

## Tuberculosis of the Elbow Joint – A Rare Case Report

Dr. Natraj M<sup>\*</sup>, Dr. S P Burma<sup>1</sup>, Dr. Vignesh S<sup>1</sup>

<sup>1</sup>Department of Chest & TB, Andaman and Nicobar Islands Institute of Medical Sciences, Port Blair, India

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\*Corresponding author: Dr. Natraj M

Department of Chest & TB, Andaman and Nicobar Islands Institute of Medical Sciences, Port Blair, India

### Abstract

### Case Report

Musculoskeletal tuberculosis accounts for nearly 10% of all extra pulmonary cases with spine being the most common site. Tuberculosis involving the elbow joint is extremely rare accounting for less than 5% of all skeletal lesions. Early diagnosis and treatment is crucial to prevent serious joint and bone destruction. Here, we present a rare case of primary TB elbow joint in a 46 year old female.

**Keywords:** Musculoskeletal tuberculosis, skeletal lesions, elbow joint TB.

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## INTRODUCTION

Tuberculosis remains a major health issue worldwide [1]. India is the highest TB burden country in the world having an estimated incidence of 26.9 lakh cases in 2019 [2]. TB commonly involves the lungs followed by central nervous system, gastrointestinal system, genitourinary tract, musculoskeletal system and cardiovascular system. Musculoskeletal accounts for nearly 10% of all extra pulmonary cases with spine being the most common site of involvement followed by pelvis [3]. Tuberculosis of the upper limb is very rare with elbow joint involvement is seen in less than 5% of all musculoskeletal TB cases [4]. Due to its rarity, diagnosis often gets missed resulting in late initiation of treatment and ultimate joint dysfunction [5].

## CASE REPORT

A 46 years old female presented with complaints of severe elbow joint pain and swelling for the last two months. There was no history of trauma. She did not have any other complaints of fever, cough, expectoration, myalgia, weight loss or loss of appetite. On examination there was pain, swelling, redness and tenderness and limitation of movement on the right elbow. Her past medical or surgical history was not significant with any co morbid.

Her CBC, LFT, RFT, RBS, Serum electrolytes, Chest X ray was normal (Fig A). HIV was

non-reactive. ESR, CRP and RA Factor were significantly elevated. X ray of the elbow joint revealed soft tissue swelling around the elbow joint along with synovial effusion with erosions in the distal humerus. Patient was then subjected to MRI of the right elbow which showed marked contrast enhancement, changes in bone density, thickening of synovial structures, and contrast enhancement of the medullary bone marrow and effusion (Fig B). Suspicious of probable tuberculosis synovial biopsy was done which showed granuloma with langherhans giant cells characteristic of tuberculosis (Fig C). Gene X pert from biopsy showed MTB detected low with rifampicin sensitive (Fig D). Since the diagnosis primary tubercular elbow joint was established patient was started on anti-tuberculosis medication based on NTEP guidelines.

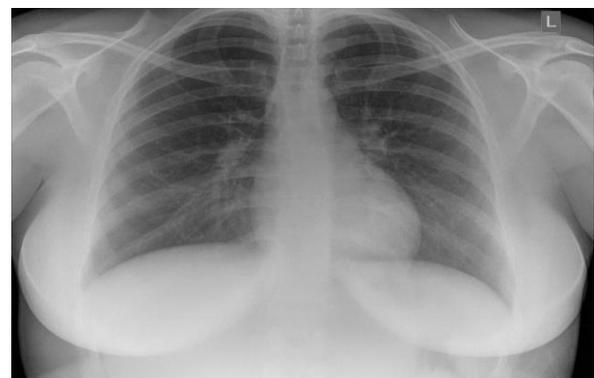
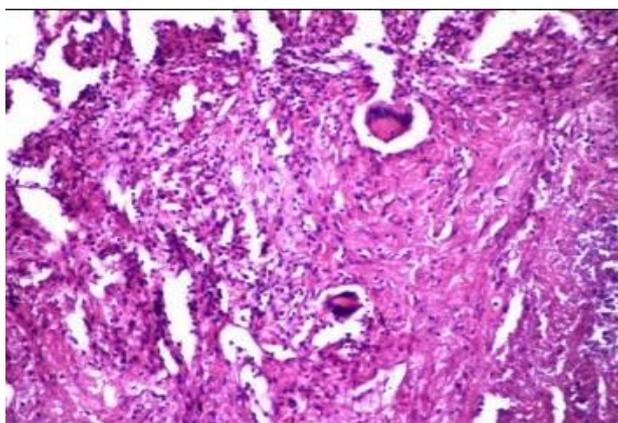


Fig. A: Normal Chest X Ray



**Fig. B:** MRI Showing Marked Contrast Enhancement, Changes in Bone Density, Thickening of Synovial Structures, and Contrast Enhancement of the Medullary Bone Marrow and Effusion



