

# Tuberculous Osteomyelitis with Superadded Pyogenic Infection of Acromion Process of Scapula without a Primary Focus

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## Abstract

*Tuberculous (TB) osteomyelitis of the scapula is a rare clinical entity. Bone TB result from hematogenous or lymphatic dissemination of the bacilli from a primary focus of lungs, lymph node or gut. Isolated bone involvement without any primary focus and without history of TB contact in a well active young patient raises question about its mode of spread to this unusual site like scapula. The isolated involvement of this flat bone without any primary focus confuses the surgeon with other pathology and as a result there is always delay in diagnosis. Possibly, the low specificity of the clinical condition and the limited suspicion with regard to TB as the cause of osteoarticular pain are responsible for the delay in diagnosis.*

*We discuss a rare case of tuberculous osteomyelitis with superadded bacterial infection of acromion process of scapula without primary TB in a 16yrs male patient. The delay in diagnosis of the case may be because of nonspecific complaints, radiographs mimicking pyogenic osteomyelitis with no history of trauma, no lung or nodal involvement by tuberculosis. Tuberculous osteomyelitis of the acromion process of scapula with superadded pyogenic infection has not received much attention in the literatures which makes us to present it. It's a rare and severe condition that can leave to serious sequelae if not detected and treated on time.*

**Keywords** – Tuberculous Osteomyelitis, Scapula, Acromion process.

## Introduction

Atuberculosis, including skeletal tuberculosis, is an ancient infection based upon evidence from archaeological remnants [1-4]. Typical features of spinal TB have been identified in Egyptian mummies dating back to almost 4000 BC [4]. Mycobacterium tuberculosis was revealed by DNA analysis in a vertebral lesion of a young girl who lived about 1000 AD [4]. TB is the major cause of skeletal infection in the developing countries [5]. Skeletal TB accounts for 10-35% of extra-pulmonary TB and only 2% of all cases of TB [5]. Resurgence of tuberculosis with rising burden of acquired immunodeficiency syndrome has created a major problem before health professionals [2]. Their atypical presentations at unusual sites lead to delay in diagnosis or misdiagnosis [2]. TB can disseminate hematogenously to almost every organ after a primary infection or reactivation of latent foci, occurring more commonly in an immunodeficient patient [1]. The pathogenesis and source of latent foci and subsequent routes of dissemination are incompletely understood, but three reported theories include spread as a late complication of pulmonary tuberculosis, reactivation of latent foci formed during hematogenous or lymphatic dissemination of primary tuberculosis, or direct extension from mediastinal lymph nodes [1]. Tuberculosis is the major cause of skeletal infection in developing countries [5]. Tuberculous osteomyelitis

involving the flat membranous bones is extremely rare [4]. Tuberculosis of scapula is also very rare, only a few cases of tubercular osteomyelitis of scapula have been reported till date and all these were associated with other forms of tuberculous osteomyelitis [4].

While the most common site of osseous involvement is spine, followed by femur, tibia and small bones of the hands and feet, any bone can potentially be affected [4]. Most common presenting symptoms of Tuberculous osteomyelitis are nonspecific pain and swelling [4]. So, appropriate imaging with CT or MRI should be pursued when plain radiographs are normal [1]. Clinical symptoms may precede radiological changes, which are varied depending on the progression of osteomyelitis and include osteoporosis, osteopenia, bone lysis, sclerosis, periostitis or pathological fracture [1]. Plain radiographs are often normal, but CT shows the extent of bone and joint destruction [1]. MRI delineates abscesses better in the soft tissues, and highlights bone marrow involvement [1]. A three phase bone scan has high sensitivity and specificity for osteomyelitis, but gives less anatomic detail and does not indicate the cause of infection [1]. Gallium scans can be useful in showing other involved organs, but are also nonspecific with regard to the cause of infection and extent of damage [1]. A needle aspiration or excisional biopsy is mandatory for histopathological diagnosis of osteomyelitis, because radiological findings cannot differentiate the cause of osteomyelitis, and sometimes may even appear neoplastic [1]. The frequency of positive cultures is similar between both types of biopsies with approximately 85% showing acid-fast bacilli, but excisional biopsies are more likely to demonstrate granulomata and acid-fast bacilli [1]. Very few cases of tuberculous osteomyelitis of scapula have been reported till date and all of these were associated with

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Figure 1a : Multiple sinuses before antibiotic treatment.

Figure 1b : Some healed sinuses with scar formation and some active sinuses with edematous red edges having purulent discharge and red granulation tissue post antibiotic treatment.

Figure 1c : incision of sinus revealed sclerosed tissue.

Figure 1d : sclerotic bone excis (original pic): X-ray (AP view shoulder) revealing an irregular non sclerotic loose bone piece with a sector of sclerotic bone in the floor of cavity.

Figure 2c : excised sclerotic piece of bone.

Figure 2d : biopsy (H&E stain 40x) showing epitheloid granuloma with Langhans giant cells (arrow)

other forms of tubercular osteomyelitis [6]. In the present case, no other focus could be detected.

