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Atypical Presentation of *Trichophyton tonsurans* Mimicking Non-Healing Ulcer: A Case Report

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ABSTRACT

Dermatophytosis is superficial cutaneous fungal infection of skin, hair, and nails. Trichophyton tonsurans is an anthropophilic cosmopolitan dermatophyte most frequently associated with Tinea capitis. A 58-year-old female presented with non-healing ulcers of 6-month duration on left leg, mimicking squamous cell carcinoma and atypical mycobacterial infection. Skin biopsy was taken and preparation of 10% KOH revealed plenty of thin hyaline septate hyphae. Fungal culture on SDA with and without antibiotics showed whitish suede like fungal growth with central furrows. The fungus was identified as Trichophyton tonsurans. Antifungal treatment was started and patient improved drastically after 3-4 weeks of treatment. We conclude that for all cases of non-healing ulcers, a suspicion of fungal infection must be kept and skin biopsy should be sent for fungal culture.

Keywords: Trichophyton tonsurans, dermatophytosis, non-healing ulcer, SDA

INTRODUCTION

Dermatophytoses is a group of superficial cutaneous fungal infections affecting skin, hair, and nails. There are about forty-two species of dermatophytes known to be pathogenic to human beings. They are broadly classified into three main genera (*Trichophyton, Microsporum* and *Epidermophyton*) based on differences in microscopic morphology [1]. *Trichophyton tonsurans* predominantly causes tinea capitis and has less predilection for the skin surface [2]. *Tinea corporis* due to *Trichophyton tonsurans* may be more common in women in close contact with infected children and is transmitted primarily by sharing of combs, beddings, and other materials [1].

We report a rare case of *Tinea corporis* due to *Trichophyton tonsurans* in a lady who presented with a non- healing ulcer mimicking squamous cell carcinoma and atypical mycobacterial infection.

CASE REPORT

A 58-year-old female native of district Kangra (Himachal Pradesh) presented to the outpatient department of dermatology and venereology in our rural tertiary care medical college. She had chief complaints of non-healing ulcer for 6 months on left leg. The patient gave history of burns on the affected site about before 30 years. The lesions started as small pin-head sized, reddish, raised lesions over the frontal aspect of left lower leg. They were associated with oozing of a yellowish discharge which was not blood stained. The lesions gradually increased in size over a period of six months. There was no history of trauma or insect bite. There was no history of fever or night sweats. The patient had no history of prolonged antibiotic use. There has been no history of such lesions in the past or in other

family members. There was no history suggestive of immunosuppressed state.

On examination, there were two lesions on the anterior aspect of left lower leg. The first lesion was ulcerated with crustation and hyperpigmentation around it. It was 0.5 × 0.5 cm in size. The other lesion was 0.3 × 0.5 cm in size, reddish in colour with well-defined outline and occasional atrophic changes (Figure 1). No similar lesions were seen on the scalp, hair, nail or on any other part of the body.

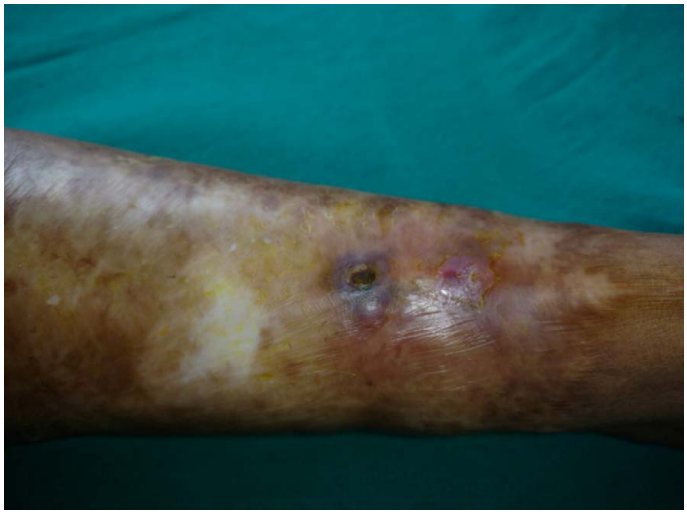

Figure 1 Lesions of the lower leg

Skin biopsy was taken from the active margin of the lesions taking all aseptic precautions. A part of the sample was sent for histopathological examination, AFB culture, fungal culture, and aerobic bacterial culture. A direct 10% KOH mount revealed plenty of thin, hyaline septate hyphae (under 10×). Fungal culture was performed on four tubes of Sabouraud dextrose agar (SDA) with and without antibiotics (Chloramphenicol and Cycloheximide). One set was incubated at 25°C and the other set was kept at 37°C. On high suspicion of dermatophytic isolation, a part of the specimen was inoculated on dermatophyte test medium (DTM). Tubes of SDA with and without antibiotic incubated at 25°C showed fungal growth within 10-12 days. The growth was whitish, suede- like with a heaped surface and with many central furrows. There was no pigment on obverse and reverse (Figure 2).

