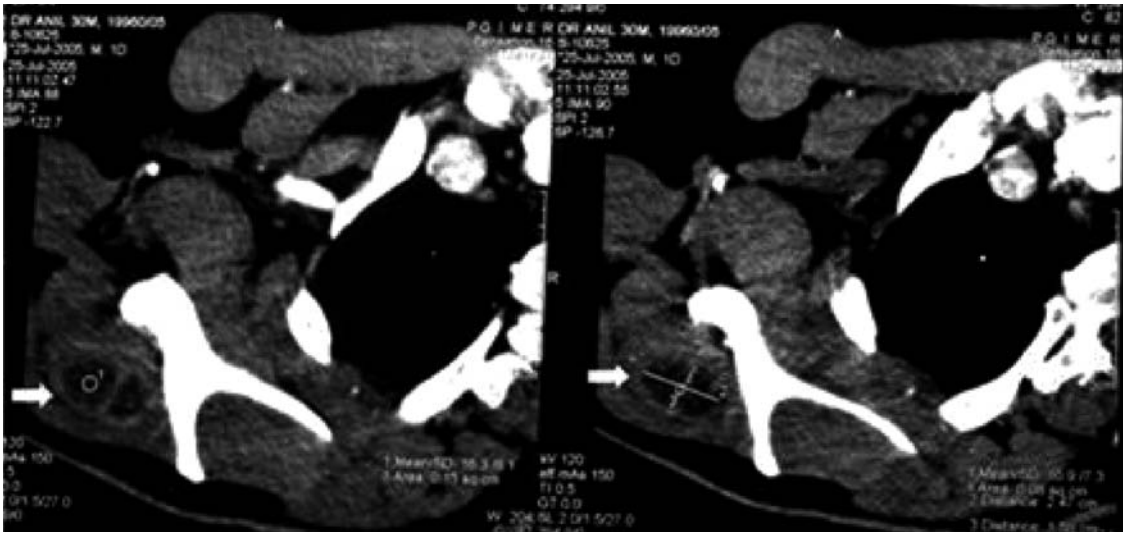

Fig. 1. CT scan of the right scapula showing a small abscess **(arrow)** in the infraspinous fossa on the dorsal aspect.

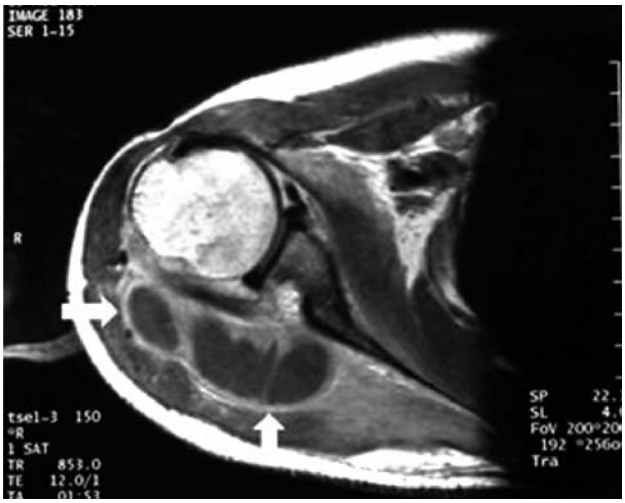

Fig. 2. MR image (T1-hypointensity) showing a 7x2.5x3 cm abscess in the right infraspinous fossa, at the junction of the muscle belly and tendon of teres minor.

of tuberculosis identified, only 676 (1.12%) cases of musculoskeletal tuberculosis were seen.[10] The study by Enarson et al. found the incidence of musculoskeletal tuberculosis to be 3%.[11] The spread from these foci to the adjoining soft tissues is well recognized. However, primary tuberculous myositis, tenosynovitis and bursitis are extremely rare. Tuberculous bursitis was common before the advent of ATT. The greater trochanteric bursa was the most commonly involved bursa followed by the olecranon bursa probably because both were subjected to frequent trauma.[1] Tuberculous tenosynovitis is also uncommon and tendons around the wrist are the most commonly affected.[1] Tuberculous myositis is probably the rarest of all these entities. A retrospective study done in Spain by Soler et al. found that 18 out of 2,334 patients had extraspinal musculoskeletal tuberculosis in the absence of acquired immunodeficiency syndrome (AIDS), and 6 (0.0026%) had primary tuberculous pyomyositis in either 1 or 2 muscles.[12] In the study by Petter the incidence of tuberculous myositis was estimated to be as low as 0.015%.[13] On the other hand, studies from Asia report significantly higher incidence of this rare entity. One such study from South Korea found that 1.8% of patients with culture-proven tuberculosis had tuberculous myositis.[14] Another study from Taiwan found the incidence of tuberculous myositis to be equally high (1.8%).[15] Based on these studies, it is logical to conclude that *M. tuberculosis* may be a relevant cause of pyomyositis in endemic areas. The treating physician must be aware that *M. tuberculosis* can cause an abscess without any bone involvement. The clinical presentations of such patients may not be obvious as in some cases a mild, dull, aching pain with minimal restriction of the adjacent joints may be the sole manifestation. This mild symptom should be taken seriously if other organ pathology is excluded by clinical and laboratory investigations. The delay in diagnosis in the present case was due to the lack of awareness among the treating physicians and absence of focal myositis symptoms. Frequent trials of antibiotic therapy may