**Fig. C:** Biopsy Showing Epithelioid Granuloma with Langherhans Giant Cells

Cartridge Based Nucleic Acid Amplification Test (CBNAAT)							
Sample	<input type="checkbox"/> A	<input type="checkbox"/> B					
M. Tuberculosis	<input checked="" type="checkbox"/> Detected	<input type="checkbox"/> Not Detected	<input type="checkbox"/> N/A				
Rif Resistance	<input type="checkbox"/> Detected	<input checked="" type="checkbox"/> Not Detected	<input type="checkbox"/> Indeterminate	<input type="checkbox"/> N/A			
Test	<input type="checkbox"/> No Result <input type="checkbox"/> Invalid <input type="checkbox"/> Error – Error Code _____ (Please arrange for fresh sample)						
Date tested:	11/08/2022	Date Reported:	11/08/2022	Reported by: _____ (Name and Signature)			
Culture ( <input type="checkbox"/> LJ <input type="checkbox"/> LC)							
Lab Sr. No.	Negative	Positive	NTM (write species)	Contamination			
Date Result:	Date Reported:		Reported by: _____ (Name and Signature)				
Line Probe Assay (LPA)							
<input type="checkbox"/> Direct <input type="checkbox"/> Indirect    Lab serial _____							
First line LPA							
RpoB: ---- locus control: <input type="checkbox"/> present <input type="checkbox"/> absent							
WT1:	<input type="checkbox"/> present <input type="checkbox"/> absent	WT2:	<input type="checkbox"/> present <input type="checkbox"/> absent	WT3:	<input type="checkbox"/> present <input type="checkbox"/> absent	WT4:	<input type="checkbox"/> present <input type="checkbox"/> absent
WT5:	<input type="checkbox"/> present <input type="checkbox"/> absent	WT6:	<input type="checkbox"/> present <input type="checkbox"/> absent	WT7:	<input type="checkbox"/> present <input type="checkbox"/> absent	WT8:	<input type="checkbox"/> present <input type="checkbox"/> absent
MUT1 (D516V):	<input type="checkbox"/> present <input type="checkbox"/> absent	MUT2A (H526Y):	<input type="checkbox"/> present <input type="checkbox"/> absent	MUT2B (H526D):	<input type="checkbox"/> present <input type="checkbox"/> absent	MUT3 (S531L):	<input type="checkbox"/> present <input type="checkbox"/> absent
Kat G: ---- locus control: <input type="checkbox"/> present <input type="checkbox"/> absent							
Inh A: ---- locus control: <input type="checkbox"/> present <input type="checkbox"/> absent							
WT1 (315):	<input type="checkbox"/> present <input type="checkbox"/> absent	WT1 (-15, -16):		<input type="checkbox"/> present <input type="checkbox"/> absent	WT2 (-8):	<input type="checkbox"/> present <input type="checkbox"/> absent	
MUT1 (S315T1):	<input type="checkbox"/> present <input type="checkbox"/> absent	MUT1 (C15T):		<input type="checkbox"/> present <input type="checkbox"/> absent	MUT2 (A16G):	<input type="checkbox"/> present <input type="checkbox"/> absent	
MUT2 (S315T2):	<input type="checkbox"/> present <input type="checkbox"/> absent	MUT3A (T8C):		<input type="checkbox"/> present <input type="checkbox"/> absent	MUT3B (T8A):	<input type="checkbox"/> present <input type="checkbox"/> absent	
Second line LPA							

**Fig. D:** Gene X Pert Report from the Biopsy

## DISCUSSION

Musculoskeletal joint tuberculosis accounts for 10% of all extra pulmonary tuberculosis which commonly affects the weight bearing joint such as spine (51%), pelvis (12%), hip joint (10%), knee joint tuberculosis (10%). Elbow joint involvement being a non-weight bearing joint is very rare as accounting for less than 5% of all musculoskeletal joint cases [5]. Osteoarticular tuberculosis is the result of blood, lymphatic, contamination of the adjacent structures or because of direct inoculation of the bacteria [6]. Pathogenesis involves hyperaemia resulting in demineralization, local bone destruction and new bone formation. When the disease reaches the subchondrial region there is destruction of the cartilage gets detached from bones resulting in loose body. Involvement of the synovium starts as synovitis progresses into synovial effusion and finally resulting in destruction of bones and cartilages. When left untreated for long time it results in soft tissue masses, abscess and sinus tract formation [3]. Diagnosing elbow joint tuberculosis often poses a challenge. Initially it starts as pain and swelling but then it gradually progresses to loss of function and deformity. In early stages it might easily be mistaken for trauma, rheumatoid arthritis or even septic arthritis [7]. Radiology plays a huge role in diagnosis. X ray of the joint usually reveals non-specific findings like soft tissue swelling, joint space narrowing, effusion, erosions and osteopenia [8]. MRI of the elbow joint is considered superior to X ray showing bone marrow edema, chondrial and sub chondrial erosions, synovial effusion, synovial thickening and loss of joint spaces [9]. CT thorax can be helpful to evaluate bone destruction, soft tissue extension and sequestrum formation [10]. However aspiration of the fluid and synovial biopsy is considered definitive to prove the diagnosis of Osteoarticular joint tuberculosis. Microbiology of the fluid and histopathology of the synovial biopsy yield positive results in more than 80% of the cases [8]. Treatment can be either medical or surgical with former being the most common form of treatment in TB elbow joint [11].

## CONCLUSION

Diagnosis of TB elbow joint is challenging often requiring high index of suspicion. Along with

histopathology, gene X pert is also becoming an important diagnostic modality in TB elbow joint.

**NOTE:** Patient did not give consent for taking pictures of her elbow swelling.

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