

Case Report

Tubercular myositis of infraspinatus: a rare clinical entity

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ABSTRACT

Tuberculosis of the musculoskeletal system is generally confined to bones and joints. The surrounding soft tissue is secondarily infected. Tuberculous bursitis, tenosynovitis and primary pyomyositis are rarer manifestations of the disease. Of these, primary tuberculous pyomyositis is probably the rarest entity. We report a case of tubercular myositis of infraspinatus in an 8 year-old female who presented with pain, low grade fever, weight loss, anorexia, progressively increasing pain in the scapular region and restriction of movements. There was no history of trauma, diabetes, immunosuppression, corticosteroid usage, or renal failure. History of contact was present. Tenderness was present along the medial border of scapula and movements of upper extremity requiring movement of the scapula were painful and grossly restricted. MRI of the scapulothoracic region and shoulder revealed small amount of fluid along medial border of scapula with T2 hyperintensity of infraspinatus. Histopathology showed caseous necrosis, inflammatory cells and granulomatous cells suggestive of tuberculosis. Polymerase Chain Reaction for Mycobacterium tuberculosis was found to be positive. Patient was started on four-drug antitubercular treatment and regular dressings. The patient's general condition improved and at 4 weeks post starting ATT, there was no pain and the patient was able to perform complete range of movement. This is probably the first reported case of tubercular myositis of infraspinatus in an immunocompetent patient without any identifiable focus elsewhere in the body. Rarity of the condition, presence of characteristic findings on MRI and histopathology make the case illustrative for young Orthopaedics surgeons.

Keywords: Tuberculosis, Myositis, Infraspinatus

INTRODUCTION

Tuberculosis is one of the common diseases affecting children globally. In developing countries, the annual risk of tuberculosis in children is 2-5% and in India it is 1.5%.¹ Extra-pulmonary tuberculosis is seen in 2.5% of cases. About 3% of patients with extra-pulmonary tuberculosis have musculoskeletal involvement in the form of spondylitis, osteomyelitis or arthritis.² 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. Involvement of skeletal muscle without co-existing active disease is very rare. Of these, primary tuberculous pyomyositis is probably the rarest entity and is seldom reported in the literature. The incidence of primary muscular tuberculosis was reported as 0.015% by Petter.³ Primary muscular tuberculosis is characterized by infrequent occurrence and non-specific clinical manifestations often leading to delayed diagnosis, delayed treatment resulting in irreversible limb deformity and functional disability.³ High index of clinical suspicion is the key to diagnosis especially in endemic

areas.⁴ We report a case of tubercular myositis of infraspinatus.

CASE REPORT

A 8 year-old female patient presented with an 8-day history progressively increasing pain in the scapular region and inability to perform movements requiring movement at scapulothoracic junction. History of low grade fever, weight loss and anorexia was present. There was no preceding history of any trauma, diabetes, immunosuppression, corticosteroid usage, or renal failure. History of contact with a tuberculosis patient at home was present. On examination, there was tenderness present along the medial border of scapula. All movements of upper extremity requiring movement of the scapula were painful and grossly restricted. Distal neurovascular status was normal. There was no lymphadenopathy, spinal tenderness, or paraspinal swelling. ESR was elevated at 88 mm in 1st hour and CRP was 76.5 mg/L. Radiographs of Chest, ipsilateral scapula, shoulder, and humerus were normal. Doppler ultrasound showed normal deep venous system with subcutaneous edema over scapula associated with myositis. There was no evidence of pus collection in subcutaneous as well as subfascial compartments. The patient was started on intravenous antibiotics covering gram-positive and anaerobic organisms with inflammatory myositis as the working diagnosis. However, the patient did not respond after 5 days of intravenous antibiotics. An MRI of the scapulothoracic region and shoulder was performed which revealed small amount of fluid along medial border of scapula with T2 hyperintensity of infraspinatus suggestive of myositis with minimal shoulder joint effusion with multiple axillary lymphnodes. Figure 1 Scapula was reported to be normal. In order to confirm the diagnosis an excisional biopsy was performed. A piece of infraspinatus along the medial border of scapula was excised and sent for biopsy. Underlying scapula was examined and found to be normal. Histopathology of the specimen revealed caseous necrosis, inflammatory cells and granulomatous cells suggestive of tuberculosis (Figures 2 and 3).



Figure 1: T2 MRI image of the right shoulder and scapulothoracic region showing small amount of fluid along medial border of scapula with hyperintensity of infraspinatus.

Polymerase chain reaction for *Mycobacterium tuberculosis* was found to be positive. Patient was started on four-drug antitubercular treatment (2HREZ/4HR) and regular dressings. The patient's general condition improved and at 4 weeks post starting ATT, there was no pain and the patient was able to perform complete range of movement at scapulothoracic junction.