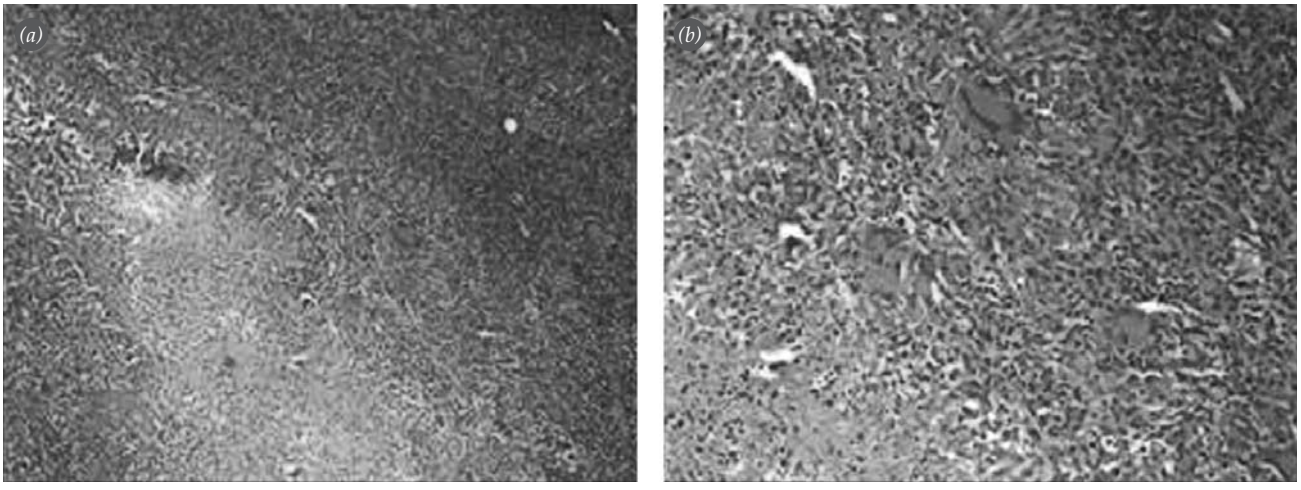

Fig. 3. Microphotograph of a biopsy slide showing central caseous necrosis with surrounding infiltration of chronic inflammatory cells, Langerhans multinucleated giant cells and epitheloid cells (epitheloid granuloma) (H-E **[a]** x20 and **[b]** x40). [Color figure can be viewed in the online issue, which is available at www.aott.org.tr]

mask the disease symptoms and can cause further delays in diagnosis. In particular, tubercular bacilli are sensitive to the quinolone group of antibiotics and these antibiotics may have caused the diminution of pain and local symptoms in the present case.

The pathogenesis of primary tuberculous pyomyositis, bursitis or tendonitis is probably the same, namely direct contiguous spread, direct inoculation or hematogenous spread from a distant site. There are reports in the literature that tuberculous myositis spreads from direct inoculation with contaminated syringes.[5] It also must be considered that all atypical extraosseous presentations may be caused by florid disseminated tuberculosis, as was reported by Batra et al.[3] Radiological examination of the chest, adjoining bones and spine must be performed to rule out pulmonary and skeletal tuberculosis. The radiological investigations in the present case did not identify any pathology in the adjacent skeleton including the dorsal vertebra. In the absence of any other foci of tuberculosis infection, the tuberculous abscess in the present case was labeled as 'primary myositis' or 'tuberculous pyomyositis of unknown origin'. MRI of a soft tissue lesion helps determine the extent and spread of the lesion and is useful in pre-operative planning. However, the diagnostic ability of MRI is limited and histological confirmation or microbiological identification is essential to confirm the diagnosis. In six cases of tuberculous pyomyositis described by Soler et al., it was found that the MRI was homogeneous in six cases and showed intermediate (n=6), low (n=2), or high (n=1) signal intensity on T1-weighted images and a high and very hyperintense signal on T2-weighted images.[12] Because of the non-specific MRI findings, they suggested that the diagnosis should be based on clinical context. MRI is essential to define the extent of the lesion to select appropriate treatment.[12]

With effective ATT, the disease responds promptly to the medical treatment. However, a large abscess needs surgical drainage and debridement along with ATT. The duration of medical treatment should be at least 12 months.[3]

Tubercular pyomyositis is increasing in incidence and primary muscular involvement is increasingly seen in developing countries and endemic areas. A high index of suspicion and awareness is essential to avoid diagnostic complexities. The frequent use of trial antibiotic therapy may cause a further delay in diagnosis. Focal muscle pain should not be neglected in systemic complaints that are not attributable to a particular organ pathology. The muscle pain should be properly evaluated with clinico-radiological examination and histopathological confirmation in suspected cases.

Conflicts of Interest: No conflicts declared.

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