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Case Report

Isolated Primary Tuberculosis of the Pectoralis Major Muscle

Ramakant Dixit[1*], Hanuman Prasad Sharma[1], Swarnlata Ajmera[2]

[1]Department of Respiratory Medicine, JLN Medical College, Ajmer, Rajasthan, India.
[2]Department of Pathology, JLN Medical College, Ajmer, Rajasthan, India.

Abstract

Skeletal muscle tuberculosis is an extremely rare form of extrapulmonary TB, accounting for <1% of all cases, even in TB-endemic countries. We present the case of a 45-year-old female with isolated involvement of the right pectoralis major muscle, presenting as a painful, gradually enlarging anterior chest wall swelling. Computerized tomography scan revealed a soft tissue lesion within the muscle, and fine needle aspiration cytology from the lesion confirmed tuberculosis with granulomatous inflammation and acid-fast bacilli. The patient responded completely to standard anti-tuberculosis therapy. This case highlights the importance of considering tuberculosis in the differential diagnosis of soft tissue swellings at any site of body in endemic areas.

Keywords: Tuberculosis, Muscular TB, Pectoralis major, Extrapulmonary TB, Chest wall swelling.

Introduction

Tuberculosis (TB) still continues to be a major health concern worldwide, particularly in developing countries like India, where it remains endemic. According to the India TB Report 2024 by the Ministry of Health and Family Welfare, over 2.4 million new TB cases were notified in the year 2023, with extrapulmonary tuberculosis (EPTB) accounting for approximately 17% of these cases.[1] Among the various forms of EPTB, isolated muscular tuberculosis is exceedingly rare, comprising less than 1% of all TB cases.[2,3]

In particular, tuberculosis of the pectoralis major muscle is extremely uncommon, with only a handful of documented cases in the literature.[4,5] Clinical presentation is often vague and nonspecific, mimicking conditions such as soft tissue tumours, pyomyositis, sarcomas, or chronic abscesses. Given the low prevalence and varied differential diagnoses, diagnosis is often delayed.

Here, we report a rare case of isolated tuberculosis of the pectoralis major muscle in an immunocompetent female patient with no evidence of pulmonary or underlying skeletal TB. The diagnosis was confirmed by imaging and cytopathology, and the patient responded well to standard anti-tuberculosis therapy. This case underscores the need for clinical suspicion and histological confirmation in cases of unexplained muscle swelling, particularly in TB-endemic regions.

Case Report

A 45-year-old immunocompetent female presented with a complaint of swelling at the right anterior chest wall. The swelling grew in size over the last two months and constitutional symptoms were mainly fatigue and localized chest pain with no history of fever or cough. She was a non-alcoholic, non-smoker, non diabetic and with no other comorbid illnesses.

During physical examination, the swelling was present just lateral to the sternum at the third intercostal space on the right side, 3×3 cm in size, solid in consistency, non-fluctuating, slightly tender on palpation with regular margins, no local redness at the overlying skin and with no rise in local temperature.

Her routine blood investigation, like blood counts and organ functions, were within normal range; however, ESR was 50 mm per/h and CRP was 90 mg/dl. Chest x-ray was absolutely normal. Further investigation, i.e., ultrasound chest wall, was done, which showed a well-defined hypoechoic

Address for correspondence: Ramakant Dixit,
Department of Respiratory Medicine, JLN Medical College, Ajmer, Rajasthan, India.
E-mail: dr_rdixit@yahoo.in

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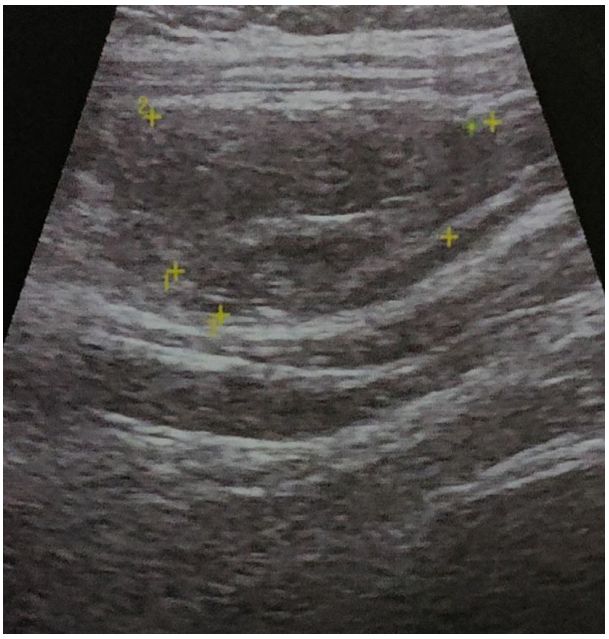

Figure 1: Chest wall ultrasound showing a hypoechoic area in the muscular planes of the pectoralis major muscle

lesion in the pectoralis major muscle planes with internal debris and peripheral vascularity (Figure 1).

Subsequent computed tomographic scan chest revealed a 3×3×2.5 cm hypodense lesion confined within the right pectoralis major, suggestive of a chronic infective aetiology (Figure 2). There was no associated rib, vertebral, or pleural involvement seen. Lung parenchyma was also normal with normal hilar structures.

