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Pathology

MUSCULAR TUBERCULOSIS: RARE PRESENTATION OF A COMMON ENTITY

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ABSTRACT Tuberculosis is a global health problem mainly affecting people in developing countries although muscular involvement is rarely seen. Authors hereby, describe a case of tuberculosis of triceps muscle in a 35-year-old immunocompetent female who presented with swelling in right upper arm. Radiological examination ruled out involvement of underlying bones. Excision biopsy was performed and on histopathological examination cyst wall showed presence of foamy macrophages in sheets, inflammatory cells and few scattered epithelioid cells but no well-formed granulomas or giant cells were seen. ZN stain for acid fast bacilli was positive. Based on the above findings a diagnosis of tuberculosis of triceps muscle was made. The patient responded well to antituberculosis therapy and is currently on follow up.

KEYWORDS : Muscular Tuberculosis, Triceps Muscle, Acid Fast Bacilli

INTRODUCTION

Tuberculosis is a major public health problem causing significant morbidity and mortality worldwide. According to 2020 edition of Global Tuberculosis Report by WHO, an estimated 10 million people fell ill and 1.4 million people died from Tuberculosis in 2019 with India leading the count.[1] It can affect any organ/system of the body, lung being the most common. Extrapulmonary tuberculosis is seen in 2.5% of the cases, of which only 3% cases have musculoskeletal involvement. Primary muscular tuberculosis is often missed due to its rarity and the non-specific clinical manifestations.[2]

CASE REPORT

A 35-year-old immunocompetent female presented with chief complaint of gradually progressive swelling in the right upper arm for 18 months. There was no history of fever, prolonged cough, weight loss, trauma, loss of appetite, history of any drug intake, rashes, joint pain, traceable history of tuberculosis or any other systemic manifestation.

On local examination, a solitary, soft, cystic, nontender, nonmobile swelling measuring 12x11 cm was present in the lateral aspect of the right upper arm involving triceps muscle. It was not associated with any restricted movement of the shoulder joint or elbow joint, local rise of temperature, erythema or discoloration of the overlying skin. Regional lymph nodes were not palpable. Chest X-ray, complete blood count, liver function test, kidney function test, Hb1AC were within normal limits, only her ESR was raised (32 mm in first hour). Mantoux test showed no induration. X-Ray of ipsilateral shoulder joint showed no involvement of soft tissue or underlying bone. Rest of the systemic and general physical examination was unremarkable.

Ultrasonography revealed a well-defined 12 x 11x 7.3 cm hypoechogenic, solid cystic lesion in the superficial plane of triceps with a volume of 3.4 cc. Outside FNAC report was inconclusive and suggestive of cystic lesion. Ziehl Neelsen (ZN) staining of the aspirate was negative for acid fast bacilli (AFB). Mass was excised and intraoperatively the surgeon found it to be a cyst located in the muscular layer and filled with dirty yellow coloured fluid (Figure 1A) The specimen was sent for histopathological examination with the provisional diagnosis of an infected epidermal cyst.

We received a cut open skin covered cyst measuring 13 x 10 cm, overlying skin measuring 9 x 7cm. Cyst wall measured 0.8 cm in thickness. Luminal side of the wall appeared gray-white, nodular and lumen of cyst showed scanty dirty yellow fluid. Areas of hemorrhage were also seen at places (Figure 1B).

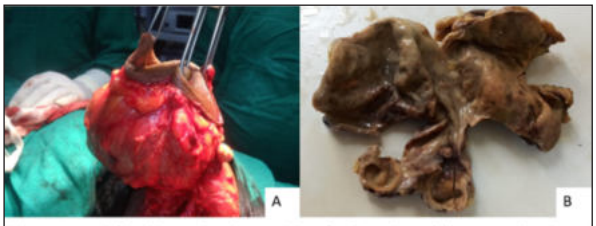

Figure 1: A- Clinical image showing excision of soft, cystic swelling measuring 12x11 cm present on the lateral aspect of the right upper arm involving triceps muscle.
B- Gross image of skin covered cystic swelling measuring 13 x 10 cm

Multiple sections of the specimen were taken and stained with Hematoxylin and Eosin(H&E) and ZN stain. Histopathological examination revealed keratinized stratified squamous epithelial skin lining with underlying dermis showing adnexal structures. Deeper tissue showed cyst wall composed of fibro-collagenous tissue, infiltrated by inflammatory cells predominantly comprising of lymphocytes, plasma cells, histocytes and admixed with variable number of acute inflammatory cells. Sheets of foamy macrophages, few scattered epithelioid cells and dilated blood vessels were also seen (Figure 2a&2b) However, no well-formed granulomas /giant cells were seen. ZN stain for AFB came positive, thus, histopathology which is the gold standard, clinched the diagnosis of tuberculosis of triceps muscle. Patient was put on antitubercular therapy and is currently on follow up.

