



## **Tuberculosis of the Ankle Joint: An Uncommon Presentation of Skeletal Tuberculosis**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author UCI designed the study, wrote the protocol and wrote the first draft of the manuscript. Authors CEE and KCA managed the analyses of the study. All authors read and approved the final manuscript.*

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**Case Report**

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### **ABSTRACT**

Skeletal tuberculosis constitutes 1 to 3% of extra pulmonary tuberculosis, and involvement of foot bones is rare. It is therefore unlikely that diagnosis of tuberculosis of the ankle joint will be rapidly made in a healthy looking patient who presents with difficulty with walking, right ankle pain and swelling and fever a week prior to presentation.

We present a case of tuberculosis of the right ankle joint which was difficult to diagnose until histopathology of the synovial biopsy specimen showed features of infection with Mycobacterium tuberculosis and medical treatment with anti-tubercle bacilli agents completely resolved symptoms within two weeks.

*Keywords: Tuberculosis; ankle joint; difficult diagnosis.*

## 1. INTRODUCTION

Skeletal tuberculosis constitutes 1–3% of extra pulmonary tuberculosis and involvement of foot-bones is rare [1]. Tuberculosis of the foot and ankle joint is an uncommon presentation of skeletal tuberculosis [2]. The incidence of ankle joint involvement in extraspinal osteoarticular tuberculosis has been reported to be 15.7% [3] though it is said to be on the increase due to a larger number of immunocompromised patients and multidrug resistant tuberculosis [4]. The uncommon site, lack of awareness and ability to mimic other disorders clinically and on radiographs lead to diagnostic and therapeutic delays [2,3,5,6]. Plain radiographs are said to have low sensitivity and specificity and cross sectional imaging in the form of Magnetic Resonance Imaging (MRI) or computed tomography (CT) is more reliable [5]. Joint involvement of this ailment occurs because of spread from a periarticular bony focus [2].

We present a case of tuberculosis of the right ankle joint in a young healthy man which was difficult to diagnose until histopathological examination of the synovial membrane biopsy confirmed it. Patient was placed on anti-tubercle bacilli agents and symptoms resolved completely within two weeks.

## 2. PRESENTATION OF CASE

A 21 year old man presented in our accident and emergency unit with progressive right ankle joint pain and swelling of five weeks duration and high grade fever in the last one week before presentation.

He was healthy until the above symptoms developed about five weeks prior to presentation. Pain at the right ankle joint was throbbing, localized to the ankle, severe and prevented proper ambulation. About the same time he noticed swelling of his right ankle joint which was progressive and symmetrical. Fever was high grade, intermittent (broken by antipyretics) and associated with chills and rigors. Poor appetite, nausea and weight loss were noticed a week prior to presentation. There was no headache, chest pains, urinary symptoms or gastrointestinal symptoms. There was no trauma, pain or swelling on other body regions. He is not a sickle cell disease patient and no significant past medical history. He is of high socioeconomic status.

On examination, he was febrile (temperature of 38.9°C), mildly pale, anicteric, acyanotic and no peripheral lymphadenopathy or pedal edema. Pulse rate was 96/min, regular, full volume and normal character. First and second heart sounds alone were heard.

There were no significant findings on the head/neck, chest and abdominal examinations. The right ankle joint was uniformly swollen, very tender, warm; passive and active movements were difficult due to pain. Test aspiration of the swelling yielded yellowish (pus) effluent. X-rays of the right ankle joint showed soft tissue swelling and joint effusion.

He had an anterior open arthrotomy of the right ankle joint. Intra operative findings include 50mls of purulent material and thickened synovial membrane. The purulent material was drained and a thorough saline washout was done. Synovial membrane biopsy was obtained and the wound was closed.

Aspirate culture yielded no organism on gram staining alone. However, the histology of the biopsy specimen from the synovial membrane confirmed tuberculosis of the right ankle joint with findings of caseation necrosis and granulomatous lesions (Fig. 1).

Patient was placed on anti-tubercle bacilli drugs (Isoniacid, Rifampicin, Ethambutol) and symptoms resolved within 2 weeks.

