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ISOLATED PRIMARY TUBERCULOSIS OF VASTUS LATERALIS MUSCLE IN SEVERE OSTEOARTHRITIS PATIENT: A CASE REPORT

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ABSTRACT Extra pulmonary Tuberculosis involving soft tissues and affecting the joints and surrounding structures (tuberculous arthritis) is well known. However, Tubercular myositis is a rare condition with skeletal muscle involvement without underlying osseous or extra osseous involvement in extremely rare presentation. Due to atypical presentation the diagnosis is often delayed. We report and present a case of isolated tubercular myositis of Vastus lateralis muscle in severe osteo arthritis knee patient without evidence of any primary focus.

KEYWORDS : Tuberculosis, Vastus lateralis, Extra pulmonary, Osteoarthritis knee, Myositis

INTRODUCTION

Tuberculosis is the major health problem with its sustained incidences worldwide. Tuberculosis is most common in crowded areas, with poor sanitation and patients with malnutrition and low self hygiene[1-3]. Skeletal involvement in extra pulmonary cases of tuberculosis ranges from approximately 10-11%. Primary isolated tubercular involvement of skeletal muscle has rarely been described in medical literature and its presentation and related manifestations may mimic malignant or other inflammatory disease leading to misdiagnosis[1]. Usually presentations of tuberculosis are being increasingly diagnosed in both immunocompromised and immunocompetent host[2]. Musculoskeletal tuberculosis accounts for 2% to 5% of cases, generally presenting as Pott's spine or large joint arthritis[3]. The rarity of skeletal muscle tuberculosis has been variously attributed to a high lactic acid content of muscles, absence of reticuloendothelial / lymphatic tissue, rich blood supply and the highly differentiated state of muscle tissue[8]; however, none of these possibilities seems to be an adequate explanation. We present a rare case report of such an extra pulmonary isolated tuberculous pyomyositis of Vastus lateralis muscle in 68 year old male without any co-morbidities.

CASE REPORT

A 68 year old, non diabetic, normotensive male with complains of pain in right knee with difficulty in walking since 4-5 years which aggravated in last 5-6 months and mild swelling around lateral aspect of knee presented to our hospital. There was no associated respiratory complaint, fever, weight loss or anorexia. Also there was no history of trauma or an intramuscular injection at the affected joint/site. No history of prior tuberculosis infection and neither gave any history of contact with any tuberculosis patient. Upon examination, there was Mild swelling, severe crepitus on joint movement, tenderness over the medial and lateral joint line as well as the patella-femoral junction. Flexion and varus deformity were evident.

Figure 1: X ray of the knee joint AP & Lateral view showing arthritic changes in the knee

Local temperature was slightly raised, with no other signs of inflammation. Swelling was mobile (not adherent to bone), compressible, soft, non tender and measured approx *3cmx2cmx1cm*. An X-ray of right knee (Anterio-Posterior & Lateral radiograms) with weight bearing views showed severe osteoarthritis with obliteration of both medial and lateral joint spaces (figure 1). Patient was advised routine blood investigation. The hemogram and TLC were within normal range, Renal parameters were normal, ESR and CRP were suspiciously raised (ESR – 55mm by wintrobe's method; CRP – 35.36) An empirical oral antibiotic therapy (Levofloxacin 500 once daily) was started and patient was further called for follow up. The patient came after 3 weeks in outpatient department with increased pain and swelling just proximally over right knee joint. Local temperature was raised, swelling extended to suprapatellar region with patellar tap test positive and severely tender (grade 3) and compressible with approx measurements of 5x3x2 cm over lateral aspect of right knee. Under all aseptic precaution, knee aspiration was done and a yellow turbid fluid was aspirated and sent for microscopic analysis and culture & sensitivity test. A Dorso-lumbar spine x ray was performed in suspicion of tubercular origin of the infection from spinal region, but the x ray were not suggesting any spinal segment involvement of tubercular disease. A whole abdomen Ultrasonographic study did not reveal any collection or any lesion pertaining to any infective primary.

