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TUBERCULAR TENOSYNOVITIS OF HAND : A COMPREHENSIVE REVIEW AND CASE SERIES OF THE MYCOBACTERIAL DISEASE AT UNUSUAL LOCATIONS

Plastic Surgery

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ABSTRACT

Tubercular Tenosynovitis of hand is very rare. This paper reports a case series of 5 peculiar cases of Tubercular tenosynovitis at 5 different sites of hand which are unique in clinical scenario. Due to many differential diagnosis early diagnosis is often missed and patient is either late treated or mal-treated; which leads to lasting morbidity of hand. In our case series patients were diagnosed and promptly managed by surgical intervention and anti-tubercular drug therapy followed by early physiotherapy. The protocol thus lead to a satisfactory regain of function of which would otherwise have been lost .

KEYWORDS

Tubercular Tenosynovitis of hand, surgical intervention, anti-tubercular drugs, early physiotherapy.

INTRODUCTION:

Tubercular tenosynovitis is an extremely unusual type of tubercular infection. Its prevalence is about 0.7-1% of all bony and joint related tubercular infection[1]. These are most commonly present around wrist joint[2]. This condition is largely misdiagnosed or mal-diagnosed due to chronic and cold nature of tubercular infection.[3] Precipitating factors include trauma, overuse of the joint, old age, low socio-economic status, malnutrition, and immuno-suppression. Due to nonspecific clinical signs and symptoms which point to a number of other differential diagnosis, like carpal tunnel syndrome, rheumatoid arthritis, and nonspecific synovitis, De Quervain's disease , pyogenic and fungal infections, brucellosis, foreign body tenosynovitis, sarcoidosis, gouty arthritis and ganglion; this diagnosis is often missed. In rheumatoid arthritis patients, when tenosynovitis is extensive and adherent, a diagnosis of tuberculosis should be considered.[4]

Generally patient presents to clinician very late leading to delay in management and reception of anti tubercular drugs. Sometimes due to adhesion and tenodesis it causes irreversible damage to tendon which causes life log morbidity, functional impairment and compromised rehabilitation.

Tubercular infection is still quite prevelant in india specially in lower socio-economical strata. Case is diagnosed generally by ziehl neelsen staining, auramine rhodamine stain;[5] or using histopathological examination by demonstration of tubercular granuloma with central caseation. The treatment is medicosurgical including antitubercular drugs, debridement and suitable reconstruction.

We report a series of 5 cases, which represent involvement of different anatomical regions around hand

Case 1:

A 20 year old male patient presented with a painless, non healing ulcer over left palm at the base of proximal phalanx of middle finger with restricted mobility since 4 months. Routine investigations revealed elevated ESR and low Hemoglobin as sole findings.[figure:1]

On surgical exploration - Thick granulation tissue was observed involving flexor tendons and palmar sheath of left hand. Debridement and primary closure of the wound was done to save flexor tendons. The Histopathology report revealed fibrocollagenous tissue infiltrated by multiple tuberculous granuloma. Langhan's type of giant cells were visible which labeled the diagnosis as Tubercular granulation tissue. Patient was subjected to Anti-tubercular therapy for 9 months. Patients hand was mobilized early on 6th post op day. In follow-up there was significant reduction in the swelling and discomfort with improved range of motion.

Figure 1: Case1;Tubercular tenosynovitis of flexor tendon left middle finger

Case 2:

A 40 yr old female patient presented with multiple pus discharging sinuses over right palm and long standing ulcer over 1st web space and 2nd metacarpal region involving tendon sheath. Patient was immuno compromised, case of chronic kidney failure on regular dialysis. There was restricted right index finger and thumb movement. Histopathological examination confirmed presence of tubercular granuloma.[figure:2]

Patient was debrided and was given anti tubercular drugs. Patient denied further surgical intervention for wound coverage so she was kept on regular dressing. Wound improved significantly, healthy granulation appeared and wound healed by secondary intention. Acceptable range of movement was regained at 4 months follow-up.

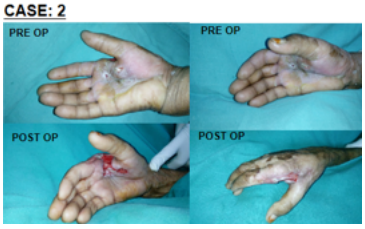

Figure 2 : case 2, Tubercular tenosynovitis of flexor tendon right index finger.

Case 3:
A 35 year old female patient presented with swelling over flexor aspect of left wrist and distal forearm with restricted wrist mobility. There was no discharging sinus or raw area present. Patient had no other co morbidities. There was restricted left wrist movement.[figure:3]

On surgical exploration characteristic rice bodies were seen. Infected sheath was excised, thorough debridement of necrotic tissue was done and wound closure was done. On histopathological examination tubercular granuloma was present. Post operative there was slight restriction of movement but patient was put on early physiotherapy and antitubercular drug therapy. Full range of motion was regained in a span of 2 months.

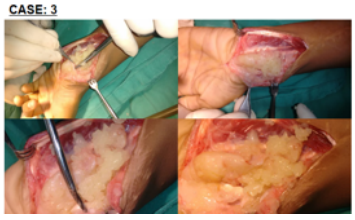

Figure 3: Case 3,Tubercular tenosynovitis of left forearm flexor sheath showing rice bodies.

