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Clinical and Mycological Analysis of Twenty-One Cases of Tinea Incognita in the Aegean Region of Turkey: A Retrospective Study

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SUMMARY Tinea incognita is a dermatophyte infection with atypical clinical features modified by the improper use of corticosteroids or calcineurin inhibitors. The aim of this study was to analyze clinical and microbiological features of patients with tinea incognita. A total of 6326 patients referred to mycology laboratory between January 2008 and January 2011 for mycological examination with a diagnosis of tinea incognita were reviewed retrospectively. Twenty-one patients, 13 (61.9%) women and 8 (38.1%) men, mean age 42.2±36.8, were included in the study. Of them, lesions were localized in 15 (71.4%) patients and widespread in six (28.6%) patients. The mean duration of the disease was 9.5 (range 1-120) months. All patients had a history of treatment with steroids. Before admission, most of them had been misdiagnosed as eczema or psoriasis. Microscopic examination revealed hyphae and spores in most of the cases (n=17, 80.95%). Mycological cultures were positive in 19 (90.5%) patients. The most frequently isolated dermatophyte was *Trichophyton rubrum* (n=14, 66.7%). This case series revealed *Trichophyton rubrum* as the most frequent agent of tinea incognita. To the best of our knowledge, this is the largest case series from Turkey describing clinical features and mycological agents of tinea incognita.

KEY WORDS: tinea incognita, tinea infection, case series

INTRODUCTION

Tinea incognita is a previously misdiagnosed superficial dermatophyte infection, which mimics different dermatological diseases because of the improper use of topical or systemic steroids, as well as topical calcineurin inhibitors such as pimecrolimus and tacrolimus (1-5). Lesions usually lose their classic annular appearance. Instead of characteristic features of a dermatophytosis including peripheral activation, central clearing and prominent scaling, papules, pustules, nodules or Majocchi's granuloma may develop (6). Thus, the disease is likely to be confused with different diseases like eczema, seborrheic dermatitis, intertriginous psoriasis, pustular psoriasis and rosacea according to their localizations, causing a delay in reaching an accurate

diagnosis (1,3,7,8). On the other hand, suppression of the itch by the anti-inflammatory effects of steroids or immunomodulator agents also helps the patient neglect the disease. The aim of this study was to evaluate retrospectively the clinical and microbiological characteristics of the tinea incognita cases.

MATERIALS AND METHODS

A total of 6326 outpatients referred to the mycology laboratory of Ege University Medical Faculty, Department of Dermatology and Venereology, between January 2008 and January 2011 for mycological examination with a diagnosis of dermatophytosis were reviewed retrospectively for the diagnosis of tinea incognita. Of them, cases with a history of treatment with topical and/or systemic steroids or topical calcineurin inhibitors for different diagnoses such as eczema and psoriasis, together with determining fungal elements on direct KOH examination or by positive mycological culture of Sabouraud dextrose agar (SDA) media were included in the study. Direct 20% potassium hydroxide (KOH) microscopic examination of skin scrapings from the lesions and mycological culture were performed in each patient. Characteristic colony morphology and pigmentation on SDA together with lactophenol cotton blue (LPCB) microscopy preparation for the identification of the conidia morphology were used for dermatophyte typing.

Data on the clinical type of mycotic infection, other associated mycotic infections such as tinea pedis, onychomycosis and tinea cruris as a possible source of infection were obtained from archive documents.

RESULTS

Twenty-one patients, 13 (61.9%) women and 8 (38.1%) men, mean age 42.2±36.8 (range 12-76) years, were included in the study. Before admission, patients had been followed with the diagnosis of eczema, plaque type psoriasis, pustular psoriasis, discoid lupus erythematosus (DLE), subacute cutaneous lupus erythematosus (SCLE), parapsoriasis, contact dermatitis, neurodermatitis, vasculitis, seborrheic dermatitis and rosacea. The mean duration of the disease was 9.5 (ranged 1-120) months. Lesions were localized in 15 (71.4%) patients (Fig. 1) and generalized in six (28.6%) of them (Figs. 2-5).

Direct KOH examination for fungal elements was positive in most of the cases (n=17, 80.95%). Cultures yielded mycological agents in 19 (90.5%) patients. In the remaining two culture negative patients (9.5%), fungal hyphae on direct examinations of skin scraping confirmed the diagnosis. Cultivated mycological agents were *Trichophyton (T.) rubrum* (n=14, 66.7%), *T. tonsurans* (n=2, 9.5%), *Microsporum (M.) canis* (n=2, 9.5%) and *T. violaceum* (n=1, 4.8%). Seventeen (81%) tinea incognita patients were anthropophilic and two (9.5%) of them were zoophilic. One of the two patients with *M. canis* as a mycological factor had a history of cat feeding. The most frequent clinical type of tinea incognita regarding the site of involvement was tinea corporis (n=17, 80.95%), followed by tinea manuum (n=3, 14.3%), tinea faciei (n=3, 14.3%), tinea capitis (n=1, 4.8%) and tinea cruris (n=1, 4.8%).

