



Case Report

Tinea Barbae Profunda Caused by *Trichophyton Rubrum* – an Autoinoculation from a Primary Tinea Pedis

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Abstract

Tinea barbae profunda is a rare mycotic infection of the beard, caused by dermatophytic fungi. Patients with suppressed immune systems and severe comorbidities, such as diabetes mellitus, are more prone to this disease, but it could also be seen in agricultural workers and stockbreeders. The most frequent etiological agents of this infection are the zoophilic dermatophytes. But in rare cases, an infection with anthropophilic dermatophytes as *Trichophyton rubrum* can be observed.

We present a case of a 55-year-old patient with insulin-dependent diabetes mellitus and tinea barbae profunda, caused by *Trichophyton rubrum*, as a consequence of autoinoculation from concomitant *Tinea pedis*. The patient was treated with oral antibiotics before admission to the clinic, but with no effect due to incorrect diagnosis and lack of mycological laboratory investigations. A satisfactory therapeutic outcome was achieved after a two-month course with antimycotic medications.

Keywords

dermatomycosis, dermatophytes, tinea faciei, sycosis barbae

INTRODUCTION

Tinea barbae, also known as *Sycosis barbae parasitaria*, is a fungal infection that affects the hairy part of the face - the beard, less often the moustache. This makes it an infection exclusively affecting the male sex.¹ It is caused predominantly by zoophilic types of dermatophytes, but in rare cases, pathogens can be also anthropophilic species, with their most common representative *Trichophyton rubrum*.¹ Tinea barbae is uncommonly detected dermatomycosis, most frequently it can be diagnosed in small towns and villages among stockbreeders or agricultural workers.^{2,3} Another prerequisite for the development of this infection can be immunosuppression in some patients due to congenital or acquired immunodeficiency conditions, as well as severe concomitant diseases, such as diabetes mellitus. Tinea

barbae may be manifested as a superficial infection or deep mycosis affecting the skin and hair follicles.³ Autoinoculation is a relatively rare mechanism of infection, often leading to errors in the diagnosis.^{2,4}

We present a case of a patient with tinea barbae profunda caused by the anthropophilic dermatophyte *Trichophyton rubrum* as a result of autoinoculation from an accompanying tinea pedis.

CASE REPORT

We present a case of a 55-year-old patient who was admitted to the University Clinic of Dermatology and Venereology with complaints in the beard area that started about two months before admission to hospital. From the beginning, the rashes

were represented by multiple reddened spots in the area of the beard, but two weeks before admission to the clinic, the patient reported that the rashes increased, became elevated, severely itchy, painful, and filled with yellowish contents (Fig. 1). A few days before admission, the patient noticed a red spot on his left shoulder. The patient reported to have been taking oral antibiotics for two weeks before hospitalization but without any effect. In addition, he reported to have been applying rubbing alcohol and OTC antifungal cream as self-treatment for a week before admission to the clinic.

General status: No specifics.

Dermatological status: The pathological changes were localized in the area of the beard. They were presented by multiple erythematous and edematous papules, some of which centred with pustules, up to 0.5 cm in diameter, infiltrates, small abscesses, and crusts (Figs 1, 2). The skin in the area was desquamated. In the area of the left shoulder, there was a single annular plaque with erythematous periphery and fine desquamation (Fig. 3). The skin between the toes was macerated, with the presence of desquamation. Toenails – onset of onychomycotic changes in some of the nails (Figs 4, 5).

Concomitant diseases: insulin-dependent diabetes mellitus, unstable angina pectoris, and arterial hypertension. The patient did not report harmful habits and denied contact with occupational and other harmful hazards.

Studies: From the paraclinical studies: CBC, WBC and ESR were within the norms, biochemical profile - elevated blood glucose levels were detected – 12.39 mmol/l H. VDRL - negative and immunological status was without deviations. From the microbiological examination of the secretion from the pustules - no pathogenic microorganisms were isolated.

Material for mycological examinations was taken from the beard, left shoulder, and between the toes. The direct microscopic examination of the skin and hairs from the beard was negative, but the culture on Sabouraud Dextrose Agar (SDA) showed the growth of *Trichophyton rubrum* (Fig. 6). The negative direct microscopy and the slow growth of the *T. rubrum* culture were considered to be consequences of the self-treatment with rubbing alcohol and antifungal cream that the patient had applied in the area for a week before admission to the clinic. The direct microscopy examinations of the material from the left shoulder and between the toes were positive and the cultures from both areas isolated *T. rubrum* (Figs 7, 8).

Therapy: During his stay in the clinic, the patient received oral treatment with fluconazole and after being discharged, he continued therapy with oral terbinafine (250 mg daily for two months), as well as topical antifungal preparations. After the second month of therapy, excellent therapeutic response to clinical symptoms and management of subjective complaints was achieved.