FNAC of the selling was done and cytopathology revealed epithelioid cells, Langerhans giant cells with focal granulomas and areas of caseous necrosis (Figure 3). Swelling aspirate on cartridge-based nucleic amplification test (CBNAAT) detected Mycobacterium tuberculosis, but rifampicin resistance was not detected. Her Mantoux test also revealed an induration of 25 mm.

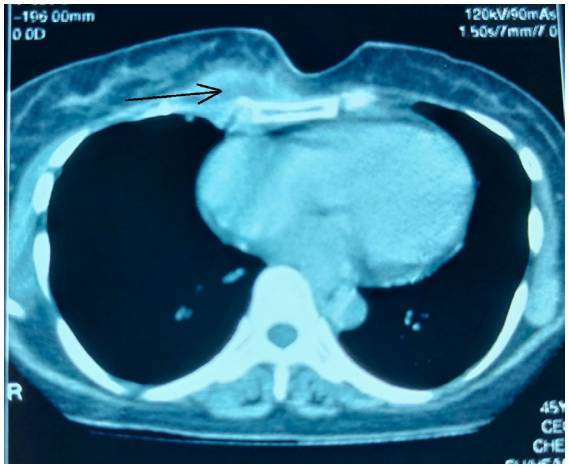

Figure 2: CT scan chest wall showing an intramuscular lesion in the pectoralis major muscle

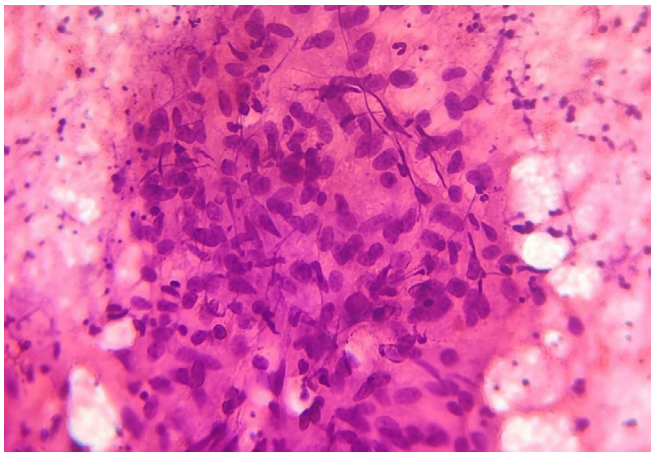

Figure 3: FNAC of intramuscular lesion showing granuloma formation by epithelioid cells suggestive of tuberculosis (HEx40)

On the basis of all the above investigations, she was diagnosed as drug-sensitive primary extrapulmonary tuberculosis in the right pectoralis major muscle and initiated on a 6th months antituberculosis treatment regimen as per the nation tuberculosis elimination programme. On subsequent follow-up, the swelling and pain reduced after six weeks and the swelling completely resolved with a normal chest wall ultrasound at the end of treatment.

Discussion

Tuberculosis involving the skeletal muscles is very rarely reported in the literature. The skeletal muscle is generally considered as inherently resistant to tubercular infection due to its high lactic acid content, rich blood supply, absence of reticuloendothelial and lymphatic tissue, and constant activity, which makes it an unfavourable environment for Mycobacterium tuberculosis.[6,7] Most reported cases of muscular TB are secondary to hematogenous dissemination or spread from adjacent bone or lymph node foci, while isolated primary muscular involvement is very rarely encountered in clinical practice.[8,9]

Muscular TB involving chest wall skeletal muscle may present in various forms, i.e., a localized nodular lesion as seen in our case, apart from intramuscular abscess (tuberculous pyomyositis), or diffuse myositis. The differential diagnosis includes pyogenic abscesses (often due to Staphylococcus aureus), soft tissue sarcomas, parasitic infections (e.g., cysticercosis, hydatid cyst of muscle), and lymphoma [9,10] apart from soft tissue lipoma, multiple myeloma, costochondritis, sebaceous cyst, herniation of lung, osteomyelitis, myxoma, haemangiomas, etc.[4]

Only a few reports have described skeletal muscle tuberculosis at different body sites, such as rectus abdominis, gluteus, psoas, triceps, quadriceps, calf muscle, etc.[8-11] Isolated muscular TB is a diagnostic challenge and an uncommon presentation of TB, emphasizing the need for tissue diagnosis in atypical soft tissue swellings. Histopathological

examination showing caseating granulomas and acid-fast bacilli in tissue sample, or a positive molecular diagnostic test such as CBNAAT/GeneXpert, confirms the diagnosis. The availability of CBNAAT has now been extensively used for diagnosing extrapulmonary TB due to its high sensitivity and rapid detection of drug resistance.[12]

While surgical excision or drainage may be required in selected cases with extensive necrosis or abscess, most cases of skeletal muscle TB, including ours, respond well to the standard antituberculosis regimen. Close follow-up is essential to monitor such cases for clinical resolution and potential recurrence, if any.

In conclusion, this case underscores the need to consider tuberculosis in the differential diagnosis of any chronic soft tissue swelling, especially in burden regions. A high index of suspicion, imaging workup and tissue diagnosis are critical for early diagnosis and effective treatment.

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