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A Rare Localization of Caseating Tuberculous Nodule of Metacarpal: A Case Report

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Abstract

Atypical tuberculous infection involving metacarpals and wrist is a very rare representation in both low and high income countries. This was the first case to be investigated in India, where a 57 year old male presented initially with a ganglion cyst affecting the right dorsum of the hand which was symptomless, soft and cystic on local examination .By performing USG guided Fine Needle Aspiration Cytology (FNAC); the features were compatible with infected Ganglion cyst which was excised and treated. After a month, the swelling reappeared in the same region (near 3rd metacarpal and wrist in the right dorsum of the hand), which was painful on movement. There was no positive sign on Chest x-ray or X-ray of the joint. By performing MRI, it revealed a subcutaneous edema involving the right dorsum of the hand and FNAC results revealed caseating and non caseating granulomas composed of epithelial cells, Langhan cells andcuff of lymphocytes ,with extensive fibrosis seen surrounding the caseous area and confirming it to be Caseating Tuberculous Nodule. Since it was diagnosed at an early stage, First line Anti-Tuberculosis drugs were given and the patient's response to the treatment was satisfactory, with consequent reduction in the size of the swelling.

Conclusion: Early diagnosis and Prompt treatment in case of a prolonged swelling involving the hand and wrist joints which shows no prominent symptoms are essential to treat with caution in order to restore the function of the joint.

Keywords: Extra-Pulmonary Tuberculosis; Hand and Wrist Tb; Ganglion Cyst; All First line Anti-Tuberculosis drug (ATT).

Introduction

TB is one of the most important causes for lost lives and ill-health across the globe. Tuberculosis (TB) is a highly infectious disease, were the lungs are the prime organs that is affected [1].The Mycobacterium tuberculosis is the organism that causes tuberculosis. The spread of infection from one person to another is by tiny droplets released into the air via coughs and sneezes. World Health Organization (WHO) statistics for 2011, states that, India is the highest TB burden country, giving an estimated incidence figure of approximately two million cases of TB for India out of a global incidence of nine million cases. According to the World Health Organization (WHO) Global Tuberculosis Report 2017, estimated tuberculosis incidence is 6 (5.1–6.9) per 100,000 in the female group, 8 (6.8–9.2) per 100,000 in the male group [2].

According to TB India 2017 report by RNTCP (Revised National Tuberculosis Control Program), India accounts for one fourth of the global TB burden. The World Health Organization (WHO) defines elimination as means, "that there should be less than 1 case of TB for a population of a million people". There is a great deal that needs to be done in view of the current TB burden in India, if elimination is to be achieved by 2025. The National Strategic Plan 2017-2025, sets out the government plans of how the elimination of TB can be achieved [3].

Tuberculosis is associated with the term poverty from age old years, and most of the low income countries are being the prime victims of TB [1]. But, during the last era, there is a change in incidence pattern of TB cases from low to high - income countries (EU/EEA).Consequently some high income counties have shown changes in their TB epidemiology.

Extra pulmonary tuberculosis (EPTB) describes the various conditions caused by Mycobacterium tuberculosis infection of organs or tissues outside the lungs. There are many forms of EPTB, affecting every organ system in the body. The estimated incidence of TB in India was 2.1 million cases in 2013, 16 per cent of which were new EPTB cases, equating to 336,000 people with EPTB [4]. The osteo articular localization is rare: affecting hand wrist remains exceptional. Most of the time, the diagnosis is delayed nor misdiagnosed, but when explored at an initial stage ,followed by prompt medical care can fully heal the disease [5].

Most of the resources for research, diagnosis and treatment are aimed at pulmonary TB as this form is most common and also most important with regard to TB control and public health. However, EPTB in all its forms has a significant impact on people suffering from the disease, their families, and economy and health system [4].

Case Report

A male patient aged 57 years came with swelling over the right dorsum of the hand on 01.12.2018 since 3 days. There was no history of trauma, fall or any other related injuries. The swelling appeared all of a sudden and it was painless with any discomfort except for it was only cosmetic problem for the patient. The patient had no history of Diabetes or hypertension but he was a hypothyroid patient and was on

medication with Thyroxine 1 OD in empty stomach which was being tested once in every 3 months.

On local examination of the swelling, it was oval shaped, soft and cystic in consistency in the right dorsum of the hand, which was not limiting his movements. It was doubted to be a Ganglion Cyst based on palpation done during local examination. In order to confirm with the diagnosis and to rule out the differential diagnosis, USG guided Fine Needle Aspiration Cytology (FNAC) test was done on 6.12.2018, which revealed that the smear showed occasional cuboidal cells and many inflammatory cells predominately neutrophils and lymphocytes in a proteinaceous background. The features confirmed and were compatible with infected Ganglion cyst. Meanwhile before the investigation (FNAC) could confirm the diagnosis, patient has applied topical medicine over the swelling and developed Atopic Dermatitis which was treated appropriately. Once after the confirmed diagnosis, the patient was referred to a Senior Surgeon in the city who excised it with Local Anesthesia and following that, sutures were removed after 10 days. He was coming for regular checkup after his suture removal and he was progressing well.

