



Case report

Two Feet-One Hand Syndrome: A Case Report

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SUMMARY

Two feet-one hand syndrome is a superficial fungal infections of the skin which involves both feet and one hand. *Trichophyton rubrum* and occasionally *Trichophyton mentagrophytes* are the usual causative organisms.

We present a 32-year-old healthy man with sharply demarcated papular erythematous and squamous lesions on dorsal aspect of the feet and diffuse dry scaling lesions of the right palm. In this syndrome, the development of tinea pedis generally precedes the development of tinea manus, which usually occurs on the hand that excoriated the pruritic feet or picked the toenails with onychomycosis. Our patient often used his dominant right hand to scratch the feet.

On mycological examination, fungal spores and mycelia were present and *Trichophyton mentagrophytes* was isolated. The patient was treated with itraconazole 200 mg daily for two weeks and topical terbinafine cream for four weeks. After the treatment all lesions resolved and fungal culture was negative.

Early diagnoses and treatment of tinea pedis and education about prophylaxis, constant care and regular medical assistance would minimize this problem in predisposed individuals.

Key words: tinea pedis, tinea manus, two feet-one hand syndrome

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INTRODUCTION

Dermatophytes are common fungal pathogens that produce mainly superficial infections of the skin, hair and nails. Tinea pedis is thought to be the world's most common dermatophytosis. It is a fungal infection of the interdigital toe web spaces as well as the skin of the feet. The most common etiological agents are anthropophiles, including *Trichophyton rubrum*, which is the most frequent, followed by *Trichophyton mentagrophytes* var. interdigitale and *Epidermophyton floccosum* (1).

Several publications deal with the high frequency of tinea pedis in recreation sports, however, the role of communal bathing places such as indoor swimming pools or modern fun bathes in the spread of tinea pedis has been well established (2-4).

The cutaneous presentation of tinea pedis is dependent on the host's immune system and the infecting dermatophyte. Host factors such as breaks in the skin and maceration of the skin may aid in dermatophyte invasion. The clinical manifestations are also influenced by external conditions such as hot, moist climates, hyperhidrosis and wearing shoes. There are four types of tinea pedis: interdigital infections, chronic erythematous squamous (moccasin-type), vesiculobulous or inflammatory type and ulcerative tinea pedis (5).

"Two feet-one hand syndrome" is a form of tinea pedis where not only both feet are infected, but also the skin of one hand and in many cases also the toenails and/or fingernails. *Trichophyton rubrum* and occasionally *Trichophyton mentagrophytes* are the usual causative organisms (6).

In 1964, Curtis first described the "two feet-one hand disease", later called a syndrome (7). This syndrome is commonly seen in dermatology clinics, but the cause of the unilateral hand involvement remains unresolved.

Herein we present a case of the "two feet-one hand syndrome" in a healthy man due to *Trichophyton mentagrophytes* infection.

CASE REPORT

A 32-year-old man, a driver, was referred to dermatologist with lesions on his feet and right hand. His personal history showed that feet lesions appeared five years earlier and hand lesions three

months before referral. Itching was present on the feet and he often used his dominant right hand to scratch the feet. He was treated by a physician and a dermatologist with topical corticosteroid and antifungal agents with periods of temporary improvement. He used over-the-counter emollients for hand treatment. He had been playing recreational football for more than ten years.

Physical examination revealed sharply demarcated papular erythematous and squamous lesions on dorsal aspect of the feet with numerous superficial erosions. There was a mild erythema with scaling between toes, and onycholysis was present on the third left toe nail (Figure 1).



Figure 1. Sharply demarcated papular erythematous and squamous lesions on dorsal aspect of the feet with numerous superficial erosions

Further examination revealed diffuse dry scaling lesions of the right palm (Figure 2).



Figure 2. "Two feet-one hand syndrome". The feet lesions are followed with diffuse dry scaling lesions of the right palm.

He was otherwise healthy, not receiving any medications and had an unremarkable medical history. Full blood count and routine biochemistry investigations were normal.

Specimens were obtained by scraping scale from the lesion margins of the feet and right hand, and the potassium hydroxide preparation of scales identified fungal spores and mycelia. Culture was performed on Sabouraud glucose agar and *Trichophyton mentagrophytes* was isolated. The patient was treated with itraconazole 200 mg daily for two weeks and topical terbinafine cream for four weeks. After that, the lesions completely disappeared and the potassium hydroxide examination and fungal culture were negative.

DISCUSSION

Tinea pedis is a common skin infection with high frequency among soldiers and men who take part in recreational or professional sport activities. In the study of Cohen et al. (8), the clinical and mycological point prevalences of tinea pedis among soldiers were 60.1% and 27.3%, respectively. According to Sabadin et al. (9), the prevalence of tinea pedis among athletes was 26%. However, the prevalence of tinea pedis in the general population in Spain (10) was 2.9% (4.2% for men and 1.7% for women). The increased prevalence of tinea pedis in men compared to that in women could be the result of more common use of occlusive footwear which favors the appearance of disease.

