

# Tuberculosis of Shoulder – Joint An Unusual Case Presentation

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## ABSTRACT

Although skeletal tuberculosis is most common form of extra pulmonary infection, tuberculosis of the shoulder is a rare disorder with male predominance. Tuberculous involvement of glenoid with relative sparing of humerus is further rare presentation. A young man presented to outpatient clinic with long standing history of gradual onset, progressive pain and limited range of active movements involving right shoulder joint. Clinical examination revealed fullness in anterior axilla

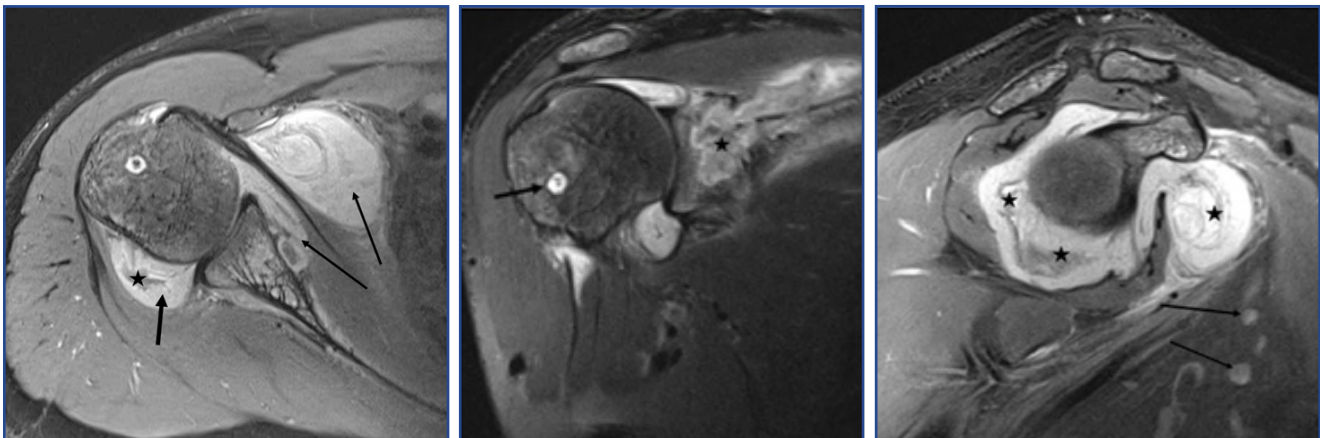
with palpable axillary lymphadenopathy. The laboratory examination revealed raised ESR and lymphocytosis. MRI findings revealed bony destruction involving glenoid with extensive enhancing synovial proliferation and cold abscess formation in joint, focal involvement of humeral head and axillary lymphadenopathy. The patient was started on antitubercular treatment and responded well till follow-up was done.

**Keywords:** Fulminant, Glenohumeral joint, Skeletal tuberculosis, Synovial proliferation

## CASE REPORT

A 22-year-old young man presented with complaints of heaviness and mild to moderate pain with limited range of active movements in right shoulder joint for the last 4 months. Recently, the pain had increased in intensity which often wakes up the patient at night. There was evidence of mild fullness in the region of right anterior axillary fold along with palpable mobile right axillary lymph nodes. No evidence of any overlying skin redness, ulceration or discharging sinus was

seen. The haemoglobin and total leukocyte count was normal, with differential count showing predominantly lymphocytes. The HIV and hepatitis serology were negative. The respiratory system examination and chest radiograph were normal. The patient underwent plain radiograph of the right shoulder, which revealed patchy osteopenia and destruction involving glenoid, however the humeral head appears normal in outline. Subsequently, the patient underwent contrast enhanced MRI of the right shoulder for which prior due consent was



**[Table/Fig-1]:** Post contrast axial PDFS sequence showing marked enhancing synovial thickening (thick black arrow) with central non enhancing areas of abscess formation (asterisk), extension anteriorly into subscapularis muscle and axilla (thin black arrows); **[Table/Fig-2]:** Post contrast coronal PDFS image showing extensive destruction of bony glenoid and spine of scapula (asterisk) with a small lytic lesion in humeral head depicting surrounding bone marrow oedema (thick black arrow); **[Table/Fig-3]:** Post contrast sagittal PDFS showing circumferential extent of enhancing synovial proliferation (asterisk) along with enhancing axillary lymphadenopathy (thin black arrows).

