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CASE REPORT

Delayed Diagnosis of Scrofuloderma Misdiagnosed as a Bacterial Abscess

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An 82-year-old woman presented with a four-month history of an ulcerative plaque overlying her left neck. This lesion had developed as a subcutaneous nodule, gradually increased in size, and evolved into ulcers. Before visiting our Dermatology clinic, the patient had been diagnosed as having a bacterial abscess, but treatments with antibiotics were unsuccessful. The presence of a purulent discharge and prominent ulceration caused further confusion as bacterial abscess, and radiologic evaluation on computed tomography also led to the possibilities of secondary lesions from an abscess or malignancy. However, the characteristic appearance of her lesion allowed us to discern cutaneous tuberculosis, especially scrofuloderma. Based on clinical examinations, staining for acid-fast bacilli, and positive findings of polymerase chain reaction, a quick diagnosis of scrofuloderma was made. After that, she was treated successfully with anti-tuberculosis therapy and the ulcer healed. Our case highlights the problem of delayed diagnosis of scrofuloderma presenting as a bacterial abscess. In conclusion, having a high index of suspicion is needed to diagnose cutaneous tuberculosis correctly. **(Ann Dermatol 24(1) 70~73, 2012)**

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INTRODUCTION

Cutaneous tuberculosis is a rare form of extrapulmonary tuberculosis, and it is often misdiagnosed because of a low index of suspicion[1]. Scrofuloderma results from the involvement and break-down of the skin overlying a tuberculous focus[2]. It begins as a painless subcutaneous nodule, called a cold abscess. With the continuous propagation of an underlying infection, it is characterized by fistula formation and pus discharge from a lymph node. The cervical lymphatic chains are most frequently involved[2-4]. Herein we report a case of scrofuloderma misdiagnosed as a bacterial abscess and note the importance of maintaining a high level of awareness.

CASE REPORT

An 82-year-old woman presented with a four-month history of an ulcerative plaque overlying her left neck. This lesion had developed as a subcutaneous nodule, which gradually increased in size and evolved into ulcers. The physical examination revealed a 3×5 cm, erythematous suppurative plaque on the surface of her neck. It was well-demarcated with elevated borders and deep undermined edges. The lesion also had central ulceration covered by a scant, cheesy, and purulent discharge (Fig. 1). There was no history of trauma. Systemic examination did not reveal any abnormalities, and there was no recent weight loss or night sweats.

Before visiting our Dermatology clinic, the patient had been diagnosed as having a bacterial abscess and was

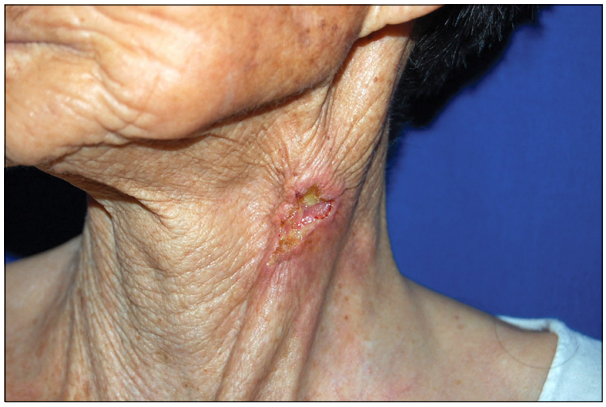

Fig. 1. Erythematous suppurative plaques with central ulceration on the surface of her neck.

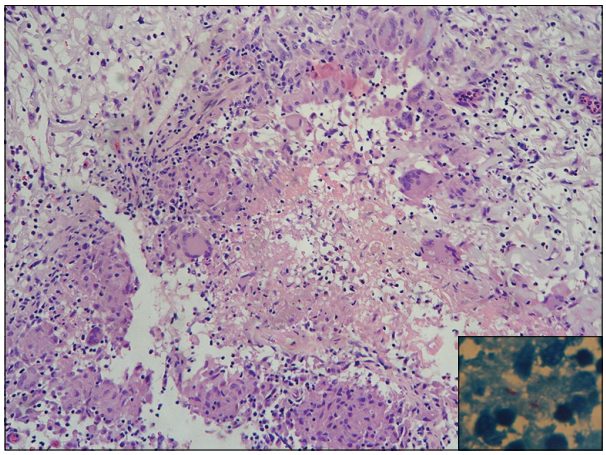

Fig. 2. Epithelioid cell granulomas with inflammatory cell infiltrations in the dermis (H&E, ×100), Inset: Acid-fast bacilli on Ziehl-Neelsen staining (H&E, ×1,000).

