Case Report

Primary skeletal muscle tuberculosis at an unusual site

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Abstract

Tuberculosis can involve virtually any organ and it manifests itself in various forms. The selective involvement of muscles by a tuberculous process without coexisting active skeletal or extraskeletal tuberculosis is very rarely seen. A case of isolated tuberculosis of the biceps brachii muscle without any evident primary focus revealed as an intramuscular mass in a 37 years old immunocompetent female is presented. Diagnosis was established by histology and acid fast stain culture. The patient showed marked improvement with a standard four drug regimen with no evidence of disease activity at the four year follow up. This rare case is presented with review of literature.

Keywords: Skeletal muscle, Extrapulmonary tuberculosis, Immunocompetent.

Introduction

The skeletal muscles are rarely affected by tuberculosis because they are not a favourable site for the survival and multiplication of Mycobacterium tuberculosis. Even in patients with widespread involvement of the disease, tuberculosis rarely involves skeletal muscles. Petter recorded only one case of primary muscular tuberculosis in over 6,000 cases of all types of tuberculosis, with a frequency of 0.015%.[1] Very few cases of tubercular involvement of skeletal muscle have been described in literature. Most have been in adults, because tuberculosis of muscle is almost always secondary to underlying tuberculosis of the bone or adjacent joint. Haematogenous tuberculosis of skeletal muscle or contiguous spread is extremely rare. The rarity of this condition often leads to the failure to consider tuberculosis in the differential diagnosis, resulting in delayed therapy. A case of isolated tuberculosis of biceps brachii muscle without osseous involvement is presented in a young immunocompetent female, with the review of literature.

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Case Report

A 37-year-old previously fit woman presented with a 2-month history of diffuse pain in the right upper arm, with an obvious swelling as a tender mass but without paraesthesia. The mass had been present for two months. She had no pyrexia, nocturnal sweats or any significant weight loss. She had no history of trauma, intramuscular injection at the local site, travel abroad, or contact with tuberculosis. Her father died because of lung carcinoma and she had been smoking a packet of cigarettes for 10 years.

Examination revealed that the patient was afebrile, well nourished, and in no acute distress. Systemic examination findings were unremarkable except for a firm, non-mobile, and tender soft-tissue mass of 4x6 cm on anteromedial aspect of the proximal part of the right arm and a 4x3 cm palpable lymphadenopathy in right axillary location. The overlying skin appeared normal, with no wounds, scars, rash, or sinuses.

Plain radiography showed the elbow and shoulder joint and the adjacent bones to be intact. No pathology was detected in her plain radiography (Figure-1). As measured with magnetic resonance imaging, this mass was approximately 10 centimeters in length, 3 centimeters in width located near to the antecubital location of the right arm in deep fat tissue. It was hyperintense in T1-weighted images and hypointense in T2-weighted images. Also pathological lymph nodes, largest one was 3 cm in size

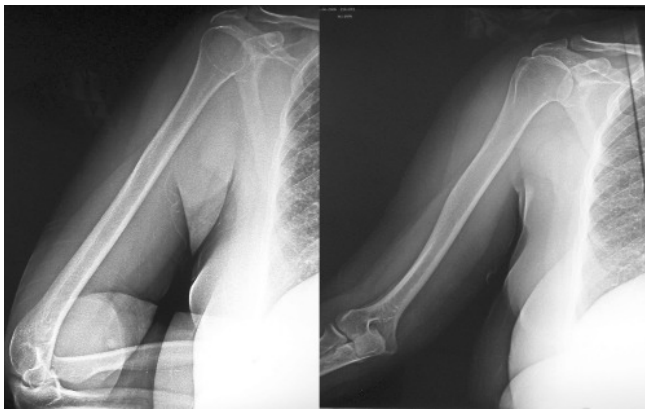

Figure-1: No pathology was detected in the plain anteroposterior (right) and lateral radiographies (left) of the arm.

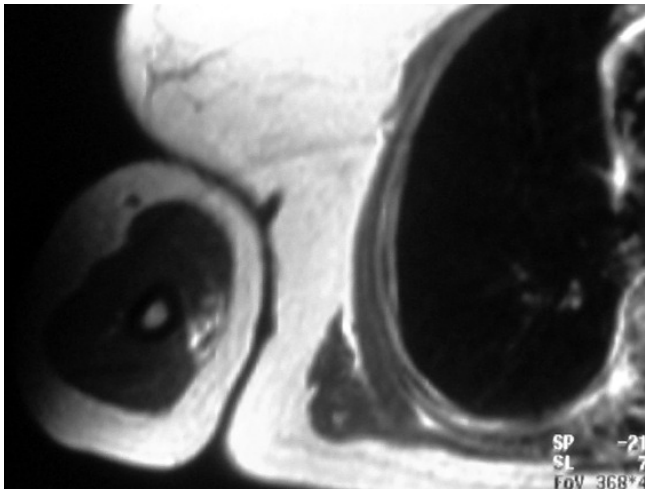

Figure-2: Magnetic resonance imaging with gadolinium enhancement revealed a well defined mass in the right arm.

were observed in right axillary fossa (Figure-2).