taken while ensuring at the same time that renal function parameters are within physiological range. Post contrast axial PDFS sequence image showed extensive enhancing synovial thickening in glenohumeral joint along with non enhancing areas representing abscess formation, invasion of subscapularis muscle and extending anteriorly into axilla [Table/Fig-1]. Post contrast coronal PDFS sequence shows the destruction of the bony glenoid with only a small lytic lesion in humeral head with surrounding marrow edema [Table/Fig-2]. Post contrast sagittal PDFS sequence depicts enhancing synovial proliferation near completely encasing bony glenoid along with enhancing axillary lymph nodes [Table/Fig-3]. The diagnosis was based on clinical presentation complemented by radiological findings. The patient was started on multidrug anti-tubercular treatment and was doing well on follow-up while on treatment.

## DISCUSSION

Tuberculosis of the bone and joint is common in India after pulmonary affection. In skeletal tuberculosis, the hip and spine are predominantly involved [1]. It is more often a delayed diagnosis owing to its close clinical resemblance to frozen shoulder or rotator cuff syndrome [2,3]. Tuberculosis arthritis has a predominant affliction for large joints like hip and knee in the vast majority of the cases with other joints including shoulder joint affected in the minority. A long symptom free period is seen between affliction of infection and manifestation of clinical symptom in almost all cases attributable to insidious and slow progression of pathologic process [2]. Tuberculosis involving shoulder joint is rare entity seen mainly in adult patients with male predominance and left side more commonly affected than the right side. The humeral head is postulated to be prime target taking into consideration that it shows the greatest proportion of destructive changes. However, Chandane PG et al., in their study reported isolated scapular involvement in paediatric age group in the form of extensive erosions which is a very rare presentation of shoulder joint tuberculosis [4]. Patel PR et al., in their study they were able to demonstrate three morphological variants of disease [5]. Synovium, cartilage and osseous structures were involved. They also stated that inflammatory changes are more marked if bone rather than synovium is the primary site of infliction. There is moderate to marked thickening of the synovial membrane which also shows fibrin deposition. In addition, there are other features of inflammation like periarticular connective tissue thickening, surrounding fat inflammation along with a joint effusion showing a tendency to increase in volume over the course of disease all contributing to soft tissue swelling. Loss of joint space in tuberculosis of shoulder joint is highly variable, ranging from being grossly reduced in cases showing minimum osseous lesions to no

apparent joint space loss in cases showing multifocal large bony erosions [2]. Plain radiographs of the shoulder joint during the early phase can be normal, however they are useful for follow-up of cases and as a baseline investigation. On plain radiographs triad of findings most suggestive of this disease comprises of markedly reduced periarticular bone density, bony lesions which are located peripherally and gradual narrowing of joint space [6,7]. In addition other findings which can be seen are subchondral erosions, periosteal reaction and reactive sclerosis [8]. In advanced cases the humeral head may dislocate and migrate inferiorly leading to unstable joint [9]. Similar dislocation of acromioclavicular joint was also seen in another case [10]. This case also demonstrated large collection along with areas of calcification in surrounding muscles and in axilla [10]. Plain and contrast enhanced CT-scan demonstrates extent of bone destruction more clearly than on plain radiography along with detection of any occult lesion not apparent on latter. Calcification around the joint is readily seen with CT-scan [1,2]. High frequency ultrasonography plays a role in infective arthritis for the visualisation of collections including image guided aspiration for bacteriological examination as well as to confirm/exclude tendon tear if any in real time [2]. The MRI spectrum in tubercular affliction of shoulder joint includes bony destructive lesions, synovial hypertrophy, infected collections, as well as extensive involvement of muscles and tendons of shoulder girdle, joint capsule and involvement of humeral marrow with postcontrast enhancement of synovium and thick rim enhancement of collection [1,7]. The bony erosions are both central and peripheral in distribution unlike non infective arthritis as well as presence of both active and passive pannus. The distinguishing feature of tubercular infection almost invariably absent in other forms of arthritis include bone chip, peripheral enhancing erosions and osteomyelitis [11]. Histopathological examination invariably shows predominantly necrotic changes in the form of granulomatous inflammation within trabecular network and stroma with surrounding lymphocytic infiltration [12]. Bacteriological culture shows mycobacterial growth [4]. The fulminant variety as seen in our patient is rare in adults but common in children. Additionally, there was significant greater involvement of glenoid than humeral head which is prime target [5]. The musculoskeletal tuberculosis like tuberculosis anywhere in body is a great mimicker and diagnosing it can be troublesome more frequently than anticipated. It can be confused with other arthritis like rheumatoid which shows significant loss of joint space in early stage of disease, gout and pigmented villo nodular synovitis which shows normal bone density and normal joint space [2,9]. Synovial chondromatosis will show intrarticular calcified loose bodies. Two cases of atypical tuberculosis mimicking neoplasm were reported by Abdelwahab IF et al., [13]. Accurate diagnosis mandates

