

CASE REPORT

A Case Report on Cutaneous Tuberculosis in a 31-Year Old Male Patient



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Abstract: This case report underscores the imperative for continuous research, heightened awareness, and collaborative efforts among healthcare professionals to advance the understanding and management of cutaneous tuberculosis. Cutaneous tuberculosis, a rare extrapulmonary manifestation, necessitates a comprehensive diagnostic approach, integrating clinical, microbiological, and histopathological evidence for accurate identification. Untreated tuberculosis (TB) can be lethal, emphasizing the significance of timely intervention. The initiation of Anti-Tubercular Therapy (ATT) is pivotal for addressing cutaneous tuberculosis, involving rifampicin, ethambutol, pyrazinamide, and isoniazid. This form of TB manifests as a primary skin infection and exhibits varying prevalence patterns in industrialized and less affluent nations. In industrialized settings, it is often associated with individuals undergoing immunosuppressive therapy, battling cancer, subject to chronic corticosteroid therapy, or experiencing malnourishment. Conversely, cutaneous tuberculosis is more prevalent in the general healthy population in less affluent regions. The distinct characteristics of cutaneous tuberculosis, such as granulomatous inflammation and variable necrosis, are discerned through diverse morphological presentations, specific staining techniques, culture, or polymerase chain reaction (PCR) tests. Approximately 1-1.5% of extrapulmonary tuberculosis cases can be attributed to cutaneous tuberculosis, including scrofuloderma, lupus vulgaris, orificial TB, miliary tuberculosis, metastatic tuberculosis abscess, and the majority of papulonecrotic tuberculid cases. This case underscores the variability in symptom manifestation, contributing to the broader understanding of tuberculosis disease progression. This emphasizes the need for comprehensive diagnostic approaches and tailored treatment strategies to optimize patient outcomes.

Keywords: Cutaneous tuberculosis; Extra pulmonary tuberculosis; Necrosis; Antibiotics; DOTS regimen.

1. Introduction

Tuberculosis (TB), an infectious disease primarily targeting the lungs, poses a significant global health concern. Although antibiotic treatment is available, the untreated progression of TB can lead to severe consequences. The causative agent, *Mycobacterium tuberculosis*, is transmitted through the air when an infected individual coughs, sneezes, or spits. Vaccination serves as a preventive measure, especially for those susceptible to TB. Approximately 25% of the world's population is estimated to be infected with TB bacteria, with 10-15% of these individuals eventually developing symptoms and the active disease. Notably, TB is not spread by individuals infected but not yet exhibiting symptoms. Antibiotics play a crucial role in treating TB, emphasizing the importance of early intervention to prevent lethal outcomes. In some regions, infants and young children receive the Bacilli Calmette-Guérin (BCG) vaccination to mitigate TB risk, particularly outside the lungs. A distinctive manifestation of TB, cutaneous tuberculosis, accounts for 1-1.5% of extrapulmonary cases. While prevalent in individuals undergoing immunosuppressive therapy or facing conditions like cancer, chronic corticosteroid therapy, or malnutrition in industrialized nations, it is more widespread in the general healthy population in less affluent regions. True cutaneous tuberculosis lesions exhibit granulomatous inflammation, variable necrosis, and vasculitis, with diverse morphological presentations identified through specific staining, culture, or polymerase chain reaction (PCR) tests. Typical symptoms of TB include a persistent cough, fatigue, high body temperature, decreased appetite, weight loss, chest pain, and night sweats. Certain conditions, such as diabetes, compromised immunity (e.g., HIV/AIDS), inadequate nutrition, and smoking, can elevate susceptibility to TB disease. When TB extends to other bodily parts, additional symptoms may arise, including enlarged glands, body pains, constipation, pelvic pain, dark stained urine, headache, neck stiffness, and rashes on the face, legs, and other body parts. TB can be classified as active or latent. Active TB manifests with symptoms, while latent TB can exist in the body without apparent symptoms. Understanding these distinctions is vital for effective diagnosis and management. The main objective of this case report is to present a detailed case report documenting the clinical manifestation, diagnostic challenges, and management approach of cutaneous tuberculosis in a 31-year-old male patient with a distinctive presentation involving the foot.

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2. Case report

A 31-year-old male working as civil engineer arrives at the outpatient department complaining of ongoing swelling and pain in his right foot. According to him, during the previous three months, the symptoms have gotten worse little by bit. He denies any recent injuries or trauma to the foot. There are no known chronic alignment, no family history of tuberculosis and occasional smoker. On examination, localized tenderness on the right foot dorsum and restricted ankle joint range of motion was noted. Necessary investigations were ordered. A diagnosis of cutaneous mycobacterium tuberculosis is made.

2.1. Laboratory investigations

The laboratory investigations carried out are listed out in Table 1.

