Short Report

A Case of Tinea Corporis due to *Trichophyton tonsurans* that Manifested as Impetigo

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ABSTRACT

A 41-year-old man visited our dermatology clinic because an eruption, which was resistant to steroid ointment treatment, had appeared on his right forearm. An oval, soybean-sized erythematous infiltrated lesion with scales and crusts was located in the central part of the extensor surface of the right forearm and showed partial erosion with attached yellow crusts. The lesion had an impetigo-like appearance. Fungal elements were confirmed from the scales by KOH examination and the fungus was identified as *Trichophyton tonsurans* by fungal culture and molecular method. Clinical features of *T. tonsurans* infection vary, wherein some patients have strong inflammatory manifestations, while others remain as asymptomatic carriers. Especially at the early stage of the infection, diagnosis is difficult because it is often misdiagnosed as eczema. We report a case of *T. tonsurans* infection that had impetigo-like appearance. We also studied the mechanism of the disease.

Key words: *Trichophyton tonsurans*, impetigo-like appearance, KOH examination

Introduction

*Trichophyton tonsurans* infection was first brought from abroad to Japan through international competitions of combat sports around the year 2000. Subsequent outbreaks among the combat sports participants were then reported. Following an epidemic among friends and families of combat sports participants, the disease has now become prevalent nationwide.

Diagnosis is difficult since this disease presents various clinical features. Recently, we encountered a case of tinea corporis presenting with peculiar clinical features and having impetigo-like appearance, and we report this case and discuss details on the clinical types of tinea.

Case

A 41-year-old male company employee visited our department complaining of an itchy eruption on the right forearm. He was healthy and had been serving as a judo coach for young athletes twice a week. As history of the present illness, an eruption associated with slight itch had appeared on the right forearm four months earlier. He had visited two local hospitals, but since it tested negative on a fungal examination, steroid ointment was prescribed. His symptoms, however did not improve, so he visited our department.

On examination, an oval, soybean-sized erythematous infiltrated lesion with scales and crusts was found almost in the central part of the extensor surface of the right forearm, and it showed partial erosion with yellow crusts attached (Fig. 1). Fungal elements were confirmed from the scales through KOH examination (Fig. 2). No fungal elements were found in the villous hairs.

Mycological examination

The fungal culture taken from the scales that
erupted was positive, while a hairbrush culture method from the scalp indicated negative results. Growth of a colony with white fluffy surface and reddish brown color on the reverse side was observed on Mycosel agar (Fig. 3a, b). Microscopic morphology showed teardrop- and club-shaped microconidia, which were not stained by lactophenol cotton blue, observed along the hyphae or on short conidiophores (Fig. 4). DNA sequence analysis of the internal transcribed spacer (ITS) region was performed. The ITS region of this isolate showed 100 % similarity to that of *T. tonsurans* (AB220044). It was also identified as *T. tonsurans* based on the morphological features.

### Treatment

Considering that the infection is tinea corporis caused by *T. tonsurans* based on the sports background of the patient, we initiated oral terbinafine treatment at 125 mg. The eruption...
improved following a four-week oral administration of terbinafine. There has been no recurrence so far.

Discussion

Clinical features of tinea corporis depend on the anatomic sites of eruptions (stratum corneum, hair, nails, and subcutaneous tissue), the host’s immunological reaction (local and systemic), and the species of the dermatophytes. Tinea corporis, which is one type of dermatophytosis, have clinical features that vary from typical, circular, sharply circumscribed erythema and papules to atypical symptoms, depending on the previously described three conditions. Furthermore, there are more causative organisms for tinea corporis compared with those of other disease types.

Specifically, the symptoms of *T. tonsurans* infection are mainly tinea capitis and tinea corporis. The former has three clinical types (seborrheic type, black dot ringworm type, and kerion celsi type); whereas the latter includes the tinea circinata type, eczema marginatum type, and plague-like type, and a remarkable feature is that it is an endothrix-type dermatophyte that can easily invade hair. The symptoms vary among patients, with some showing strong inflammatory manifestations while others remaining as asymptomatic carriers. In the early stage of the infection it is often misdiagnosed as eczema and thus overlooked. More problematic is the fact that eruptions can spontaneously heal without care, and patients carry the fungus on their scalps.

In our case, the eruption appeared on the extensor surface of the right forearm, which is considered as a site where minor traumas can easily occur. We assumed it occurred because of rubbing with the sleeve of the judo uniform. Furthermore, both forearms of judo playing males are usually hairy, and the strong affinity of the fungus to hair tissue is considered one of the causes for disease formation.

The eruption in our case was an impetigo-like lesion, not a typical tinea circinata type lesion. Since the hairbrush culture from the scalp was negative, it was considered a symptom of the early stage of the infection. The clinical types of tinea corporis are classified differently by different textbooks, but according to Andrew’s textbook, tinea circinata is the typical type, whereas fungal folliculitis (Majocchi granuloma) and tinea incognito are included in the atypical type. In our case, it is unclear whether a granuloma was formed because a skin biopsy was not performed, but we chose systemic therapy with terbinafine because of the ability of this fungus to easily invade hair in the early stage of the infection and a history of incorrect administration of steroid ointment. Nevertheless, we reaffirmed the importance of the KOH examination for incurable eruptions through our case.

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Conflict of Interest

All authors declare no conflict of interest.

References