Figure 2: Xray dorso-lumbar spine AP & Lateral View not sowing any evidence of Primary TB

The patient came after two days for follow up. The reports of the fluid culture and sensitivity revealed presence of E Coli sensitive to levofloxacin, Cefoparazone-Sulbactum, Amikacin and most other antibiotics.. The swelling was now evident over the lateral aspect of right knee and the distal part of right thigh, swelling was tense, red, and compressible with more over the distal part of thigh on lateral aspect with approx measurements of 7x5x3 cm. The overlying skin was normal, mobile with no sinuses opening over it. No limitations of joint movements of ipsilateral hip and ankle. Spine examination revealed no obvious findings. Distal neurovascular status was normal.

Ultrasonographic findings of the swelling and right knee joint revealed (!) Large collection of ? Inflammatory abscess on posterolateral aspect of the knee measuring *74mmx69mmx70mm*, involving subcutaneous space and underlying muscle belly of Vastus lateralis. (2) Another heterogeneous collection measuring *53mmx43x17mm* in lower third of right Vastus lateralis with few echoes suggesting liquefaction.

Figure 3: Collection of Abscess in Vastus lateralis muscle

Magnetic Resonance imaging of the affected thigh and associated knee joint also pointed *out a well defined peripherally enhancing collection along Vastus lateralis muscle measuring 8x1cm.*

OPERATIVE PROCEDURE An I & D of abscess was planned and pre operative workup was done with chest X-ray and blood investigations. Patient was given spinal anaesthesia and after aseptic & sterile preparation direct needle aspiration of the swelling was performed which revealed turbid, reddish yellow, fluid approx 100ml in volume. The fluid was kept for investigation. A 2 cm long incision was taken in a curvilinear fashion over the swelling (posterolateral aspect of distal third of right thigh and heavy collection of *white caseous/cheesy chalky necrotic material* (image 1 & 2) was drained out along with turbid reddish yellow fluid from the swelling. Both the aspirated fluid and white caseous necrotic material gave a suspicion of tubercular origin and thus were sent for routine biochemical, microbiological, molecular and histopathological studies. The results were in favour of tubercular nature of the infection. (table 1 & 2)

Image 1 & 2: Showing intraoperative picture of surgical drainage of white caseous chalky abscess on performing I & D procedure

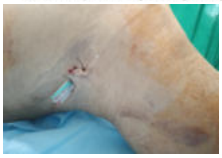


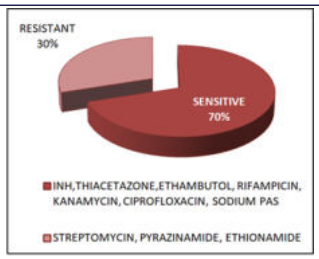
Image 3: Postoperative picture showing corrugated drain in situ

Table 1: Microbiology & Histopathology Reports

TESTS	REPORT
Pus Culture & Sensitivity	Gram Positive Cocci with Pus Cells (+++) AFB Staining POSITIVE
AFB Microscopy & Culture	AFB culture BACTEC (+)
RT PCR with RiF resistance by Gene Xpert	Mycobacterium tuberculosis complex detected Rifampicin resistance Not Detected
Histopathology Report	Granulomatous Inflammation favouring Tuberculosis.

Table 2: Drug Sensitivity Results

DRUGS	RESULTS
STREPTOMYCIN	Resistant
INH	Sensitive
SODIUM PAS	Sensitive
THIACETAZONE	Sensitive
ETHAMBUTOL	Sensitive
PYRAZINAMIDE	Resistant
RIFAMPICIN	Sensitive
KANAMYCIN	Sensitive
ETHIONAMIDE	Resistant
CIPROFLOXACIN	Sensitive



Pie chart showing distribution of drug sensitivity

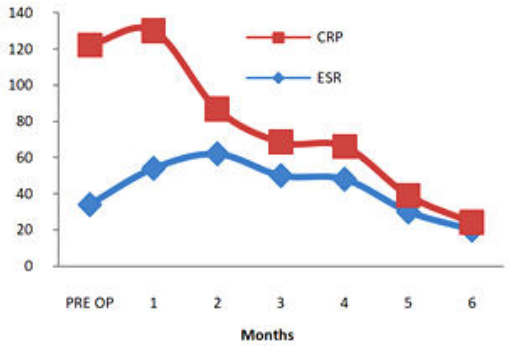
POST OPERATIVE PROTOCOL

Patient's knee was kept immobilised in above knee splint and was followed up regularly in 5 days interval for dressing.

