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Tinea Unguium, *Tinea Cruris* and *Tinea Corporis* Caused by *Trichophyton rubrum* in HIV Patient: A Case Report

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ABSTRACT

Dermatophytes are a type of fungi that infect keratinized tissues. These infections are very common and categorized by their anatomical location and typically caused by one of three main species: Microsporum, Epidermophyton, or Trichophyton.

Trichophyton rubrum is an anthroophilic, cosmopolitan, fungal complex that cause numerous forms of dermatophytosis. The disease in immunocompromised hosts is more varied and often more severe than in immunocompetent hosts. We report on an atypical clinical presentation with multiples locations on skin (neck, face, inguinal), and nails.

The clinical presentations, though very typical of tinea infection, samples were collected and examined by direct microscopy and culture on Sabouraud's medium, revealing the presence of *Trichophyton rubrum*.

After few weeks of oral terbinafine treatment, the cutaneous lesions disappeared. There have been few reports of generalized dermatophytosis infection in HIV patients. Thus, it is important to be aware of their transmissibility and complications in HIV patients.

KEYWORDS

Tinea corporis; Tinea cruris; Tinea unguium; HIV; Trichophyton rubrum

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1. INTRODUCTION

Dermatophytes are Fungi which infect keratinized tissues, that is, skin epidermis, hair and nails and rarely deep tissues [1-3]. Dermatophytes are keratinophiles and keratinolytic fungi, Trichophyton rubrum remains cosmopolitan and a wide spread anthrophilc dermatophyte among Algerian children and adults [4-6]. Infections caused by dermatophytes are termed dermatophytoses, ringworm or tinea. They are classified in three genera Epidermophyton, Microsporum and Trichophyton [6].

Trichophyton rubrum spreads by sharing towels or clothing. It can propagate within families from one generation to another by carriers with low-grade infection. It is known to be one of the most prominent anthropophile species of dermatophyte, that cause numerous forms of diseases [7], it primarily causes Tinea unguium and less commonly *tinea corporis* and *tinea cruris*. *Tinea corporis* is the infection of the glabrous skin.

Dermatophytosis in immunocompromised hosts is more varied and often more severe than in immunocompetent hosts [8].

2. CASE REPORT

We report on a 37-year-old HIV male patient, native of district Sidi-Bel-Abbes, and living in a farm, presented to the outpatient Department of Dermatology at our Institute, with chief complaints of a dry reddish, scaly lesion on his neck for the past 15 days (Figure 1). The lesion progressively increased to the present size of 4 cm × 4 cm and was accompanied with severe itching. On examination, the lesion was a circumscribed, scaly, erythematous annular plaque and had an inflammatory advancing margin. No central clearing was present.

Figure 1: Dry reddish scaly skin lesion.

The patient gave a history of similar lesions on his face for the past 2 month, which came off and on and were treated with over the counter topical medications (Figure 2).

Figue 2: Skin lesion of the face.

Moreover, inguinal region showed similar lesions, the patient presented scaly lesions with an active border and central clearing, the patient has also reported severe continuous itching.

Furthermore, another chief complaints were onyxis of toenails and hand fingernails, involving only the left hand. On admission nails were thick, brittle and brown (figure 3).

Figure 3: Onyxis of fingernails.

Examination of the scalp did not show any signs of fungal infection.

On further questioning, it was found that no other family similar cases were recorded in the past.

Skin and nail scrapings from annular lesion and affected nails were collected on separated sterile Petri dishes and were inoculated on the surface of SGA (cyclohexemide and chloramphenicol) then incubated at 27°C.

A direct blue chloral-lactophenol mount revealed thin, hyaline, septate hyphae on skin and nails scraping, confirming the diagnosis of dermatophyte.

After 12 days of incubation, isolates were white and cottony on the surface (Figure 4), the colony underside appeared more yellowish, on microscopy were seen teardrop or peg-shaped microconidia laterally on fertile hyphae rare macroconidies where present, they were smooth-walled and narrowly club-shaped, On further incubation, the growth became heaped up (Figure 5).

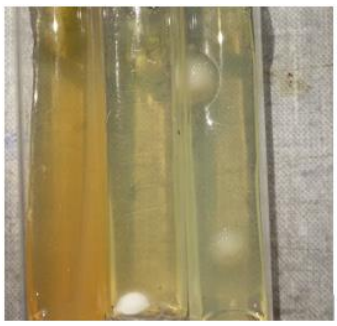

Figure 4: *Trichophyton rubrum* colonies on Sabouraud medium.

The patient tested HIV positive in 2012, and was under ART. At admission, CRP value was 38mg/L. Therapy was started with oral terbinafine as it is one of the most potent antifungal agents for dermatophytoses. An age appropriate daily dose of 125 mg was prescribed to the patient for a period to 4 weeks. The therapy was supplemented with twice daily topical application of Econazole ointment to achieve a complete microbiological cure. After few weeks of treatment the cutaneous lesions disappeared.