Case 4:
A 25 year male patient presented with a painless non healing ulcer over base of right little finger dorsal aspect involving extensor tendon since 6 months.[figure:4] On histopathology tubercular granuloma was present, Antitubercular treatment was started, wound debridement done and kept on dressing and subsequently grafted with split skin graft. Post operative physiotherapy was given and patient gained full range of motion in 6 weeks.

Figure 4: case 4 ,Tubercular tenosynovitis of right little finger extensor tendon.

Case 5:
A 40 yr old male patient presented with sinus at the base of index finger over dorsal aspect involving extensor tendon.[figure:5] Pus smear showed acid fast bacilli with superimposed staph aureus, On culture it was positive for multi drug resistant tuberculosis. Patient denied any surgical intervention so he was started with MDR TB anti tubercular medication. Wound improved significantly, discharge reduced and healing was satisfactory.

Figure 5: Case 5, involvement of extensor tendon right index finger; patient managed conservatively.

DISCUSSION :
Tuberculous infection of the tendon, tendon sheath of hand are quite rare. Tubercular tenosynovitis was first described by Acrel in 1777.[6] We observed 5 cases in a span of 4 years. Our patients came quite late after onset of symptom. Few patient were referred from rheumatology department mal-diagnosed as rheumatoid arthritis where steroid was prescribed, which aggravated the symptoms.

Most of the cases of tuberculosis are caused by – Mycobacterium Tuberculosis, other related organisms includes Mycobacterium bovis, Mycobacterium Marinum, Mycobacterium Avium complex, Mycobacterium Sacrofuloceum, cause disease in immuno-deficient population .[7]

Considering historical background; genus Mycobacterium appeared 150 Million years ago. Human Tuberculosis has been detected in archeological specimen as far back as 10,000 B.C. They were even present in Ezyptian mummies as spine Tuberculosis.[8] Tubercular bacilli was identified by Robert koch in 1882, so it is also known as koch's bacillus.[9]

Generally in tuberculosis primary site of infection is lung which is transmitted by droplet infection.[10] Extrapulmonary Spread occurs via Hematogenous route or via an adjacent infected bone or joint.

Approximately 1% to 3% of patients infected with tuberculosis demonstrate skeletal involvement, which most often manifests as spondylitis, peripheral arthritis, or osteomyelitis [4]. Approximately 50% of patients with musculoskeletal tuberculosis have concomitant pulmonary disease. Tendon Sheath around hand are more commonly affected in comparison to other sites like foot.

Pulmonary and extra pulmonary tuberculosis including that of Hand and Wrist are in increasing trend with increase in the worldwide population of immunocompromised and ageing people;[11] increasing incidence of HIV infection increases the severity of tuberculosis;[12] as they are more prone to endogenous tuberculous reactivation and emergence of MDR-TB. .

The disease usually starts as a simple inflammation of the tendon sheath with serous exudates and fibrinous deposits covering the inner surface. Gradually tendon sheath thickens and exudate becomes seropurulent. With movement and friction, the broken villi and fibrinous exudate gets moulded to resemble "Rice bodies" closely resembling similarly looking "Rice bodies" seen in Rheumatoid arthritis. Rice or melon bodies were first described by Reise in 1895.[13] Rice bodies can also be seen in systemic lupus erythematous, seronegative arthritis, infectious arthritis, and nonspecific arthritis[14].

Clinically tenosynovitis presents as a painless or painful swelling, non healing ulcer or discharging sinus with restricted movement of hand. In our case series we demonstrated diverse presentation of infection. On blood investigation Raised ESR with increased WBC count was seen. Diagnostic modalities of choice are Histo pathological examination of tissue biopsy with Z-N Staining, Mycobacterial culture and PCR.[15]

Imaging studies are not specific, but they may define the disease extent and help in pre-operative planning. MRI may show thickening of the synovial membrane, increased vascularity and fluid within the tendon sheath, reactive inflammation and swelling around the tendon. In contrast to acute suppurative tenosynovitis, where synovial sheath fluid is the predominant feature, relatively little synovial sheath fluid is characteristic of TB pathology.[16] CT may demonstrate calcification in chronic Tubercular abscess. Jaovishida et al were able to diagnose all forms of tubercular tenosynovitis using a combination of CT & MRI.[17]

There are studies proposing surgical debridement (excision) while other studies condemning it. Tuli in his study states that surgical debridement should be performed in patients who do not respond to 4-5 months of chemotherapy.[18]

We planned surgical intervention after giving ATT for few weeks to prevent milliary and meningeal dissemination of the tuberculosis. However there are cases showing complete remission of condition with ATT alone.

CONCLUSION:
Tenosynovitis of wrist and hand is an extremely rare presentation of tubercular infection. It is a slowly progressive disease with many differentials, leading to late or maldiagnosis which might cause serious

complications like tendon rupture, joint involvement, osteomyelitis,and persistent morbidity. It is managed both surgically and medically. Anti tubercular drugs are cornerstone of management. A high grade of suspicion, early diagnosis and a combined medico-surgical management followed by early and strict physiotherapy is essential for prompt recovery, prevent recurrence and proper rehabilitation of patient.

In this case series we described various rare sites of presentation of tubercular tenosynovitis around wrist and hand and their treatment. Most of the patients resumed acceptable mobility and range of motion of wrist and hand after management.

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