Patient was administered a combination of oral anti tubercular medicines (as per ATT protocol) and antibiotics for 1 month and serological evaluation was performed in every month for a period of 6 months by estimating ESR & CRP levels.

Table 3: Declining Trends of ESR & CRP

MONTH	ESR	CRP
Pre OP	34 mm	88.39
1 month	54 mm	76.35
2 months	62 mm	24.84
3 months	50 mm	18.60
4 months	48 mm	18.22
5 months	30 mm	9.12
6 months	20 mm	4.06



The fever was subsided within 1-2 weeks, and over the next few months, the swelling reduced in size and the patient gained weight. Few dressings were carried out in an interval of 6-7 days for a month which revealed continuous decline in the discharge material from the drain site and ultimately the discharge was stopped, Drain was removed and wound started to heal by healthy tissue. There are no more symptoms remaining and patient is comfortable, The ATT regime is still being carried out and follow ups are scheduled. The further plan of action will involve total knee Arthroplasty in the future.

DISCUSSION

Every year more than 1.7 billion population of the world gets infected by Mycobacterium tuberculosis and incidence of active TB disease is approximately 10 million people annually. Out of all the cases of TB only 2% to 5% are that of Musculoskeletal tuberculosis presenting mostly as TB spine (Pott's) or Hip/Knee arthritis[3]; Amongst the new diagnosed cases of tuberculosis, the extra pulmonary lesion occupies about 1/5th part, of which hardly 1/10th affects the musculoskeletal system. Tuberculosis of the skeletal muscles can be due to the expansion of the primary foci from bones, synovial lining of joints or tendon sheaths which mostly occurs by direct inoculation of the bacilli into the muscle from the adjoining infection source or rarely, by haematogenous spread[4] probably from an occult primary focus elsewhere. Muscle involvement can occur either due to hematogenous spread (primary) or as a result of extension from a contiguous site (secondary); the former being less common[1]. An isolated primary muscular involvement without an osseous or non osseous primary focus is a rare presentation. Transmission of primary tuberculosis into the muscles by the use of syringes have also been reported in a few cases[5,6]. Majority of such reported cases have been frequently found as an associated entity in immunocompromised patients of HIV, renal

failure patients (including end stage renal diseases), patient undergoing long term chemotherapy for cancers or those on long term corticosteroid use and chronic drug abusers[10,11,12.] Both pulmonary and Extra pulmonary lesions or abscesses of tubercular nature of origin are commonly reported with Acquired Immunodeficiency Syndrome (AIDS)[7]. Many-a-times a muscular tubercular infection can be mistakenly be diagnosed as a sarcoma, soft tissue tumor, parasitic infections like cysticercosis or hydatid cyst, fungal infection, hematoma or lipoma.[13] Due to uncommon mode and nature of presentation with delay from the patient side to seek help from professionals and lack of early signs along with unavailability of radiological, and molecular diagnostic modalities in the area, the diagnosis gets delayed and results into a widespread infection causing atrophy of the muscular and soft tissue elements and thus causing deformity of the affected part.[14] A suspicion of a tubercular abscess should always be kept in mind in any presentation of swelling with or without constitutional symptoms in a patient presenting from a tuberculosis endemic areas/countries. Even a patient with a normal chest radiograph, not having any of the specific systemic symptoms, or who is not presenting with any other focus of active or healed tuberculosis, may be such a rare case of isolated tuberculosis and physician should always suspect TB. Petter[9] recorded only one case of primary muscular tuberculosis in over 6,000 cases of all types of tuberculosis making an incidence of 0.015%. A spectrum of all available diagnostic modalities should be implied as soon as possible including biochemical, molecular and histological examination of the suspected lesion to reach to a confirmatory diagnosis. Polymerase chain reaction (PCR) is a tool for rapid confirmation of diagnosis[15] but biopsy and culture remains the gold standard. CRP may not be indicative of any infectious pathology and raised erythrocyte sedimentation rate may be the only consistence finding[10].