synovial fluid aspiration or synovial membrane biopsy which is crucial for diagnosis [14].

## CONCLUSION

The acute fulminating type of tuberculosis is a rare variant in adults with the present case being even more unique by virtue of depicting greater involvement of glenoid as compared to humeral head, marked glenohumeral synovial proliferation and abscess formation. Accurate diagnosis requires synovial fluid aspiration or synovial membrane biopsy as a prerequisite to initiate treatment. A prolonged course of anti tubercular drugs is the basis of treatment.

## REFERENCES

- [1] Ostrowska M, Gietka J, Nesteruk T, Pliaszek A, Walecki J. Shoulder joint tuberculosis. *Pol Journal Radiol.* 2012;77(4):55-59.
- [2] Lakhkar DL, Yadav M, Soni A, Kumar M. Unusual presentation of shoulder joint tuberculosis: A case report. *Indian J Radiol Imaging.* 2006;16:23-26.
- [3] Agarwal A, Bhandari A, Maheshwari R. Tuberculosis of acromioclavicular joint. *J Clin Diagn Res.* 2017;11(3):RD03-04.
- [4] Chandane PG, Shah I, Mehta R, Jadhao N. Isolated scapular involvement: uncommon presentation of childhood tuberculosis. *Oxf Med Case Reports.* 2016;2016(8):omw039.
- [5] Patel PR, Patel DA, Thakker T, Shah K, Shah VB. Tuberculosis of shoulder joint. *Indian J Orthop.* 2003;37:7.
- [6] Donald Resnick, Gen Niwayama, *Diagnosis of bone and joint Disorder.* 2<sup>nd</sup> ed. Vol.4, Philadelphia: Saunders.1988. Pp: 2678-85.
- [7] Wakhlu A, Wakhlu A, Tandon V, Krishnani N. "Smouldering conditions of the shoulder" Lest we forget! *Indian J Rheumatol.* 2017;12:169-74.
- [8] Greenfield G B: *Radiology of bone diseases, Diseases of Joints.* 5th Ed, J.B. Lippincott Williams and Wilkin. 1986. Pp: 953-56.
- [9] Kant S, Kumar S, Verma S, Sanjay, Sharma V. Dry type of tuberculosis of humerus: a case report. *The Internet Journal of Orthopedic Surgery.* 2006;7(2). [Available from]: <http://ispub.com/IJOS/7/2/4294>
- [10] Mangwani J, Gupta AK, Yadav CS, Rao KS. Unusual presentation of shoulder joint tuberculosis: A case report. *J Orthop Surg.* 2001;9(1):57-60.
- [11] Sawlani V, Chandra T, Mishra RN, Aggarwal A, Jain UK, Gujral RB. MRI Features of Tuberculosis of Peripheral Joints. *Clin Radiol.* 2003;58(10):755-62.
- [12] Roshan P, Maruthi CV, Vedashree MK, Buvanesh CR, Anand BP, Vishal. Rare Case of Tuberculosis of Shoulder Joint: Sicca Variant. *Sch J App Med Sci.* 2013;1(5):538-41. [Available from]: <http://saspublisher.com/wp-content/uploads/2013/10/SJAMS15538-541.pdf>
- [13] Abdelwahab IF, Kenan S, Hermann G, Lewis M, Klein M, Rabinowitz JG. Atypical skeletal tuberculosis mimicking neoplasm. *Br J Radiol.* 1991;64(762):551-55.
- [14] Broderick C, Hopkins S, Mack DJF, Aston W, Pollock R, Skinner JA, et al. Delays in the diagnosis and treatment of bone and joint tuberculosis in the United Kingdom. *Bone Joint J.* 2018;100-B(1):119-124.

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