

A case report on cutaneous tuberculosis in a 31-year-old male patient with unique foot involvement

Authors: Dr. Sravani Muppana (1), Sunanda Kaligithi(2)

Address: 1. Zhengzhou university, Henan province, China

2. VVI Pharm.D Aditya Pharmacy College, Surampalem, Kakinada.

Submitted: 20-01-2024

Accepted: 30-01-2024

I. INTRODUCTION:

The infection known as tuberculosis (TB) typically attacks the lungs. Antibiotics can be used to treat it, but left untreated, it may become dangerous. Certain individuals who are susceptible to tuberculosis can benefit from a vaccination. It arises from a particular kind of bacteria known as MYCOBACTERIUM TUBERCULOSIS. When an infected coughs, sneezes or spits, the infection spread via the air. Both prevention and treatment are available for tuberculosis. It is estimated that TB bacteria have infected about 25% of world's population. About 10-15% of individuals infected with tuberculosis will eventually exhibit symptoms and acquire tuberculosis disease. It cannot be spread by those who are infected but are not (yet) sick with the illness. Antibiotics are typically used to treat tuberculosis (TB), which can be lethal if left untreated. In certain nations, infants and young children receive the Bacilli Calmette- Guérin (BCG) vaccination in order to avoid tuberculosis. The vaccination doesn't prevent tuberculosis within the lungs, but it does prevent it outside of them.

CUTANEOUS TUBERCULOSIS:

Cutaneous tuberculosis is a type of tuberculosis (TB) characterized by a primary skin infection. 1- 1.5% of extrapulmonary tuberculosis is caused by cutaneous tuberculosis. It is a significant issue in the late 19th and early 20th centuries. In industrialized nations, cutaneous tuberculosis is usually found in individuals receiving immunosuppressive therapy, cancer, chronic corticosteroid therapy, or malnourishment, in poor nations, in the other hand, it is more common in general healthy population. Granulomatous inflammation, variable necrosis, and variable vasculitis are the hallmarks of true cutaneous tuberculosis skin lesions, which can be identified by a variety of morphological presentations, specific staining, culture, or polymerase chain reaction (PCR) tests. These

lesions include scrofuloderma, lupus vulgaris, orificial TB, miliary tuberculosis, metastatic tuberculosis abscess, and the majority of papulonecrotic tuberculid cases. Additional lesions include tuberculous chancre and tuberculosis verrucose cutis.

COMMON SYMPTOMS INCLUDE:

- A cough that lasts longer than three weeks; you can cough up blood- filled mucus or phlegm.
- Experiencing fatigue or exhaustion
- High body temperature or night sweats
- Decrease in appetite.
- Weightloss
- Chest pain

THE FOLLOWING CIRCUMSTANCES MAY MAKE A PERSON MORE SUSCEPTIBLE TO TB DISEASE:

- Diabetes or elevated blood sugar
- Compromised immune system (HIV, AIDS etc.)
- Having inadequate nutrition
- Smoking

IN ADDITION, YOU CAN EXPERIENCE ADDITIONAL SYMPTOMS IF TUBERCULOSIS HAS EXTENDED TO OTHER BODILY PARTS, SUCH AS BRAIN, BONES, OR LYMPHNODES:

- Enlarged glands
- Body pains
- Inflamed ankles or joints
- Constipation
- Pelvic pain
- Dark stained urine
- Headache
- Stiffness in the neck
- A rash on face, legs and other parts of the body

1. ACTIVE TB: if you have tuberculosis and exhibit symptoms.
2. LATENT TB: it is possible for TB to exist in your body at times without any symptoms.

II. CASE STUDY:

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.

LABORATORY INVESTIGATIONS:

SL.NO	INVESTIGATIONS	ABNORMAL VALUES	INDICATIONS
	COMPLETE BLOOD COUNT		
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

	OTHER INVESTIGATIONS		
7.	Serum creatinine	1.4 mg/dl	Impairments 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 TOTAL-SERUM/PLASMA	24.1 ng/mml	Osteoporosis and feelings of sadness

ON MANTOUX TEST: (Tuberculin Ag challenge Test) – 15 mm POSITIVE is noted.