Figure 2 Cultures of tissue from lesions of *Trichophyton tonsurans*-infected patient

Lactophenol Cotton Blue (LCB) mount was prepared and examined under 40×. Urease test was also put up. LCB mount revealed thin hyaline septate hyphae with numerous tear shaped microconidia borne laterally on hyphae. Some of the microconidia were enlarged to form balloon forms (Figure 3). Very few macroconidia were seen. Urease test was positive. Histopathological examination showed mixed inflammatory reaction consisting of lymphocytes, plasma cells and macrophages. AFB culture showed no growth even after 8 weeks of incubation ruling out possibility of atypical mycobacterial infection. Aerobic bacterial culture was sterile. Blood test to rule out diabetes was negative.

Figure 3 Microscopic examination of culture of tissue from lesions of *Trichophyton tonsurans*

DISCUSSION

Superficial mycoses are common worldwide. They are believed to affect 20% to 25% of world's population and the incidence continues to increase [3]. They are predominantly caused by dermatophytes and the causative species varies with the geographic region. Certain species have worldwide distribution whereas others are geographically restricted. Variation in clinical presentation is attributed to the species involved, size of inoculum and immune status of host [1].

Dermatophytes can be anthropophilic (infect humans), zoophilic (infect animals) or geophilic (that grow in soil). Trichophyton genus has several species but the species prevalent worldwide are *Trichophyton rubrum* and *Trichophyton mentagrophytes* [4].

Trichophyton tonsurans is an anthropophilic species and is the principal etiological agent of scalp ringworm infections or tinea capitis. It also infects skin and nails but with less predilection. Most of the cases have been reported from countries like USA, UK, and Japan (50-90% cases) [5]. It is currently the leading cause of tinea capitis in North America (21-44.9%). In India, only few cases of infection with *Trichophyton tonsurans* have been reported. In studies conducted in northern part of our country, the most prevalent species have been *Trichophyton rubrum* [6] and *Trichophyton mentagrophytes* [7].

Dermatophytes usually invade the epidermis of skin but rarely due to trauma to skin and in immunocompromised state it may penetrate deeper into dermis and subcutaneous tissue [1].

Clinical features of *Trichophyton tonsurans* infection varies from patient to patient. Some patients have strong inflammatory manifestations whereas others remain as asymptomatic carriers. Cases of *Tinea corporis* have been reported mainly among members of sporting clubs. Typical skin lesions due to *Trichophyton tonsurans* infection are multiple, well defined erythematous plaques [1].

In our case, the patient (with a history of burns) presented with two reddish ulcerated lesions having crustation and hyperpigmentation on the area of burns. According to clinical presentation of a non-healing ulcer, a differential diagnosis of squamous cell carcinoma and atypical mycobacterial infection was kept.

Immunosuppression has an important role in development of unique clinical features of *Trichophyton tonsurans*

infection. Atypical cases have been reported which can present as impetigo [8] and as Majocchi's granuloma [9].

We presume that the cause of non-healing ulcer in our patient could have been due to infection of *Trichophyton tonsurans*. The patient might have suffered some trivial trauma at the site of ulcer development which had gone unnoticed by the patient leading to break in skin continuity. The thinning of skin due to previous burn injury must have contributed to ulceration. Subsequent infection due to *Trichophyton tonsurans* at this site must have led to its non-healing nature.

Similar findings have been reported by Foroozon, et al., in which 6% of chronic ulcer samples yielded fungi. In this case, all fungi belonged to Candida species (*Candida albicans, Candida parapsilosis and Candida ciferrii*) [10].

To the best of our knowledge, this is the first case report of non-healing ulcer due to *Trichophyton tonsurans*. Although Lee, et al. have reported isolation of *Trichophyton rubrum* from diabetic foot ulcers in four patients [11].

In the present case, after receiving the report of the microbiologist, the patient was put on Terbinafine 250 mg OD for four weeks. To ensure the eradication of the fungus, personal clothes, bed linen and towels of the patient were disinfected with 1% bleaching solution. The patient was called for follow up after one month. There was dramatic improvement in the skin lesions and subsequent culture examination of the skin specimen did not show any fungal growth.

CONCLUSION

We conclude from our study that clinical examination alone is unreliable in establishing the diagnosis in case of non- healing ulcers. Microscopic examination and culture should be an integral part of investigation of such lesions. Moreover, in case of the lesions which are non- healing or progressive in nature, the dermatologist must keep suspicion of fungal infection and should send skin samples for fungal culture. This case report provides a resource for clinicians to recognize dermatophytes as potent etiological agents for chronic non- healing ulcers. Timely and appropriate diagnosis results in improved treatment and lesser morbidity.

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