After a month, there was a re-emergence of hyper intense lesion at the head of 3rd Metacarpal & over dorsum of the right wrist on 02.02.2019; on palpation the swelling was fatless and rubbery in consistency. The patient had no history of fever, weight loss or loss of appetite but he presented with pain on movement. The patient was advised to do the following investigations (Hematological tests, X-ray wrist and X-ray chest) on 5.02.2019, which appeared to be normal. Since the above test appeared to be normal, in order to rule out the differential diagnosis the patient was also advised to do ultrasound soft tissue of the right wrist. The USG results revealed that, there was a diffuse significant heteroechoic tendon sheath thickening (maximum thickness measures approximately 9mm) noted involving the exterior digitorium and digitiminimi tendon from the level of distal forearm extending up to mid hand. The underlying tendons showed altered echoes and displayed a significant internal vascularity with power Doppler. Therefore from USG results, it was diagnosed has tendon sheath tumor. For further evaluation and for the confirmation of diagnosis, MRI of the right wrist was suggested on the same day (5.2.2019).MRI results revealed that; there was an ill-defined homogeneously enhancing T2 /STIR hyper intense lesion with area of cystic change engulfing the exterior didgitorium and indicis tendons from the level of distal forearm to dorsum of hand, distally engulfing the lateral two slips of extensor digitorium to the level of neck of 2nd and 3rd metacarpal bones. And there was a well-defined T2/STIR hyper intense lesion in the head of 3rd metacarpal, distal scaphoid and lunate bones without cortical breech/periosteal reaction showing mild enhancement on contrast were noted and from the above impression, it was confirmed that there was subcutaneous edema in the dorsum of hand.

Meanwhile Fine Needle Aspiration Cytology (FNAC) for right wrist was advised for confirmation of the diagnosis. The microscopic findings revealed large caseating and few non caseating granulomas composed of epithelial cells, Langhan's giant cells and cuff of lymphocytes. Extensive vascular proliferation with edema congestion and diffuse acute on chronic inflammatory infiltrate seen in areas. And there was evidence of extensive fibrosis seen surrounding the caseous area. From Fine Needle Aspiration Cytology (FNAC) result we confirmed it to be Caseating Tuberculosis Nodule. Thereby, the patient was started with ATT (All first line Anti-Tuberculosis drugs) on 5.02.2019. The patient was responding well to the ATT treatment and was improving well with reduction in the size of the swelling with no adverse effects to the treatment. This diagnosis of Tuberculosis Tenosynovitis of the wrist was first of its kind to be reported in India, which initially developed has ganglion and re-emerged has "Ceseating Tuberculosis", while others cases till today were of bacterial or Viral in origin.

Discussion

According to Global Report on Tuberculosis (2018) by World Health Organization, estimated 10 million new cases of TB (range, 9.0–11.1 million), equivalent to 133 cases (range, 120 – 148) per 100000 population. Tuberculosis affects everybody, irrespective of what country we belong to? And what age group we are in? The best estimates of 2017 were 90 percent of cases were adults, aged more than or equal to 15 years of which 64 percent were males [6].

Extra-pulmonary TB occurs in 15%-20% of active cases [7] .Tuberculosis infection generally affects the lungs at first, later involves extra-pulmonary sites via lympho-hematogeneous route. The prime part affected is the vertebrae. In rare cases, it may also affect the hand, wrist and ankle region [8]. In YaminaBenkeddache study on 27 cases, majority of the patient had a single bone or joint involvement outside the hand and most of these patients had primary tuberculosis symptoms with an absence of BCG vaccine history [9]. On the other hand study by Mohamed Ali Sbai, reported localization of Tuberculosis of the wrist affecting the scaphoid joint which presented with a localized swelling in the left wrist which restricted the end of motion [5].Few reports on Hand and wrist tuberculosis have been presented.

Here, we presented a male patient aged 57 years came with swelling over the right dorsum of the hand with no history of pain or trauma. By performing USG guided FNAC, it was confirmed to be a ganglion cyst, which was excised and sutured. After a month time, there was a re-emergence of swelling in the same spot which was rubbery in consistency on local examination which was symptomless and the patient did not present with any chest symptoms clinically and radiologically. In order to confirm the diagnosis, MRI and USG guided FNAC was performed. The pathological findings confirmed the swelling to be Caseating Tuberculosis. Since the pathology was identified during the initial stage of TB, the treatment just involved first line TB drugs, without any necessity for surgery. As in case of Tania Freitas study, 79 years old female presented with positive chest radiographs in lungs and MRI suggestive of flexor tendon sheath tenosynovitis involving first four fingers [10], similar to our case study, Tania Freitas case was also diagnosed at an earlier stage and Anti – tuberculosis chemotherapeutic agents were given for treatment. Whereas in VinilShinde case, patient was posted for debridement and joint capsule was incised and anti-tubercular treatment was recommended [11].

Hand and wrist tuberculosis is a rare disease condition, which is tough to diagnose due to lack of crystal clear symptoms [12]. The treatment for hand Tuberculosis remains no consensus. Some authors have reported that conservative treatment like, chemotherapy, rehabilitation and immobilization was successful in curing the disease. But, some thought, surgical treatment alone without Anti-Tubercular drugs can recur the disease. But comparable studies on both treatment (Anti tuberculous chemotherapy or surgical-chemotherapy) combinations verified no major difference in results [13]. According to Indian Council of Medical Research (ICMR) guidelines 2RHZE/10–16RHE with rest to the joint provided by immobilization in plaster/

brace for 4 to 6 weeks followed by gradual mobilization. It was recommended for surgery as rarely needed [14]. Since in this case, the diagnosis was done at an earlier stage, the necessity for surgery was eliminated. And this was the first case report to be presented in India with Caseating Tuberculosis at the head of 3rd metacarpal and wrist region, which initially developed, has a Ganglion Cyst.

Conclusion

In summary, Tuberculous Tenosynovitis is a rare disease condition which is often misdiagnosed, especially when there is no specific tuberculosis symptoms presented. High caution has to be anchored when dealing with long standing inflammatory swellings of the joints when they do not respond to conservative treatments. When provoked with unusual findings, send the tissue for culture and histology. Since the results and respond to treatment are better in earlier stages of the disease, early diagnosis and prompt treatment is a key for restoring the function of the joint and for a better quality life for the patient.

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