TREATMENT:

He commenced ANTI-TUBERCULAR THERAPY (ATT)

SERIAL NO	DRUG NAME	DOSE	ROUTE OF ADMINISTRATION
1.	Tab rifampicin	600mg	Per oral
2.	Tab ethambutol	800mg	Per oral
3.	Tab pyrazinamide	1500mg	Per oral
4.	Tab isoniazid	300mg	Per oral
5.	Tab tayo	60k	Per oral
6.	Tab febutaz	80mg	Per oral

III. RESULTS:

The presented case involves a 31-year-old male civil engineer with ongoing swelling and pain in his right foot for the past three months. Clinical examination revealed that the localized tenderness on the right foot dorsum and restricted ankle joint range of motion. Laboratory investigations indicated abnormal values including anemia in which hemoglobin is 8.5g/dl, low RBC count is 2.12million/ul, elevated WBC count(13,700 mm³ , high neutrophil count 82%, low platelet count 175 mm³, elevated ESR 28mm/ 1st hr, elevated serum creatinine 1.4mg/dl, increased serum uric acid 8.2mg/dl, elevated random blood sugar 187mg/dl and low vitamin D levels 24.1ng/ml. The Mantoux test was positive with a 15 mm induration.

IV. DISCUSSION:

The abnormal laboratory findings are indicative of a systemic response to the infection suggesting the potential involvement of the multiple organ systems. The anemia, low RBC count and elevated inflammatory markers (ESR and C-reactive protein) reflect the presence of an ongoing inflammatory process. The abnormal renal function parameters like elevated serum creatinine and uric acid levels may suggest the kidney involvement or the impaired renal function.

The positive Mantoux test, along with the clinical symptoms and the laboratory results, led to the diagnosis of the cutaneous Mycobacterium tuberculosis. Cutaneous tuberculosis is a rare extrapulmonary manifestation and its diagnosis often requires a combination of the clinical, microbiological and the histopathological evidence. The patient's lack of recent injuries or the trauma to the foot and the absence of the known chronic conditions or family history of tuberculosis contributed to the diagnostic evaluation.

The initiation of the anti-tubercular therapy(ATT) consisting of rifampicin, ethambutol, pyrazinamide, isoniazid is appropriate for the treatment of the cutaneous tuberculosis. ATT aims to eliminate the mycobacterial infection and prevent the further spreading of the disease.

V. CONCLUSION:

In conclusion, this case report details a 31-year-old male civil engineer presenting with persistent swelling and pain in his right foot, ultimately diagnosed with cutaneous Mycobacterium tuberculosis. The absence of recent trauma, combined with localized tenderness, prompted a thorough diagnostic investigation that

included abnormal laboratory findings, such as anemia, altered blood cell counts, elevated inflammatory markers, and impaired kidney function.

The positive Mantoux test further supported the diagnosis, highlighting the significance of considering atypical presentations of tuberculosis. The initiation of Anti-Tubercular Therapy (ATT), including rifampicin, ethambutol, pyrazinamide, and isoniazid, is underway to address the mycobacterial infection and prevent complications.

The abnormal laboratory values reflect the systemic impact of the infection, implicating multiple organ systems. The patient's clinical condition underscores the importance of a multidisciplinary approach, including close monitoring, follow-up evaluations, and adjustments to the treatment plan to assess efficacy and optimize outcomes.

Patient education on medication adherence, potential side effects, and the importance of follow-up appointments is paramount. Nutritional and psychosocial support, along with comprehensive care, will contribute to the patient's overall well-being.

This case report emphasizes the need for ongoing research, awareness, and collaboration among healthcare professionals to enhance the understanding and management of cutaneous tuberculosis. By addressing these aspects, we aim to optimize patient outcomes, contribute to the knowledge on atypical tuberculosis presentations, and strengthen public health measures against this infectious disease.

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