treated with antibiotics at two local clinics and by an ENT doctor at our hospital. Earlier therapeutic attempts with antibiotics (Banan; Meiact; cefditoren pivoxil) were unsuccessful and the lesion was sometimes reduced but never had disappeared entirely. Further investigations such as a computed tomography (CT) study of the neck, and fine needle aspiration cytology (FNAC) were done by the ENT doctor of our hospital to rule out malignancy. Also, she was referred to our clinic for the evaluation of chronic dermatologic disease. At that time, the characteristic appearance of her lesion allowed us to discern cutaneous tuberculosis, especially scrofuloderma and further workups including skin biopsy, polymerase chain reaction (PCR) for *Mycobacterium tuberculosis*, cultures (bacterial, fungal, and mycobacterial), and chest X-ray were carried out.

Histological examinations revealed epithelioid cell granulomas with inflammatory cell infiltrates in the dermis.

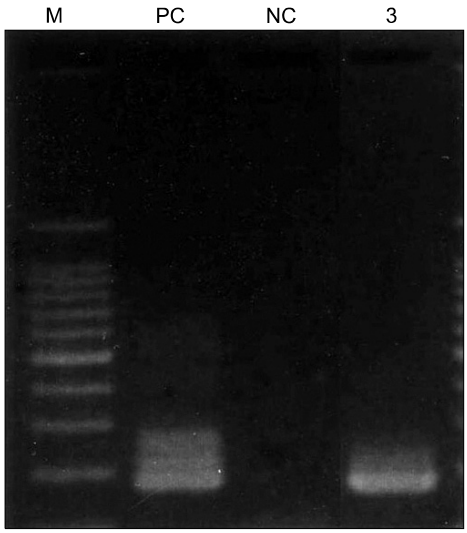

Fig. 3. Positive results on polymerase chain reaction for the detection of *Mycobacterium tuberculosis*. Lane M: molecular weight marker, Lane PC: positive control, Lane NC: negative control, Lane 3: patient's sample.

Ziehl-Neelsen stain demonstrated acid-fast bacilli (Fig. 2). Cultures from the skin biopsy showed growth of *Mycobacterium tuberculosis* after 8 weeks. Fungal and standard bacterial cultures from the skin biopsy were negative. A PCR study for the detection of *Mycobacterium tuberculosis* was conducted on a biopsy specimen and turned out positive (Fig. 3). However, FNAC from the skin lesions on the neck showed only neutrophils and fibrin exudates.

A radiograph of the chest revealed 1 cm, small, calcified nodules on the right upper pulmonary lobe, and pulmonary tuberculosis was suspected (Fig. 4A). CT of the neck, which demonstrated peripheral enhancing low density lesions with extension to the cutaneous area, was found and ruled out an abscess or malignancy (Fig. 4B).

Based on clinical examinations, staining for acid-fast bacilli, and positive PCR findings, a rapid diagnosis of scrofuloderma was made. The patient was quickly started on an anti-tubercular treatment regimen that included isoniazid, rifampicin, ethambutol and pyrazinamide. The cutaneous lesion regressed in a slow but complete fashion. Her treatment with anti-tuberculosis therapy was successful and the ulcer healed after 18 months.

DISCUSSION

Cutaneous tuberculosis remains a rare infection, with an incidence of 3.5% reported among patients with organ tuberculosis[5]. Among them, scrofuloderma is a common form of cutaneous tuberculosis; it is seen in many developing countries and in some European countries[5,6]. It is