DISCUSSION

Tinea barbae is a rare fungal infection, especially in urbanized areas and in healthy males.¹⁻³ Predisposing factors which favour the development of the disease are severe concomitant diseases such as diabetes mellitus, congenital or acquired immunodeficiencies, previous corticosteroid therapy (systemic or topical), and contact with animals and/or people suffering from the infection.³ It is also characteris-



Figure 1. Beard (bottom view).



Figure 2. Beard of the patient (side view).



Figure 3. Left shoulder of the patient.



Figure 5. Right foot of the patient.



Figure 4. Left foot of the patient.



Figure 6. Culture from the beard.



Figure 7. Culture from left shoulder.



Figure 8. Culture from between the toes.

tic for agricultural workers, stockbreeders, and immunocompromised subjects.⁵⁻⁷ It is usually caused by zoophilic species, *Microsporum canis*, *Trichophyton verrucosum*, and *Trichophyton mentagrophytes*.^{1,2,8} In very rare cases, tinea barbae can be caused by anthropophilic types of dermatophytes. *T. rubrum* is the most common representative

of anthropophilic dermatophytes, also the most frequent causative agent of infection in immunocompromised individuals.^{6,7,9} According to Szepietowski et al.⁵ it is the most commonly isolated pathogen of superficial fungal infection in Poland, and also worldwide. Although this dermatophyte demonstrates a minimum affinity to the hairy areas and the hair follicles, it is often isolated in cortisone-dependent patients.^{6,7} In addition, its isolation may be a signal of concomitant fungal infection or tinea atypica, with another initial outbreak.^{1,6,10} An autoinoculation of the beard area from an accompanying fungal infection with another localization, for example from *Tinea pedis* is described in such patients.^{9,11,12} Years ago, autoinoculation was considered a quite rare phenomenon, but according to a study by Bonifaz et al.³, physicians should consider autoinoculation as not so rare a method of fungal infection transmission. The clinical picture varies from mild to severe form of inflammation represented by superficial and deep mycosis of the beard, respectively. This case presents a deep fungal infection involving the hair follicles with multiple follicular pustules, dense infiltrates, nodules, small abscesses and crusts. The pathological process is usually unilateral, less often localized on both sides of the face or the entire beard, as it is in the presented case.¹⁻³ The name of the disease, sycosis barbae, has a Greek origin and corresponds to the appearance of the skin that resembles a slit fig.¹ Studies have shown that patients suffering from diabetes mellitus have a higher risk of *Tinea pedis* and/or onychomycosis. That is even considered to be a predictor of diabetic foot syndrome in the future.^{1,6}

As far as the differential diagnosis is concerned, there are multiple dermatoses that should be considered such as staphylococcal folliculitis, carbuncle, furuncle, pseudo-folliculitis barbae, contact dermatitis, *Candida* folliculitis, pustular acne, rosacea, actinomycosis, and iododerma.^{2,3,6,7} This may lead to difficulty in the diagnosis, the delay of treatment and the progression of the process with possible chronification of the infection.⁸ Conducting a mycological and microbiological examination is essential for the correct diagnosis.^{1,3,10}

CONCLUSIONS

We present a case of a patient with insulin-dependent diabetes mellitus and tinea barbae profunda, as well as an initial form of *Tinea corporis*, all caused by the anthropophilic dermatophyte *T. rubrum*, due to autoinoculation from concomitant *Tinea pedis*. Before admission, the patient was treated for a long time with oral antibiotics, which did not affect the fungal infection of the beard and even led to worsening of the condition. For the proper diagnosis and therapy, it is important to take a detailed medical history of the patients regarding the specificity of the autoinoculation mechanism of infection. Furthermore, in order to avoid diagnostic errors, it is mandatory to carry out microbiology and mycology examinations before starting empirical

antibiotic therapy. This is especially important in patients suffering from serious systemic concomitant diseases, in which cases the improper and untimely treatment can cost a much longer convalescent period.

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Tinea Barbae Profunda, вызванная *Trichophyton Rubrum* – аутоинокуляция от первичной Tinea Pedis

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Резюме

Tinea barbae profunda – редкая грибковая инфекция бороды, вызываемая дерматофитными грибами. Пациенты с подавленной иммунной системой и тяжёлыми сопутствующими заболеваниями, такими как диабет, более восприимчивы к этому заболеванию, но оно также встречается у сельскохозяйственных рабочих и животноводов. Наиболее частыми этиологическими причинами этой инфекции являются зоофильные дерматофиты. Однако в редких случаях может произойти заражение антропофильными дерматофитами, такими как *Trichophyton rubrum*.

Мы представляем случай 55-летнего пациента с инсулинозависимым сахарным диабетом и tinea barbae profunda, вызванной *Trichophyton rubrum* в результате аутоинокуляции сопутствующей *Tinea pedis*. Перед поступлением в клинику пациент лечился пероральными антибиотиками, но безрезультатно из-за неправильного диагноза и отсутствия обследования в микологической лаборатории. Удовлетворительный терапевтический результат был достигнут после двухмесячного курса противогрибковыми препаратами.

Ключевые слова

дерматомикоз, дерматофиты, tinea faciei, sycosis barbae