### Case Report

16year male patient presented with repeated attacks of pain, mild fever on & off and swelling over lateral aspect of left shoulder (Fig. 1a) since 2years. Swelling used to burst open to discharge pus and occasionally small pieces of bone. The resulting sinuses healed with treatment by local doctors in 3-5 weeks. There was no history of injury, weight loss or cough. Local examination revealed multiple sinuses on lateral aspect of left shoulder, some healed sinuses with scar formation and some active sinuses with edematous red edges having purulent discharge and red granulation tissue. The acromion process was thickened, irregular, enlarged and tender showing wasting around the shoulder with painful restriction of terminal abduction of left shoulder. Blood investigations were within normal limits except mild increase in ESR-26 mm/hour.

X-ray showed destructive lytic lesion at the tip of acromion without any periosteal reaction (Fig.-2a), irregular non sclerotic loose bone piece with a sector of sclerotic bone in

the floor of cavity (Fig.-2b). After culture and sensitivity report specific antibiotics were started.

After course of antibiotics, pain and swelling reduced. Purulent discharge changed to clear watery discharge, the edges of sinuses became thin, overhanging-granulation tissue became pale (Fig-1b). The skin surrounding the sinuses remained swollen and red. The clinical features of this sinus changed from pyogenic to tubercular, this forced us to go for biopsy (Fig.-1c, 1d & 2c) which revealed granulomatous tuberculous osteomyelitis (Fig.-2d). Patient was then treated with Anti- tuberculous regimen and lesion healed in 12 months.

### Discussion

Osteoarticular TB constitutes only 1-2% of all TB [2]. Tuberculous osteomyelitis of the scapula is a rare clinical entity.[4] While, most common site of osseous involvement is the spine, followed by the femur, tibia and small bones of hands and feet, any bone can potentially be affected [4]. Solitary tuberculous osteomyelitis involving acromion with superadded bacterial infection is a very rare clinical entity, to the best of our knowledge till date the literature review

Table 1 - Scapular tuberculosis as available in literature till date

Study	No of patients	Age/sex	Scapular region involved	Presenting complaints	Other focus	Treatment
Lafond 1958	One	NA	NA	NA	NA	NA
Martini et al 1986	One	NA	Acromion	NA	NA	NA
Shanoon et al 1990	One	4/m	Scapula	Pain swelling in left shoulder	Multifocal cystic lesion with right ileum involvement	ATT
Mohan et al 1991	One	23/f	Body of scapula	Pain and swelling	Isolated	Drainage and ATT
Gusati et al 1997	One	NA	Spine of scapula	Pain	Isolated	Surgery and ATT
Vohra et al 1997	One	NA	Body of scapula	NA	Isolated	NA
Kam et al 2000	Two	31/m	Acromion	Pain and swelling	Isolated	Debridement curettage and ATT
		22/F	Lateral border of scapula	Incidental finding	Multifocal T12&L2vertebra upper part of right sacroiliac joint	ATT
Greenhow and Weintrub 2004	One	14/F	Inferior aspect of the left scapula	Enlarging, non-tender mass	Cystic lesion with a soft tissue component, located dorsal to the Lt scapula	Scapular mass excision
Stones and Schoeman 2004	One	42/ M	Scapula	Discharging sinus	Multifocal tuberculosis involving maxilla, parietal bones and spine	Died
Husen et al. 2006	One	18/ M	Spine of scapula near neck	Diffuse pain	Isolated	ATT
Srivastav et al 2006	One	26/F	Inferior angle of scapula	Pain and swelling	Isolated	ATT
Solav S 2007	Three	54/F	Medial margin and spine of scapula	Pain	Isolated	ATT
		26/ M	Right scapula	Occipital headache and back pain (incidental finding on bone scan)	Multifocal (sternum, rib, vertebra)	NA
		40/ M	Right scapula	Rt shoulder pain and backache	Multifocal (L4 vertebra)	NA
Jain et al 2009	One	14/ M	Body of scapula involving glenoid margin	Rt Pain swelling and discharging sinus	Isolated	ATT

shows only fourteen cases of scapular involvement, out of which only two cases (both had pulmonary tuberculosis

focus) shows isolated acromion involvement (table-1) [2]. Most common presenting symptoms of Tuberculous

osteomyelitis are nonspecific pain and swelling [4]. Bone pain that does not respond to analgesic medications is characteristic of an infection like TB or a neoplasm [1]. The lesions on radiograph are highly nonspecific and simulate pyogenic osteomyelitis, fungal infection, metastasis, telangiectatic osteosarcoma, aneurysmal cyst, sarcoidosis, eosinophilic granuloma or chordoma [2]. Differentiation of TB from all these differentials may not be possible without tissue biopsy [2]. MRI-scan may be sometime deceptive [2]. Morris reported that confirmation of musculoskeletal tuberculosis is solely based on identification of epitheloid granuloma and caseous necrosis or tubercle bacilli in fine needle aspirates or on tissue culture studies [2]. Accordingly the present case was diagnosed on the basis of histological findings which revealed epitheloid granuloma. Culture

report further supported the diagnosis.

### Conclusion

Clinicians should have high index of suspicion for diagnosing this rare presentation of tuberculous osteomyelitis of the acromion process of scapula without any other prior pulmonary symptoms and signs. Diagnosis is often delayed due to lack of awareness, insidious nature, lack of early radiographic findings persisting symptoms and signs, especially when there is superadded pyogenic infection.

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