Chest X-ray was normal and no pathological finding was observed in her thorax CT. The erythrocyte sedimentation rate was 23 millimeters per hour which was above normal. The white blood-cell count was 8.6x10[9] per liter, with 63 percent polymorphs. Her biochemical and haemogram values were normal. Serology for HIV was negative. She had been immunized with BCG vaccine and also had a BCG scar. Her tuberculin skin test (Mantoux) was positive with the induration measuring 10mm. Because of the high suspicion of malignancy, exploration was undertaken and open biopsy was done both to the nodule and the axillary lymphadenopaty. Subsequent histology demonstrated a chronic granulomatous lesion without evidence of malignancy in both of the specimens. It stains for acid fast bacilli and later culture was also found to be positive (BACTEC). Anti-tuberculosis therapy was started with Isoniazid 300 mg, Rifampicin 600 mg, Pyrazinamide 2000mg, Ethambutol 1500mg daily. Two months later Pyrazinamide and Ethambutol was withdrawn and other drugs continued for the next seven months. The patient improved on systemic anti-tuberculosis treatment. She had been in our follow up for 4 years and no recurrences occurred.

Discussion

After the introduction of antituberculous chemotherapy, the incidence of tuberculosis in the world declined considerably. The disease is usually caused by Mycobacterium tuberculosis, which affects the lungs primarily in most patients. Although the infection is presumed to spread to the musculoskeletal system through a focus, the prevalence of active pulmonary tuberculosis coexisting with musculoskeletal tuberculosis has been about 29 per cent (147 of 499 patients).[2] Primary skeletal muscle tuberculosis is extremely rare and earlier studies have reported only four cases of muscle tuberculosis in 2224 autopsy specimens from tuberculosis patients.[3]

In more recent studies, about 3% of patients with tuberculosis have musculoskeletal involvement, mostly spondylitis, osteomyelitis or arthritis.[4] However tuberculous myositis has rarely been described in the medical literature, and its manifestations may mimic malignant or other inflammatory diseases, leading to misdiagnosis.[5] By far the commonest site of involvement is the thigh.[5]

The involvement of skeletal muscle in tuberculosis is usually by a direct extension from a neighboring joint or rarely by haematogenous spread. The pathophysiological mechanism is not clear but it is possible that high lactic acid content of muscles, absence of reticulo-endothelial cells and lymphatic tissue in muscles associated with very rich blood supply may help towards the localization of the bacteria in the muscles.[6] Haematogenous dissemination plays an important role in tuberculous myositis and is usually limited to one muscle.[7] However, several muscles may be involved and this presentation was observed in half of the patients with haematogenous dissemination.[8]

Soft tissue involvement in tuberculosis is generally associated with an underlying disorder, immunosuppressive therapy, or local injury.[5] In a review on tuberculous myositis from Taiwan showed that in contrast to previous reports most (71.4%) of their patients had no underlying disease and had tuberculous myositis as a result of contiguous rather than haematogenous spread.[8] In literature, besides contiguous and hematogenous spread, transmission by way of injection was also reported.[8]

With its multiplanar capability and excellent contrast for soft tissue, magnetic resonance imaging is the best modality for evaluating soft-tissue masses, including inflammatory infectious processes. In magnetic resonance imaging the nodule was hyperintense in T1-weighted images and hypointense in T2 -weighted images. When T1 and T2-weighted images are used, it is sometimes difficult or even impossible to differentiate neoplasms, either benign or malignant, from non-neoplastic diseases, including inflammatory processes. The small areas of relatively low signal intensity within the abscess on the T2-weighted images generally represent debris and proteinaceous material.[9] The computed

tomography or the magnetic resonance imaging of the involved muscles showed findings suggestive of tuberculous myositis in 15 (42.9%) patients in a series from Taiwan.[8] So although MR is suggestive of the diagnosis, and essential to define extent of the lesion to select appropriate treatment, biopsy and culture are needed for definite diagnosis.

High degree of suspicion is needed for early diagnosis of musculoskeletal tuberculosis to avoid complications especially in TB endemic areas.[8] The treatment of musculoskeletal tuberculosis is primarily medical. Operative intervention is an adjunct to appropriate antituberculosis chemotherapy.[10] Successful medical treatment of tuberculosis requires the prolonged administration of a minimum of four drugs to which the organisms are susceptible, and at least one of these drugs must be bactericidal. Isoniazid, rifampin, pyrazinamide and ethambutol regimen is used. The optimum duration of treatment has been an issue of considerable debate, and much of the information now available concerns the treatment of pulmonary disease. The short-course regimens for six months may not be applicable to extrapulmonary tuberculosis, specifically those with osseous involvement. The treatment should be continued for a minimum of nine months for osteoarticular involvement.[10]

Our patient was unusual as she had only biceps muscle involvement without any osteoarticular involvement. She did not have any clinical or serological evidence of primary or secondary immune deficiency and no evidence of lung tuberculosis or previous anti-tuberculosis therapy.

Conclusion

The tuberculosis incidence has increased in the last decades. Although muscle tuberculosis is a rare entity, it should also be considered in the differential diagnosis of painful soft tissue swellings especially in people born in tubercular endemic areas. The prognosis is good in tuberculous myositis with early appropriate chemotherapy and surgical drainage when needed.

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