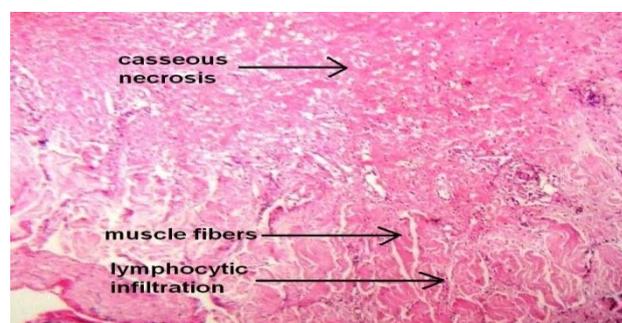


Figure 2: Section shows large areas of caseous necrosis along with skeletal muscles infiltrated by lymphocytes. (hematoxyline and eosine stain x 100).

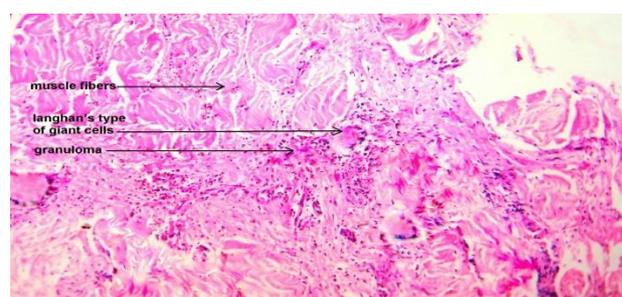


Figure 3: Section shows skeletal muscle with epithelioid granulomas. Granulomas show collections of epithelioid cells, langhan's type of giant cells and lymphocytic infiltration. (hematoxyline and eosine stain x 400).

DISCUSSION

Nonspecific clinical manifestations seen in tubercular myositis may lead to a diagnostic dilemma. Tubercular pyomyositis is commonly misdiagnosed as a soft tissue sarcoma, parasitic infection like cysticercosis or hydatid cyst, and inflammatory myositis or hematoma with secondary infection.⁶ Atypical presentation, lack of knowledge about the disease, lack of specific signs and large number of differentials often lead to a delay in diagnosis. Blood investigations usually are normal except a raised ESR which is a consistent finding.⁶ Some of the effected muscle groups reported in literature are the forearm muscles, gluteal muscles, rectus abdominis, soleus, temporalis, brachialis and biceps brachii.⁶⁻¹²

Tubercular pyomyositis has been reported in immunocompetent as well as in immunodeficient, HIV infected, renal failure patients, patients on corticosteroids, immunosuppressive drugs, or chemotherapy.^{9,13}

Tuberculous myositis may mimic malignant or other inflammatory diseases, leading to misdiagnosis.¹⁴ Poor oxygen content, high lactic acid concentration, rich blood supply and paucity of reticuloendothelial cells make skeletal muscles 'forbidden tissue' for growth and multiplication of tubercular bacilli.^{6,14} Tubercular bacilli do not produce proteolytic enzymes; hence, it does not cause a pus formation, but secondary infection may lead to abscess formation in surrounding tissue leading to pyomyositis. Route of spread to muscle reported is contagious (63% cases) haematogenous (29% cases) and direct inoculation (8% cases).¹⁵

DNA-PCR is a highly sensitive investigation especially to differentiate tubercular from nontuberculous mycobacteria which cause soft tissue infection. Owing to its multiplanar capability and contrast for soft tissue, MRI is the investigation of choice. Most cases of M. tuberculosis myositis are initially diagnosed as bacterial pyomyositis. Although it is difficult to differentiate between M. tuberculosis and Staphylococcal pyomyositis in the early stage of disease, MRI findings can help to distinguish between the two. On MRI exam, M. tuberculosis myositis is characterized by low signal intensity on T1WI and high signal intensity on T2WI in a single muscle, with peripheral rims showing subtle hyperintensity on T1WI and hypointensity on T2WI. After gadolinium infusion, peripheral rim enhancement is observed in all cases.¹⁶ Unlike pyogenic myositis, neither cellulitis nor venous thrombosis surrounded the involved muscle.¹⁷ MRI may be useful in the management of tubercular myositis in delineating the anatomical extent of muscle lesions and guiding the surgeons in debridement. MRI is superior to CT or USG in the detection and characterization of the swelling in order to differentiate it from malignancy.^{5,17}

Characteristic MRI finding of T2 hyperintensity of a single muscle and absence of cellulitis and venous thrombosis on MRI were seen in our case. PCR for tuberculosis is an important tool to diagnose tubercular myositis. However histopathology is the gold standard for making this rare diagnosis which was positive in our case. This report is important as we believe this is the first reported case of tubercular myositis of infraspinatus in an immunocompetent patient without any identifiable focus elsewhere in the body.

Rarity of the condition, presence of characteristic findings on MRI and histopathology make the case illustrative for young orthopaedics surgeons especially in countries where tuberculosis is no longer a common condition.

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