Patients were not immunocompromised except for one patient who had been misdiagnosed as SCLE and had been treated with systemic steroid for a month. Eight (38.1%) patients had tinea pedis, four (19.0%) patients had onychomycosis, and one (4.8%) patient had tinea cruris in addition to tinea incognita. Thirteen (61.9%) patients with localized lesions were treated with topical terbinafine for a varying duration ranging from 4 to 6 weeks, and eight (38.1%) patients were treated with systemic terbinafine for a varying duration of 1 to 6 months. Clinical and mycological details of the cases are summarized in Table 1.

DISCUSSION

There are a number of studies on tinea incognita (2,3,7,9), thus relevant data include too many sporadic case reports (4-9). Data from our country have also been presented as case reports in the literature (8). This is the first study in Turkey that highlights the clinical and mycological features of patients with tinea incognita.

Figure 1. Localized tinea incognita cases: (a) case 18; (b) fungal hyphae on KOH examination from a lesion of case 18; (c) case 7; (d) case 14; (e) case 8; and (f) case 10.

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Table 1. Clinical and mycological features of patients

Patient	Sex (M/F)	Age (yrs)	Localization and clinical type	Duration (months)	Previous diagnoses	KOH examination, culture	Associated dermatophytosis	Treatment
1	M	68	Extremities T. manuum, T. corporis	16	Psoriasis	Hyphae +, *M. canis*	Onychomycosis and t. pedis, *M. canis*	Systemic
2	F	47	Extremities, trunk T. corporis	8	Eczema, parapsoriasis, ichthyosis	Hyphae +, Culture -	_	Systemic
3	M	60	Upper and lower extremities T. corporis	5	Vasculitis	Hyphae +, *T. rubrum*	Onychomycosis, and t. pedis *T. rubrum*	Topical
4	F	35	Upper extremities, face, neck T. corporis, T. faciei	12	Contact dermatitis, rosacea	Hyphae -, *T. tonsurans*	_	Systemic
5	F	28	Lower extremities T. corporis	60	Psoriasis	Hyphae +, *T. rubrum*	T. pedis, *T. rubrum*	Topical
6	M	12	Arms, chest and back T. corporis	3	Eczema, pustular psoriasis	Hyphae -, *T. tonsurans*	_	Topical
7	M	44	Hand T. manuum	3	Contact dermatitis	Hyphae +, Culture -	_	Systemic
8	M	42	Upper extremity T. corporis	4	Eczema	*Hyphae +, T. rubrum*	_	Topical
9	F	35	Upper extremity T. corporis	4	Psoriasis	Hyphae +, *T. rubrum*	_	Topical
10	F	76	Lower extremities T. corporis	2	Vasculitis	Hyphae -, *T. rubrum*	T. pedis, *T. rubrum*	Systemic
11	F	33	Scalp, face, extremities T. capitis, T. faciei, T. corporis	120	SCLE, DLE Seborrheic dermatitis	Hyphae -, *T. violeceum*	Onychomycosis, T. pedis, *T. violeceum*	Systemic
12	F	33	Abdomen T. corporis	1	Contact Dermatitis	Hyphae +, *T. rubrum*	_	Topical
13	M	42	Face T. faciei	3	DLE	Hyphae +, *T. rubrum*	_	Topical
14	F	45	Lower extremities T. corporis	4	Eczema	Hyphae +, *T. rubrum*	_	Topical
15	F	50	Trunk, extremities T. corporis	1	Eczema	Hyphae + , *M. canis*	_	Systemic
16	F	64	Lower extremity T. corporis	2	Eczema	Hyphae +, *T. rubrum*	Onychomycosis and T. pedis, *T. rubrum*	Systemic
17	F	34	Hand T. manuum	2	Contact dermatitis	Hyphae +, *T. rubrum*	_	Topical
18	M	33	Lower extremity T. corporis	4	Neurodermatitis	Hyphae +, *T. rubrum*	T. pedis, *T. rubrum*	Topical
19	M	20	Lower extremity T. corporis	3	Eczema, psoriasis	Hyphae + , *T. rubrum*	T. pedis, *T. rubrum*	Topical
20	F	69	Gluteus T. cruris	2	Eczema	Hyphae +, *T. rubrum*	T. cruris, *T. rubrum*	Topical
21	F	16	Arm T. corporis	3	Contact dermatitis	Hyphae +, *T. rubrum*	_	Topical

SCLE = subacute cutaneous lupus erythematosus; DLE = discoid lupus erythematosus

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Figure 2. Erythematous, mildly squamous, partly annular plaques and papular lesions on the scalp, forehead, and extremities of a woman with widespread tinea incognita, previously misdiagnosed as subacute cutaneous lupus erythematosus; onychomycosis on the fingernails and toenails (case 11).