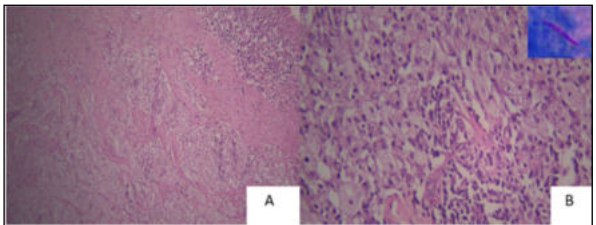

Figure 2A (x100 magnification) & 2B (x400 magnification) : Hematoxylin and Eosin(H&E) stained sections show cyst wall composed of fibro-collagenous tissue exhibiting sheets of foamy macrophages, few scattered epithelioid cells and inflammatory cells predominantly comprising of lymphocytes, plasma cells and histocytes.
Inset: ZN stain positive for acid fast bacilli

DISCUSSION

Regardless of the newer treatments and numerous vaccination drive for several decades, tuberculosis still remains a public health problem.[3] Muscular tuberculosis without any obvious underlying pathology is extremely rare in both children and adults. The precise incidence of this condition is not known and the current knowledge is based on the previous case reports. *Cullota et al* in 1929 conducted a study on 2224 patients with history of tuberculosis and found only 4 cases of tuberculosis of muscle.[4] Similarly, *Petter et al* conducted a study on 6180 patients with different forms of tuberculosis and found only 1 case of muscular tuberculosis, resulting in an incidence of 0.015%.[5] The rare occurrence of skeletal muscular tuberculosis has been attributed to high lactic acid content of muscle, absence of reticuloendothelial and lymphatic tissue, rich blood supply and highly differentiated state of muscle tissue.[6] Skeletal muscle may be involved by direct spread from the bone or the synovial lining of joints or the tendon sheath; by direct inoculation and rarely by the hematogenous route.[7]

Muscular tuberculosis usually presents with pain and/or swelling of the involved muscle and due to its nonspecific symptoms, lack of early signs, rarity; there is delay in the diagnosis leading to widespread involvement causing more damage of the involved muscle.[3] Most of the cases of muscular tuberculosis were diagnosed on muscle biopsy and had a negative Mantoux test.[8] In the index case, there was no history of tuberculosis, Mantoux test was negative and tuberculous involvement of triceps seems primary because there were no tuberculous foci in any other part of the body.

The main differential diagnosis of muscular tuberculosis includes soft tissue tumors such as myxoma, hemangioma, sarcoma; parasitic infection such as cysticercosis or hydatid cyst; fungal infections and lipoma.[9] Based on the characteristic histomorphological features, these above-mentioned entities could be easily differentiated from muscular tuberculosis. In the index case, the differential of an infected epidermal cyst was offered and primarily by detecting tubercular bacilli (ZN stain for AFB) and few epithelioid cells on histopathology, the diagnosis of muscular tuberculosis was confirmed.

Treatment is based on the antitubercular therapy with a minimum of four drugs (Isoniazid, rifampicin, pyrazinamide and ethambutol) for a prolonged period. Operative intervention is an adjunct to the appropriate antituberculous chemotherapy. The optimum duration of treatment is debatable; as the short course (6 months) of treatment may not be appropriate for extrapulmonary tuberculosis; especially those with osseous involvement.[10]

CONCLUSION

Muscular tuberculosis is a rare entity and clinicians should consider this as a differential diagnosis while evaluating such lesions especially in an endemic region. The diagnosis of this condition is often delayed due to its non-specific symptoms and rarity. If prompt diagnosis is made and antitubercular therapy is instituted early, damage to underlying bone and joint can be prevented.

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