

## Longstanding skin ulcers due to *Mycobacterium tuberculosis* in a healthy man

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**Abstract.** Cutaneous tuberculosis, a rare form of extrapulmonary tuberculosis, has a wide variety of clinical presentations and continues to be one of the most important dermatological diseases in developing countries. The sites of predilection are neck, supraclavicular region, axilla, and groin. Single or multiple cutaneous and subcutaneous nodules first appear and breakdown later resulting in undermined ulcers with a purulent discharge, sinuses, and disfiguring scars. We report a multifocal case of scrofuloderma in a 47-year-old immunocompetent man treated successfully with four antituberculous drugs, albeit lately due to the loss of awareness to the disease.

### INTRODUCTION

The incidence of skin tuberculosis (TB) is gradually rising in both developing and developed countries parallel to systemic TB and remains to be one of the most elusive and more difficult disease to diagnose (Bravo & Gotuzzo, 2007; Semaan *et al.*, 2008).

Scrofuloderma (SCD) is a comprehensive term applied to gummatous skin TB. It occurs most frequently over or around the cervical lymph nodes. The process generally begins as deep and purplish indurations of overlying skin. In months, it has been doughy and tends to break down resulting a purulent and necrotic discharge. Chronic, oval or linear ulcerations with undermined margins, discharging sinuses, irregular cicatricial bands and disfigurements are all the characteristics of SCD. (Meltzer & Nacy, 2006; Umapathy *et al.*, 2006; Bravo & Gotuzzo, 2007; Vashisht *et al.*, 2007).

Here, we present a middle-aged immunocompetent man with bilateral, chronic, ulcerative lesions on his neck, supraclavicular region, armpits, and arms treated successfully with proper anti-tuberculosis regimen.

### Case Study

A 47-year-old man has been suffering from multiple ulcers with a purulent discharge on his retroauricular region, neck, suprasternal area, and axillae for 13 months. He had been previously treated unsuccessfully with broad-spectrum antibiotics with a diagnosis of skin infection (abscess and furunculosis).

The patient was admitted to our clinic with diagnoses of SCD, hydradenitis suppurativa, sporotrichosis, and furunculosis. Systemic examination was normal. On dermatological examination; there were several doughy, erythematous, and fluctuated nodules on his retro- and preauricular, cervical, submental, suprasternal, axillar regions, and medial arm, bilaterally. There were also two undermined and suppurative ulcers with a violaceous halo on his left cervical area, each approximately 2x3 cm in size (Fig. 1). Additionally, there were several atrophic and hypertrophic scars with some sinuses and bridges on submandibular, submental, suprasternal, and axillar regions.

The patient was otherwise healthy. Biochemical analyses were within normal limits. Human immunodeficiency virus (HIV)



Figure 1. Clinical appearance of the patient before treatment with ulcerative lesions on left cervical region.

I and II and hepatitis (B and C) antibodies, and venereal disease research laboratory test (VDRL) were all negative. On complete blood counting (CBC), a microcytic hypochromic anemia was observed with a 8.4 g/dL hemoglobin, 24.9% hematocrit, and  $2.75 \times 10^6/\mu\text{L}$  erythrocyte. Erythrocyte sedimentation rate (ESR) was 62 mm/h. Purified protein derivative (PPD) test with 1 TU was weakly positive (13 mm/72 h).

Smears and bacteriological, fungal, and mycobacterial cultures from purulent material revealed no etiological pathogens.

On histopathological examination of incision biopsies from multiple lesions, a weak dermal granulomatous reaction with heavy caseating necrosis and epithelioid cells was observed (Fig. 2a). Mycobacteria was positive on histopathologic examination of biopsied tissues stained with Erlich-Ziehl-Neelsen (EZN) stain (Fig. 2b). Culture from biopsied tissues in Loewenstein-Jensen (LJ) media yielded *Mycobacterium tuberculosis*. Tissue recovered from the paraffin block of the biopsy specimen as previously detailed revealed *M. tuberculosis* DNA in two-stage polymerase chain reaction (PCR) technique (Durmaz *et al.*, 1997).

We could not find any tuberculous foci on lungs, gastrointestinal tract, and kidneys by radiological, microbiological and ultrasonographic investigations. Sputum and urine cultures were negative.

The patient was put on four antituberculous drugs (isoniazid 300 mg/d, rifampicin 600 mg/d, ethambutol 1 g/d, and pyrazinamide 2 g/d) for three months. A significant improvement was observed at the end of this three-month period (Figs. 3) and ethambutol and pyrazinamide were discontinued. The patient's therapy is ongoing with isoniazid and rifampicin.

## DISCUSSION

In a recent study, the incidence of skin TB has been reported as 3.51% in patients with systemic TB, especially TB adenitis, in Turkey (Kivanc-Altunay *et al.*, 2003).

The most frequent causes of skin tuberculosis are *M. tuberculosis* and *Mycobacterium bovis*. (Aliagaoglu *et al.*, 2006). We observed mycobacteria on histopathological examination, isolated *M. tuberculosis* on culture of skin biopsy and

obtained *M. tuberculosis* DNA from the diseased tissue.