Tinea incognita usually develops because of incorrect treatments given by doctors when a dermatophytosis is misdiagnosed or overlooked. The clinical features of the disease are modified or sometimes aggravated by the application of topical or systemic steroids as well as calcineurin inhibitors (2-5). In our case series, all of the patients had a history of topical or systemic steroid use. None of them had used topical calcineurin inhibitors. Calcineurin inhibitors are more expensive than steroids and paid by the health insurance by a specialist drug report in Turkey. However, steroids are easily available without prescription in Turkey. The easy availability of steroids, as well as prescription of steroids without considering fungal infections in the differential diagnosis usually by physicians of primary health care or dermatologists may be the factors that facilitate the inappropriate steroid usage.

The most frequently isolated and reported agent in adult patients with tinea incognito is *T. rubrum*. Romano *et al*. (2) found *T. rubrum* (50.5%) as the most common agent of tinea incognita in a series of 200 consecutive patients, followed by *T. mentagrophytes, Epidermophyton floccosum, M. canis, M. gypseum, T. violaceum,* and *T. erinacei*, in descending frequency. In this series, culture positivity has been reported to be approximately 100%. However, a recent series of 56 cases with tinea incognita from Iran revealed *T. verrucosum* as the most frequent agent in 33.9% of cases. The detection of a zoophilic agent in most of the cases was attributed to living in rural areas (7). In children, unlike other studies, the most common factor was *T. mentagrophytes* with a rate of 44.4%. Mycological culture was positive in 85.2% of these cases (3). In most of these case series, the frequency distribution of mycological agents correlated with the isolated agents from the general population (2,7,9). In our series, *T. rubrum* was the most common agent of tinea incognita, accounting for 66.7% of analyzed cases. Cultures were positive in 90.5% of cases. Detection of *T. rubrum* in the majority of cases was attributed to

Figure 3. Erythematous and squamous plaques on both arms, trunk and legs in a woman previously diagnosed as eczema, ichthyosis and parapsoriasis by different physicians (case 2).

its frequency as being the most common causative agent of dermatophytosis in our country (10,11) and throughout the world (2). Only two of our patients were in the childhood group, and the responsible agents in these cases were *T. tonsurans* (case 6) and *T. rubrum* (case 21). *T. tonsurans* was isolated from the lesions previously misdiagnosed as pustular psoriasis (Fig. 5) and *T. rubrum* was isolated from the lesions mimicking contact dermatitis.

Figure 4. Sharply demarcated purpuric and erythematous-scaling plaques on the hands, wrists, legs and feet, together with onychomycosis of the toenails and fingernails (case 3).

In our study, the most frequent clinical type of tinea incognita regarding the site of involvement was tinea corporis, followed by tinea manuum, tinea faciei, tinea capitis and tinea cruris. In adults and children, the trunk and extremities have also been reported as the most commonly involved sites, as in our study (2,3,7). Scalp involvement has been rarely reported in patients with tinea incognita (1-6). In our case series, one patient presented with scalp involvement together with face, trunk, extremities and hands (case

Figure 5. Widespread erythematous-scaling plaques on the arms, and papulopustular lesions on the trunk mimicking pustular psoriasis in a 12-year-old boy with tinea incognita (case 6).

11, Fig. 2). This patient had been followed as DLE by a different outpatient clinic because of the erythematous scaling plaque on the scalp. After extension of lesions to the limbs and trunk, DLE had been thought to progress SCLE, and systemic steroid and hydroxychloroquine had been initiated. On admission, the associated tinea pedis, onychomycosis of the toenails and fingernails were the features that pointed to a generalized dermatophytosis. Finally, laboratory findings confirmed a dermatophytosis due to *T. violaceum* after a 10-year delay in diagnosis.

The association of a fungal infection such as onychomycosis of the fingernails or toenails may suggest the role of autoinoculation in the development of tinea incognita (12). Onychomycosis, tinea pedis and tinea cruris accompanying tinea incognita were detected in 42.9% (n=9) of our cases. Tinea incognita on lower extremities was thought to be associated with tinea pedis and onychomycosis because of the similarity of the isolated agents. Therefore, the possible sources of a dermatophytosis such as fingernails, toenails, interdigital spaces, or inguinal flexures must be examined carefully.

Clinical manifestations of tinea incognita are mostly misdiagnosed as eczema (2,3,7) and impetigo (2), besides them, they may resemble lupus erythematosus (9), rosacea (7,13), plaque type or pustular psoriasis (4,8), vasculitis (2), seborrheic dermatitis (2,7) granulomatous periorificial dermatitis (14), erythema migrans (15), and lichen planus (2,3). Our cases had been mostly misdiagnosed as eczema and psoriasis before admission to our department. In addition, they had been followed with the diagnoses such as SCLE, DLE, parapsoriasis, contact dermatitis, vasculitis, seborrheic dermatitis, and rosacea. Less frequently observed purpuric lesions of tinea incognita were observed on the legs of two cases in our series.

CONCLUSION

In conclusion, differential diagnosis of tinea incognita may be difficult because of its atypical presentations. In these instances, only mycological examination can provide the exact diagnosis. Finally, dermatophyte infections should be kept in mind in the differential diagnosis of a variety of dermatoses, mainly erythematous squamous diseases, particularly before prescribing topical and systemic steroids.

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