

## Digital gangrene in spinal tuberculosis

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### ABSTRACT

Though tuberculosis is commonly seen in India, uncommon manifestations like peripheral gangrene is also a possibility. Here we present a case of spinal tuberculosis, with peripheral gangrene.

**Keywords:** Gangrene, spinal, tuberculosis, vasculitis

Mycobacterium tuberculosis infection is found in more than one-third of the population globally.<sup>[1]</sup> The World Health Organization estimates a figure of 2.5 million cases of tuberculosis in India.<sup>[2]</sup> Spinal tuberculosis is a common manifestation of extrapulmonary tuberculosis, accounting for 2% of all cases of tuberculosis, and 15% of extrapulmonary tuberculosis cases. [Figure 1]<sup>[3]</sup>

Gangrene is a rare feature of tuberculosis, usually involving the digits, but may also involve other parts of the body.

Knowledge of the uncommon manifestations of a common disease like tuberculosis is important for primary care physicians as they are the doctors of first contact. Therefore, early diagnosis and treatment from them will lead to improved outcome.

Here we report a case of spinal tuberculosis, with acral symmetrical digital gangrene of the toes, which is an uncommon manifestation of tuberculosis.

A lady of 30 years age complained of fever of low grade with weight loss, since 1 month, followed by low backache and weakness of the left lower limb. The weakness then involved the right lower limb, followed by the retention of urine. There was no history of trauma. She was a nonsmoker, and had no addiction. The symptoms were associated with pain over the toes of the left foot, along with the change of color of the left third, fourth, and fifth toes. The color of the left third toe rapidly changed to black, along with shrinkage of the toe.

Examination revealed sacral spinal tenderness, paraparesis (muscle power grade 3/5 in both lower limbs), with diminished deep tendon reflexes (bilateral knee and ankle reflexes), and mute plantar response bilaterally. Sensory examination revealed perianal sensory loss. There was no neurological deficits in the upper limbs. No cranial nerve deficits, higher mental function impairment, or signs of meningeal irritation was detected. There was blackening and shrinkage of left third toe, with tenderness and darkening over left fourth and fifth toes. All peripheral pulses were palpable. Other systemic abnormalities were not detected. There was no pallor, cyanosis, icterus, or peripheral lymphadenopathy. Clinically the diagnosis of Cauda equina syndrome, with digital gangrene of toes was made.

Blood investigations revealed a Hemoglobin of 9.0 gm/dl, and ESR (erythrocyte sedimentation rate) was 57 mm 1<sup>st</sup> hour. The

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**Figure 1:** Digital gangrene

random blood sugar, liver profile, renal profile, and lipid profile, were normal. Tuberculin test was positive, and Chest X-Ray was normal. Serological markers for HBV (Hepatitis B virus), HCV (Hepatitis C virus) and HIV (Human immunodeficiency virus) were negative. Anti-nuclear antibody (ANA) profile was negative.

MRI spine revealed irregularity of both the vertebral endplate and anterior aspect of vertebral bodies, with bone marrow edema and enhancement. There was T1 hypointense marrow in adjacent vertebra, with T2 hyperintense marrow, and disc. There was Gadolinium enhancement of marrow, disc, and dura. The MRI findings were suggestive of Pott, s spine. Arterial Doppler of lower limbs revealed sluggish flow, as suggested by the biphasic waveform.

CT guided FNAC of the spinal lesion revealed granulation tissue with caseous necrosis on Histopathological examination. Acid Fast Bacilli was detected on tissue smear.

The patient was started on Antituberculous treatment in accordance with RNTCP (Revised National Tuberculosis Control Program). Surgical consultation was taken for the Digital gangrene. They advised for amputation of the left third toe. The symptoms of digital gangrene on the other toes in the third month of therapy. However, the neurological symptoms did not recover completely.

## Discussion

Acral symmetrical digital gangrene was first reported by Hutchison in 1891.<sup>[4]</sup>

The manifestation of digital gangrene in tuberculosis has always been rare, and the explanation for it is still not clear. One report has suggested that the digital gangrene in tuberculosis may result from vasospasm or small vessel obstruction.<sup>[5]</sup> Parish and Rhode first described vasculitis due to tuberculosis in 1967.<sup>[6]</sup> Tuberculosis is known to cause large vessel vasculitis. It has



**Figure 2:** MRI Spine showing Tuberculous diskitis

been suggested that vasculitis is due to an immunologic reaction caused by the chronic stimulus of *Mycobacterium tuberculosis*, leading to thickening of vessel wall and stenosis of the vessels.<sup>[7]</sup> Tuberculosis has also been associated with small vessel vasculitis, like leukoclastic vasculitis. However, there is only one report of medium vessel vasculitis caused by tuberculosis.<sup>[8]</sup>

All cases of digital gangrene due to tuberculosis, cannot be explained by vasculitis. Digital gangrene with palpable pulses, may be explained by hyper aggregation of platelets, or due to hemodynamic instability.<sup>[5]</sup> Embolization of arterioles by tubercle bacilli may also cause digital gangrene. The peripheral gangrene of toes in our patient was probably due to hyperaggregation of platelets, as the peripheral pulses were palpable [Figure 2]. The presence of palpable pulses, suggest the absence of vasculitis.

Treatment of the digital gangrene in tuberculosis generally consists of Antituberculous therapy. Several agents like aspirin, vasodilators, tissue plasminogen activator,<sup>[9]</sup> has been suggested. Peripheral symmetrical gangrene has been successfully treated with epoprostenol and tissue plasminogen activator.<sup>[9]</sup> However, another study found the above modalities of treatment unsatisfactory.<sup>[5]</sup> Amputation and debridement may also be required if the gangrene is advanced.

Other causes of gangrene should also be excluded by appropriate clinical examination, and laboratory investigations.

## Conclusion

Tuberculosis has varied presentations. In an endemic region, even rare presentation like digital gangrene can be seen, which if treated appropriately shows recovery. However, at times, surgical amputation may be required for the gangrenous part.

## Key points

1. Peripheral gangrene is an uncommon manifestation of tuberculosis
2. Early diagnosis and treatment can help to prevent surgery
3. Advanced gangrene requires amputation.

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## Conflicts of interest

There are no conflicts of interest.

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