The clinical manifestations of skin TB depends on some factors such as location of the main focus, the mode of spread to the skin, and nutritional and immunological status of the host, especially the level of delayed-type immunity (DTI) (Aliagaoglu *et al.*, 2006). In western countries, lupus vulgaris, scrofuloderma, and verrucous

tuberculosis are the most frequent forms of skin tuberculosis, respectively (Rai *et al.*, 2005; Sethuraman *et al.*, 2006). Kivanc-Altunay *et al.* (2003) observed that SCD and lupus vulgaris (LV) are the most frequent forms of skin TB associated with organ TB (SCD, 2.16% and LV, 1.35%) in Turkey. It has been accepted that patients with SCD has a low degree of DTI than patients with other forms (Aliagaoglu *et al.*, 2006). Our patient

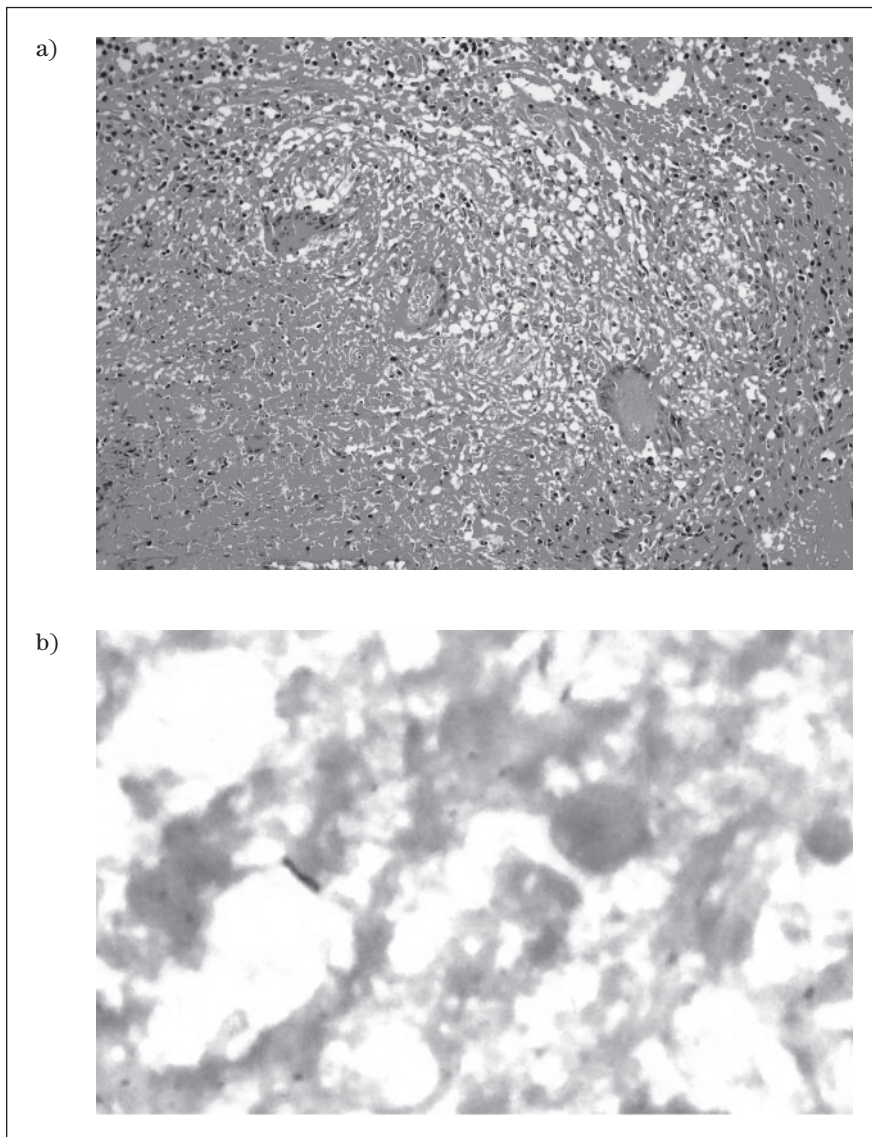


Figure 2. Histopathological findings. a, A necrotizing tissue reaction with scattered epithelioid cells and multinucleated giant cells (Hematoxylin-eosin stain; original magnification: X400). b, Acid fast bacillus in tissue biopsy (EZN stain; original magnification: X1000).



Figure 3. Clinical appearance of the same lesion patient after treatment, lesion healed with scars on left side of neck.

had a weak positive PPD reaction and chronic disease-type microcytic anemia.

Diagnosis of cutaneous TB by conventional laboratory methods such as smear, histopathology, and culture is unreliable and time consuming. It has been reported that PCR is most sensitive and rapid followed by histopathology, BACTEC (rapid) culture, LJ media culture (classic), and smear examination, respectively (Negi *et al.*, 2005). It has been claimed that fine needle aspiration cytology has more positivity rates than classical histopathology, (Kathuria *et al.*, 2006) but the value of a careful evaluation of skin biopsy is indisputable in revealing the entire disease process (Vashisht *et al.*, 2007). Despite the sophisticated techniques, the gold standard is still the isolation of *M. tuberculosis* in the culture (Bravo & Gotuzzo, 2007). We used all three methods; histopathology, culture, and PCR to confirm the clinical diagnosis and obtained positive results.

In differential diagnosis; hydradenitis suppurativa, furunculosis, actinomycosis, sporotrichosis, atypical mycobacterial infection and syphilis gumma should be kept

in mind. We excluded all above entities in our patient.

Although some claims on the adequacy of two-drug regimen, (Umapathy *et al.*, 2006) current recommended anti-TB therapy for most of the patients with scrofuloderma is four-drug regimen including isoniazid, rifampicin, ethambutol, and pyrazinamide as initial therapy. After two months, therapy should be continued with two basic anti-TB drugs, isoniazid and rifampicin, for 7-10 extra months according to clinical response (Meltzer & Nacy, 2006). We observed an excellent improvement at the end of three month period with four drugs and plan to continue dual therapy with isoniazid and rifampicin for additional 7 months. Finally it is worth quoting Semaan *et al.* (2008) recent comment; cutaneous tuberculosis is not a rare disease and should be suspected in immunocompetent as well as in immunosuppressed patients who present with chronic skin lesions failing to improve on antibacterial treatment, especially when these lesions are nodular, ulcerated, and purulent with associated regional adenitis.



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