CONCLUSION

Isolated muscular lesions of tuberculosis are rare presentations. Ultrasonography of the lesion and MRI scan of the involved muscle can be very helpful in differential diagnosis. Molecular & histopathological examinations are the cornerstone of the diagnosis. Prognosis is usually good with appropriate antitubercular therapy and surgical intervention. Surgical debridement may be necessary in patients not responding to chemotherapy alone. ESR & CRP can be used as markers for monitoring of disease progression and effective treatment. Hence, we conclude that as such isolated primary skeletal tuberculosis in an immunocompetent patient without any co-morbidities without any associated primary foci, should be considered as a diagnosis of exclusion over a soft tissue mass or a pyogenic abscess with proper investigations and timely treatment would aid to decrease the disease morbidity and adds up to improve the prognosis and outcome of the disease.

REFERENCES

1. Wang JY, Lee LN, Hsueh PR, Shih JY, et al. Tuberculous myositis: a rare but existing clinical entity. Rheumatology 2003; 42: 836-40
2. Global tuberculosis control: surveillance, planning, financing. WHO report 2005. Geneva, World Health Organization(WHO/HTM/TB/2005.349)
3. Hogan JI, Hurtado RM, Nelson SB. Mycobacterial musculoskeletal infections. Infect Dis Clin North Am. 2017;31:369–382.
4. Derkash RS, Makley JT (1979) Isolated Tuberculosis of The Triceps Muscle-Case Report. J Bone Joint Surg (Am) 61-A: 948.
5. Heycock JB, Noble TC (1961) Four Cases of Syringe-transmitted Tuberculosis. Tubercle 42: 25-7.
6. Tamura M *et al*. (1995) Observations on an Epidemic of Cutaneous and Lymphatic Tuberculosis Which Followed The Use of Antityphoid Vaccine. American review of tuberculosis 11: 465-72.
7. Lupatik H, Brau N, Flomenberg P, *et al*. (1992). Tuberculous Abcess in Patients with AIDS. Clin Infect Dis 14: 1040.
8. Plummer WW, Sanes S, Smith WS (1934) Skeletal muscle tuberculosis. J Bone Joint Surg 16: 631
9. Petter CK. Some thoughts on tuberculosis of fascia and muscle. Lancet 1937;/57:/156-/9
10. Sen RK, Tripathy SK, Dhatt S, et al. Primary tuberculous pyomyositis of forearm muscles. Indian J Tuberc 2010; 57:34-40
11. Ergin F, Arslan H, Bilezikci B, et al. Primary tuberculosis in the gluteal muscle of a patient with chronic renal failure. A rare presentation. Nephron 2001; 89:463-66 11.
12. Puttick MPE, Stein HB, Chan RMT, et al. Soft tissue tuberculosis : a series of 11 cases. J Rheumatology 1995; 22(7): 1321-25
13. Shiraz M. Bhatty, Jeevan S. Prakash, Bobby John. Primary tuberculous abscess of vastus lateralis muscle. JK Science. 2011; 13(1): 37-8.
14. Sunanda A. Kulkarni, Santosh S. Patil, Pradeep Kulkarni, Usha S. Udgaonkar and Shubhangi A. Gadgil. Primary tuberculous myositis: a rare clinical entity. Indian J Tuberc. 2013; 60: 241-244.
15. Pandey V, Chawla K, Acharya K, Rao S, Rao S (2007) The role of polymerase chain reaction in the management of osteoarticular tuberculosis. Int Orthop Nov 24 (e published ahead of print)