Table 1 Laboratory investigations

S.No	Investigations	Abnormal findings	Indications
1.	Hemoglobin	8.5g/dl	Anemia
2.	RBC count	2.12 million/ul	Internal bleeding, vitamin B12 or folate deficiency
3.	WBC count	13,700 $10^3/mm^3$	Respiratory infections like whooping cough
4.	Neutrophil count	82 %	Certain infections
5.	Platelets count	175 $10^3/mm^3$	iron deficiency
6.	ESR	28 mm/1 st Hr	Kidney diseases
7.	Serum creatinine	1.4 mg/dl	Impairment of kidney functions
8.	C-reactive protein	19.4 mg/dl	Inflammation in body
9.	Serum uric acid	8.2 mg/dl	Gout
10.	Random blood sugar	187mg/dl	Weight loss and frequent urination
11.	Vitamin D	24.1 ng/mml	Osteoporosis and feelings of sadness
12.	Mantoux Test (Tuberculin Ag challenge)	15 mm	Positive reaction for tuberculosis

2.2. Therapy

The anti-tubercular therapy (ATT) regimen prescribed for the patient consists of multiple oral medications, each serving a specific role in combatting the Mycobacterium tuberculosis infection. The treatment plan includes the following medications with their respective doses and routes of administration: Tab rifampicin (600mg) administered orally, Tab ethambutol (800mg) taken orally, Tab pyrazinamide (1500mg) via oral administration, Tab isoniazid (300mg) ingested orally, Tab tayo (60k) consumed orally, and Tab feebates (80mg) taken orally. This comprehensive combination aims to address the specific characteristics of the infection, ensuring an effective and well-rounded approach to treating cutaneous tuberculosis.

2.3. Discussion

The case under consideration involves a 31-year-old male civil engineer who has been experiencing persistent swelling and pain in his right foot over the last three months. Clinical examination unveiled localized tenderness on the dorsum of the right foot, coupled with restricted ankle joint mobility. Laboratory analyses revealed abnormal parameters, including anemia (Hb: 8.5g/dl, RBC: 2.12 million/ul), elevated WBC count (13,700 mm^3 , neutrophils: 82%), low platelet count (175 mm^3), increased ESR (28mm/1st hr), elevated serum creatinine (1.4mg/dl), heightened serum uric acid (8.2mg/dl), elevated random blood sugar (187mg/dl), and low vitamin D levels (24.1ng/ml). A positive Mantoux test, indicating a 15 mm induration, further contributed to the diagnostic process.

The abnormal laboratory findings suggest a systemic response to the infection and hinting at potential involvement of multiple organ systems. Anemia, low RBC count, and elevated inflammatory markers (ESR and C-reactive protein) collectively signify an ongoing inflammatory process. Abnormal renal function parameters, such as elevated serum creatinine and uric acid levels, raise concerns about potential kidney involvement or impaired renal function.

The positive Mantoux test, coupled with clinical symptoms and laboratory results, culminated in the diagnosis of cutaneous Mycobacterium tuberculosis. Recognized as a rare extrapulmonary manifestation, the diagnosis of cutaneous tuberculosis necessitates a comprehensive assessment integrating clinical, microbiological, and histopathological evidence. The absence of recent injuries or trauma to the foot, along with the patient's lack of known chronic conditions or family history of tuberculosis, played a significant role in the diagnostic evaluation. Initiation of anti-tubercular therapy (ATT), comprising rifampicin, ethambutol,

pyrazinamide, and isoniazid, stands as an appropriate therapeutic strategy for treating cutaneous tuberculosis. ATT aims to eradicate the mycobacterial infection and prevent further disease spread.

3. Conclusion

In conclusion, this case report elucidates the clinical journey of a 31-year-old male civil engineer afflicted with persistent swelling and pain in his right foot, ultimately diagnosed with cutaneous Mycobacterium tuberculosis. The absence of recent trauma, coupled with localized tenderness, prompted an exhaustive diagnostic investigation, revealing abnormal laboratory findings including anemia, altered blood cell counts, elevated inflammatory markers, and impaired kidney function. The positive Mantoux test further validated the diagnosis, underscoring the importance of recognizing atypical presentations of tuberculosis. The initiation of Anti-Tubercular Therapy (ATT), comprising rifampicin, ethambutol, pyrazinamide, and isoniazid, has been initiated to combat the mycobacterial infection and prevent complications. Patient education on medication adherence, potential side effects, and the importance of follow-up appointments remains paramount. Nutritional and psychosocial support, alongside comprehensive care, are integral components contributing to the patient's overall well-being. This case report highlights the imperative for sustained research efforts, increased awareness, and collaborative endeavors among healthcare professionals to advance the understanding and management of cutaneous tuberculosis.

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Author's short biography

Sunanda Kaligithi

Sunanda Kaligithi is studying 5th year Pharm.D. She has written two research articles with the aspects of obesity and malnutrition prevalence in a community and its impact, 2 case reports titled with the subdural hematoma in end stage renal patients and a case report on major depressive disorder with benzodiazepine poisoning. Other contributions within this field is writing book-chapters titled child sexual abuse, cancer-inflammation and immune response of the cancer associated with the enzyme proteases.