The first type of tinea pedis – the interdigital type, commonly referred to as “athlete’s foot” presents as scaling, maceration, fissuring or erythema of the web spaces between the toes, with the space between the fourth and fifth toes most commonly affected. Moccasin-type tinea pedis presents as generalized scaling and hyperkeratosis of the plantar surface of the foot. This form of infection is frequently associated with nail involvement. The inflammatory or vesiculobulbous type is followed by painful, pruritic vesicular eruption on the arch or side of the feet. Finally, the fourth ulcerative type of tinea pedis is characterized by rapidly spreading vesiculopustular lesions and ulcers typically in the web spaces in immunocompromised and diabetic patients (5).

Although the “two feet-one hand syndrome” is not rare, there have been only few large case series

investigating this condition. In the study of Zhan et al. (11), *Trichophyton rubrum* was the most common pathogen isolated (93.3%) followed by *Trichophyton mentagrophytes* (4.0%) and *Epidermophyton floccosum* (2.7%). The second one was identified in our patient, as we have already mentioned.

Clinical presentation of the “two feet-one hand syndrome” is usually the chronic bilateral, papulosquamous form and is characterized by minimal inflammation and a patchy or diffuse moccasin-like scaling over the soles. Our patient had atypical presentation with more pronounced lesions on the dorsal aspect of the feet, however, the typical generalized scaling of the plantar surface of the foot and diffuse dry scaling lesions of the right palm were present. Chronic tinea pedis must be differentiated from chronic eczema and psoriasis, while irritant and allergic dermatitis of the hands or palmar psoriasis can mimic tinea manus, but they are typically bilateral.

In the “two feet-one hand syndrome” the development of tinea pedis generally preceded the development of tinea manus. The study conducted on 113 patients with this disorder has shown that 80.5% patients developed tinea pedis approximately 6 years before hand infection (11). Daniel et al. (6) reported that in 91% of cases tinea pedis preceded tinea manus with an average time interval between infection at the two sites of 8.8 ± 1.3 years. Our patient developed foot infection five years before hand infection that has occurred on the dominant hand.

Tinea manus usually develops on the hand that excoriated the pruritic feet or picked the toenails with onychomycosis. Some patients recalled trauma to their hands prior to the development of a fungal infection at this site (6). Other study reported that people who developed tinea manus were more likely to have touched the infected foot, and there was a relationship between the hand used to scratch the feet and the infected hand (11).

Socks, footwear and leather shoes are risk factor for tinea pedis as they supply the wet, warm and enclosed environment favorable for dermatophyte growth (8). Conversely, the hands are in an open and relatively dry environment and are washed more frequently than feet, so pathogens on the surface are removed easily.

Early diagnoses and treatment of tinea pedis and education about prophylaxis, constant care and

regular medical assistance would minimize this problem in predisposed individuals.

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Sindrom dva stopala i jedne šake – prikaz slučaja

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SAŽETAK

“Sindrom dva stopala i jedne šake” (eng. two feet and one hand syndrome) je gljivična infekcija stopala i šake, čiji je uzročnik najčešće *Trichophyton rubrum*, a retko i *Trichophyton mentagrophytes*.

Prikazuje se bolesnik star 32 godine, koji se obratio dermatologu zbog jasno ograničenog eritemoskvamoznog osipa na dorzalnim stranama oba stopala i difuznih, suvih, skvamoznih promena na dlanu desne ruke. Kod ovog sindroma, gljivična infekcija stopala, *tinea pedis*, prethodi infekciji šake, *tinea manus*, koja se obično javlja na ruci, kojom se primarno češu pruriginozne lezije na stopalu i dodiruju inficirane nokatne ploče. Bolesnik je često koristio desnu ruku za češanje promena na stopalima.

Mikološkim pregledom promena na koži nađene su spore i micelska vlakna, a kulturom je izolovan *Trichophyton mentagrophytes*. Bolesnik je dve nedelje koristio peroralnu terapiju itrakonazolom od 200 mg dnevno i lokalno aplikovao terbinafin krem tokom četiri nedelje, nakon čega su se sve promene povukle, a nalaz kulture na mikoze bio negativan.

Rana dijagnostika i terapija oboljenja *tinea pedis*, kao i edukacija pacijenata o merama profilakse, neophodni su preduslovi za sprečavanje nastanka ovog oboljenja kod predisponiranih osoba.

Ključne reči: *tinea pedis*, *tinea manus*, sindrom dva stopala i jedne šake