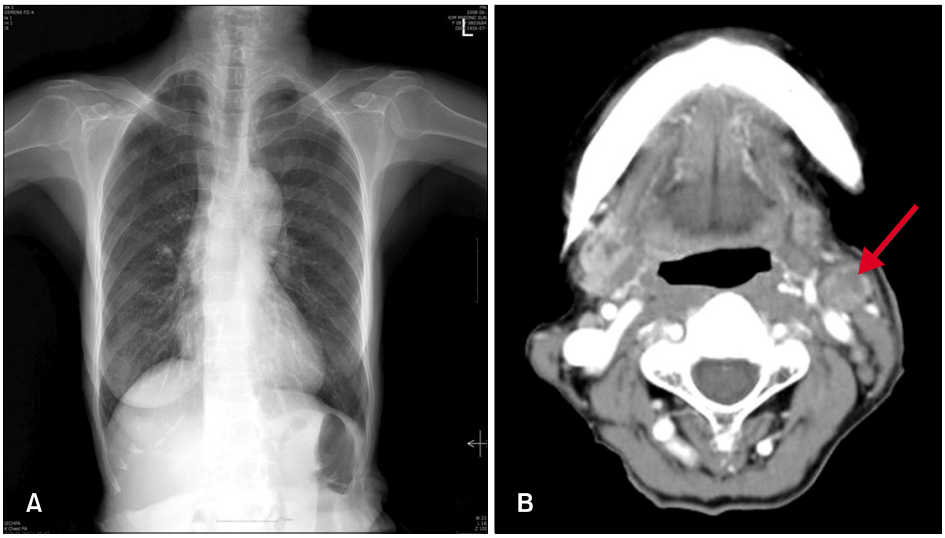

Fig. 4. 1 cm small calcified nodules on the right upper pulmonary lobe (A), and peripheral enhancing low density lesions (arrow) on the left neck (B).

caused by a lesion in the lymph node, bone, muscle or tendon that continuously spreads to the skin[2-4].

The skin lesion first presents as painless, subcutaneous nodules, which is called a cold abscess. Then, the reddish-blue induration suppurates and breaks down, forming an ulcer with granulating tissue at the base. Sometimes sinuses may develop and communicate directly with areas of deep infection. Progression and scarring produce irregular adherent masses, densely fibrous in places, and fluctuant or discharging in others[2-4]. The disease is usually slow-growing, and has an insidious course and an unusual presentation; a chronically discharging sinus or a non-healing ulcer are possible[4].

Scrofuloderma remains a diagnostic and therapeutic challenge because the clinical appearance of the lesions is not always characteristic, and a positive culture result is not always obtained[1,7]. This case highlights delayed diagnosis of scrofuloderma presenting as a bacterial abscess. Although our case presents typical features of scrofuloderma, the presence of purulent discharge, prominent ulceration, or features suggestive of a carbuncle can cause further confusion and misdiagnosis as a bacterial abscess[7]. Moreover, radiologic evaluation on CT also led to the possibility of secondary lesions from an abscess or malignancy. The delay in the diagnosis emphasizes the importance of maintaining a high level of suspicion.

In our case, scrofuloderma was confirmed by the presence of acid fast bacilli on AFB staining and a positive culture for *Mycobacterium tuberculosis*. Supportive evidence included the presence of epithelioid granulomas on histopathologic examination and a positive result on PCR for mycobacteria.

Scrofuloderma may be a manifestation of systemic tuberculous disease and can result from direct extension or hematogeneous spread of the infection[6]. The incidence of systemic involvement in adults with scrofuloderma has been reported to be as high as 35%[6]. Of note, using PCR to identify the infectious agents has increased the sensitivity and improved the overall detection rate among those with a diagnosis of cutaneous tuberculosis[7,8]. A further advantage of PCR is the possibility of earlier initiation of treatment[7,8].

Histology may show marked caseation necrosis, with numerous bacteria usually in the deeper structures[2,9]. The center of the lesion is dominated by necrosis and abscess material with inflammatory infiltrates. In the epidermis, scarring and atrophic changes often predominate. Tubercle bacilli are usually easy to identify in the purulent discharge or biopsy tissue[3].

Chemotherapy still remains the treatment of choice[2,10]. It aims to cure the disease as rapidly as possible in order to prevent relapses and the emergence of resistant strains. The standard 6-month regimen for adults includes isoniazid, rifampin, pyrazinamide, and ethambutol for the initial 2 months followed by isoniazid and rifampin for a further 4 months in the continuation phase[2,10]. When a therapeutic trial is undertaken in a case of cutaneous tuberculosis, 6 weeks of therapy with four drugs appears adequate to confirm the diagnosis[11]. The response to anti-tuberculous treatment alone as a primary therapy is usually good, but some authors have recommended wide surgical removal of all diseased tissue, combined with pharmacologic anti-tuberculous treatment[2,3].

Our case serves as a reminder that chronic neck ulcers may be due to cutaneous tuberculosis and that pulmonary tuberculosis may be a focus for tuberculous infection. A chronic, non-healing ulcer is a common presentation of scrofuloderma. Nevertheless, scrofuloderma with concomi-

tant bacterial infection frequently occur, preventing early diagnosis of tuberculosis if not suspected[1,7]. Therefore, a high index of suspicion is needed for the prompt diagnosis and management of this uncommon skin disorder.

When a therapeutic trial is undertaken in a case of cutaneous tuberculosis, 6 weeks of therapy with four drugs appears adequate to prove (or disprove) the diagnosis.

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