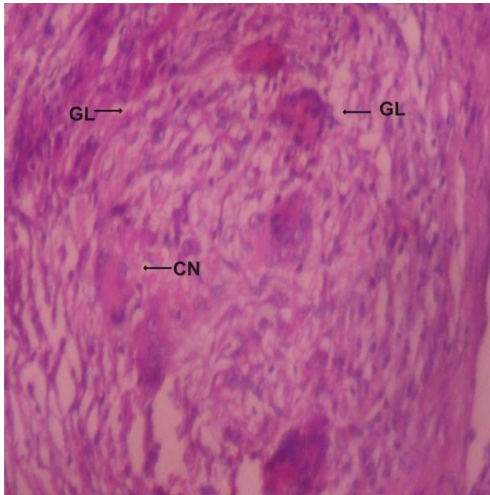
Patient's appetite improved remarkably and there was progressive weight gain over a six week period.

## 3. DISCUSSION

Osteoarticular tuberculosis especially in the foot and ankle is uncommon [7]. The index patient was an atypical presentation. He had no significant past medical history suggesting trauma, immune-suppression or chest infection. He was a healthy looking patient of high socioeconomic status.

High grade fever associated with chills and rigors and right ankle joint pain and swelling are consistent with infection of the joint. However, in a healthy looking adult without significant past medical history and immune-suppression who also received childhood immunization for tuberculosis; it was a difficult decision to make a diagnosis of tuberculosis of the right ankle. This

scenario is in keeping with observations by other authors [2,3,5,6], who found that lack of awareness and a confusing clinical and radiological picture often lead to a delay in the diagnosis of skeletal tuberculosis.



**Fig. 1. Histological section of a biopsy specimen from synovial membrane at magnification (X400) showing areas of caseation necrosis (CN) and granulomatous lesion (GL)**

X-rays of the right ankle joint contributed no significant findings. Soft tissue swelling alone as in the index case is not specific and can be seen even in mild trauma to the ankle joint. Osteoporosis of affected bones as reported by Dhillon and Nagi [2] was not appreciated in this patient. This however, agrees with the work of Sumant et al. [3] who stated that osteopaenia which is the hallmark of osteoarticular tuberculosis might not be seen in all forms of tuberculosis affecting the ankle joint. It is not surprising therefore that Magnussen et al. [7] reported that radiological findings are often atypical while Karim et al. [5] stated that Plain radiographs have low sensitivity and specificity. Computed Tomography Scan (CT-scan) and Magnetic Resonance Imaging (MRI) were not done for this patient because of some constraints. Index patient was so much in pain that it was rather expedient to relieve that pain and clinch the diagnosis particularly when pus was aspirated from the right ankle by going straight for an open arthrotomy to drain the pus and obtain a synovial biopsy. It should also be noted that the pus aspirated from the right ankle joint did not yield bacterial cultures probably due to the fact that patient received antibiotics prior to

aspiration. Secondary bacterial infection of tuberculous infected tissue is not unusual. Staining and culture of the aspirate for acid and alcohol fast bacilli was not done. Dhillon and Nagon [2] as well as Nayak et al. [6] noted that the disease is paucibacillary, so a positive acid fast bacilli culture is rare and diagnosis is usually confirmed by obtaining granulomatous tissue on biopsy [1,6,8].

The intraoperative finding of pus within the synovial cavity and thickening of the synovial membrane, however, suggested an acute-on-chronic ailment which needed to be confirmed at histology.

Therapy with anti-tubercle bacilli drugs leading to complete resolution of symptoms in the index case is not unusual. The history is that of five weeks of disease, and joint destruction had not ensued. Complete resolution of symptoms in the index patient is in keeping with reports by other authors [2,3,6]. Residual sequelae of stiffness and pain were not seen in this patient as reported by Dhillon et al. [1], even after 1 year of follow-up. This may be due to the short history of the disease and its acute manifestation which led to early presentation in the hospital before the onset of joint destruction.

#### **4. CONCLUSION**

Fever, joint pain and swelling in any patient should attract the suspicion of tuberculosis of that joint irrespective of the past medical history. The main stay of diagnosis is histopathology of the synovial biopsy.

Joint aspirations should not only be for microscopy, culture and sensitivity; cytology and culture for tubercle bacilli should also be done whenever possible.

CT scan and MRI of the affected joint may provide additional information particularly in early cases but requires further evaluation.

#### **CONSENT**

Written informed consent was obtained from the index patient according to the criteria of the Ethical Committee of University of Uyo.

#### **ETHICAL APPROVAL**

This study was conducted in line with the guidelines set forth in the 1964 declaration of Helsinki governing the conduct of human

research. The study protocol was approved by the Institutional Ethic Committee.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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