Case report

Primary cutaneous tuberculosis with superadded acinetobacter after a cut from knife on hand - rare case presentation

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Abstract
Cutaneous tuberculosis occurs rarely, despite a high and increasing prevalence of tuberculosis worldwide and even after giving the Bacille Calmette-Guérin vaccine, tuberculosis involving the skin can occur. Here we report a case of cutaneous tuberculosis in a 55-year-old female housewife who contracted primary cutaneous tuberculosis from a cut from kitchen knife. Cultures of pus aspirated from the finger initially grew Staphylococcus that led to a delay in the diagnosis. Later the wound got infected with acinetobacter too.

Keywords: Cutaneous, primary, tuberculosis, Acinetobacter

Introduction
TB is an airborne transmissible disease with skin manifestations presenting as a result of hematogenous spread or direct extension from a latent or active foci of infection. However, primary cutaneous tuberculosis results from the direct inoculation of Mycobacterium tuberculosis into the skin or mucosa of a susceptible individual by trauma or injury with no previous history of tuberculosis infection. Increased risk of acquiring disease occurs with HIV infection, intravenous drug abuse, diabetes mellitus, immunosuppressive therapy, malignancies, end-stage renal disease, and infancy. Cutaneous tuberculosis is considered predominantly an occupational disease and is a challenging diagnosis to make, especially in low-income countries due to a wide array of differential diagnoses, for example, fungal infections, leishmaniasis. Cutaneous tuberculosis (CTB) is frequently elusive as it mimics a wide differential diagnosis and also evades microbiological confirmation despite recent advances in sophisticated techniques. Although rare, given its worldwide prevalence, it is important for clinicians to recognize the many clinical variants of CTB to prevent missed or delayed diagnoses.

Case report
A 55 year old female housewife by occupation without any co-morbidity came to outpatient department with chief complaint of watery discharge from wound from the base of the left thumb. Patient had history of accidental penetrating injury at the base of left thumb with kitchen knife 1 and 1/2 months back. The initial injury healed in 3-5 days. 2 weeks later patient developed swelling at the site of injury and it was treated by incision and drainage which yielded serous fluid. Since then the incision site had not healed and continues to discharge serous fluid (Figure 1 & 2). The culture study suggested Staphylococcus infection and patient was started on antibiotics. The wound did not heal over a month and so it was decided to explore the wound under anesthesia. Intra-operative findings were suggestive
of Sinus tract extending into the first inter-digital web space. The consistency of soft tissue within and surrounding the sinus tract was granular and gritty. The adjacent ligaments, nerves and tendons were normal. The granular and indurated tissue was excised and thorough debridement done and the tissue was sent for histopathology and culture. Culture from the specimen of tissue revealed Acinetobacter. Histopathology report revealed: Gross: Soft grey bits measuring 1cm in toto. Microscopic: fragments of fibro-collagenous tissue infiltrated by caseating granulomas. The diagnosis was confirmed by histopathology report as primary cutaneous tuberculosis of left thumb. Patient was started on anti-tubercular therapy and the wound completely healed at the end of one month and anti tubercular therapy was continued for 6 months. Patient followed up after 6 months with no reoccurrence.

Discussion
Since this is a case of primary cutaneous tuberculosis by direct inoculation. Tuberculosis continues to pose a significant public health problem and kills about 3 million people annually. It is largely an airborne infection, but skin manifestations may be caused by hematogenous spread or contiguity from foci of infection which may be active or latent. Primary inoculation, another mode of transmission, results from direct inoculation of M. tuberculosis into the skin of a person who has no previous exposure and subsequently no immunity to the organism. Cutaneous tuberculosis is rare and accounts for 0.1% of dermatology cases and only 1.5% of extra pulmonary tuberculosis cases. Once the traumatized skin of a previously uninfected person is inoculated with M. tuberculosis, a tuberculous chancre develops at that site within 3 weeks. A painless regional lymphadenopathy becomes prominent 3–6 weeks after inoculation, and a previously negative, intradermal; intermediate-strength purified protein derivative (PPD) test converts to a positive test. Cutaneous tuberculosis is commonly seen amongst young adults because of their likelihood to sustain work related injuries and inoculation of tubercle bacilli. It is also common amongst hospital personnel. The diagnosis of tuberculosis in this case was masked by an initial culture growth of Staphylococcus which led to a delay in diagnosis. This is comparable to a case report by Opara et al. on tuberculous arthritis of the
knee with staphylococcus super infection in which a delay in the diagnosis led to adverse outcome. Diagnosis requires correlation of clinical and histopathology findings but a Mycobacterium culture is the most reliable method of detecting mycobacteria and monitoring treatment response. An absolute diagnosis can be made when AFB is visualized on a Ziehl–Nelson-stained slide of a smear prepared from material from lesions. Cutaneous tuberculosis that occurs by direct inoculation is a paucibacillary disease, sparse bacilli seen on histology and microorganisms are difficult to isolate. Smears, Ziehl–Nelson staining, and mycobacterium cultures in Lowenstein–Jensen and BACTEC media are frequently negative. It manifests as a painless, solitary, purplish or brownish-red warty plaque that may extend peripherally causing central atrophy or form fissures that exude pus or keratinous material. On physical examination, there is often lymphadenopathy. Skin biopsy with histological examination reveals pseudocarcinomatous hyperplasia with noncaseating tuberculous granulomata without mycobacterium seen or cultured. Typical features of a tuberculous chancre of tuberculosis include granulomatous tubercles with epithelioid cells, Langerhans giant cells, and a mononuclear infiltrate. Useful diagnostic tools in the diagnosis of cutaneous tuberculous include histopathologic findings of tubercles, isolation of M. tuberculosis in cultures of biopsy material, or by polymerase chain reaction. Management of cutaneous tuberculous is the treatment with four-agent regimen given for 2 months followed by a two-drug regimen for the next 4 months as per tuberculosis treatment guidelines for tuberculosis in other organs.

**Conclusion**

Primary cutaneous tuberculosis is rare and should be suspected in all patients who present with skin lesions that do not respond to antibacterial treatment. A high index of suspicion is required to make the diagnosis of cutaneous tuberculosis because diagnostic methods are not sufficient and may lead to a delay in starting appropriate methods. Complete microbiological tests should be carried out for any persistent non healing wound or ulcer. Early management should be initiated to minimize morbidity and if they are super added by any other organism the morbidity increases.

**References**