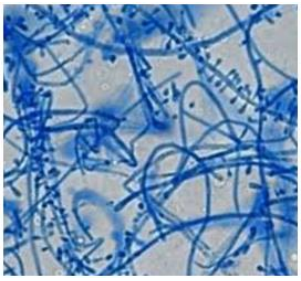

Figure 5: Microscopy of *Trichophyton rubrum* (40x).

It was advised to get all the family members examined to rule out the presence of similar infection or asymptomatic carrier state, and recommended to avoid any contact with pets.

3. DISCUSSION

Dermatophytes are a group of pathogenic fungi that cause mostly superficial diseases, further it is more difficult to diagnose dermatophytosis in immunocompromised patients, as clinical presentation is often atypical [9], in the present case multiples localization were recorded.

Dermatophytosis was already seen in patients newly diagnosed with HIV, in our town [6]. Heat and high humidity in our area, were suitable ground for the development of the disease [10].

Early recognition and treatment with systemic therapy are important in human immunodeficiency virus (HIV)-positive patients in order to prevent severe infection [8].

Cross infection between family members occurs in cases of infection with *T. rubrum* [11].

Transmission occurs via infected towels, linens, clothing, factors are high humidity, heat, perspiration, diabetes mellitus, obesity, friction from clothes, our patient lives in a large family, and used to walk barefoot on damp floor in the farm.

Reaction to a dermatophyte infection may range from mild to severe as a consequence of the host's reactions to the metabolic products of the fungus, the virulence of the infecting strain or species, the anatomic location of the infection, and local environmental factors [11], From anamnesis of the reported case is emphasize continuous itching described by terrible which correspond to the literature.

In rare cases dermatophyte infection may be invasive, and more aggressive especially in immunocompromised patients [3,12], generalized invasive infection with dermatophyte has been reported [1,2,13].

Extensive presentation of a cutaneous infection proved to be an early sign of HIV infection. This illustrates how important it is for clinicians to maintain a high index of suspicion when evaluating atypical presentations of common fungal infections, as any skin changes always constitute potential markers of internal disease, it seems that the source of infection may have been the onychomycosis, which creates a huge reservoir of fungal propagules that may be at the origin of generalized mycosis in immunocompromised patients [14].

Tinea corporis in immunocompromised patient have been already reported in our hospital [6]. The differential diagnosis of dermatophytosis are: Multiform erythema, annular granuloma, nummular dermatitis, rosea pityriasis, versicolor pityriasis, psoriasis, Secondary syphilis, candidal intertrigo but we were also based on clinical appearance, anamnesis complementing it with microscopic examination and fungal culture [10].

Tinea cruris is three times more common in men than in women because of the scrotal anatomy [15,16]. Also the humidity of the genital area itself, washing with water after each defecation and urination (Islamic belief and tradition) can also explain tinea cruris in our patient [10].

Though it is usually not life-threatning, infections are long lasting, recurring, and difficult to cure, the fungal pathogen's ability to produce and secrete proteolytic enzymes is a major virulence factor [17], that's why chronic forms are much common in immunocompromised patients.

Certain species of dermatophytes are worldwide in distribution whereas others are geographically restricted. Examples of these cosmopolitan species are *Epidermophyton floccosum*, *Microsporum audouinii*, *T. rubrum*, *T. tonsurans* and *T. violaceum* etc. [18], These cosmopolitan species are able to establish themselves in new geographical areas when carriers move from original endemic areas [19], so biological test are important to prove the origin of the infection especially in immunocompromised patient.

Bindu and Pavithran studied 150 patients with dermatophytosis from India. Most common clinical type in this study was tinea corporis. *T. rubrum* was the most common isolate followed by *T. mentagrophytes*, *T. tonsurans* and *E. floccosum* [20].

Due to the pleomorphism many strains and varieties of *T.rubrum* have been described, colonies produce typically a white to cream color pigmentation on its surface and have a reverse side that ranges from yellow-brown to wine-red, colony structures can appear flat to slightly raised [21], underside is usually red, although some isolates appear more yellowish and other more brownish [22]. Production of Macroconidia are scanty to moderate, have thin-smooth walled septa and are bacillus shaped. On the contrary, microconidia are abundant, small and pear-shaped, although most isolates lack macroconidia.

Although warnings have been made of possible drug interactions between certain antifungals and antiretroviral medications, only one combination has shown a clinically significant interaction. A case treated

aggressively with oral terbinafine at the onset was cured [8].There are no clinically significant reasons to avoid any oral antifungal for dermatophytosis in the HIV-positive patient [8]. Terbinafine has been shown to be effective in children with various dermatophyte infections of the skin, with a cure rate of more than 90% [23].

4. CONCLUSION

We consider the report on the mentioned case will be beneficial for family doctors, to complement their knowledge on clinical manifestation, diagnosis and differential diagnosis of dermatophytosis in immunocompromised patients.

Trichophyton rubrum, though mostly known for superficial mycosis, physician must be aware of the multiples and possible locations. Thus, immunocompromised patients require strict follow up, and oral treatment.

5. ACKNOWLEDGEMENT

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6. CONFLICT OF INTEREST

No conflict of interests is declared.

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