CASE REPORT

Trichophyton ajelloi: A rare case of Tinea cruris

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Abstract

Diseases caused by fungi can be divided into three broad groups: superficial mycosis, subcutaneous mycosis, and systemic mycosis. The superficial infection caused by the dermatophytes is called dermatophytosis and the term dermatomycosis refers to the infection from any of the fungi. Superficial fungal infections are some of the most common dermatologic diseases seen worldwide. Among superficial mycosis, dermatophytosis is the most common contagious infection. Dermatophytosis is a term used to describe mycotic infections caused by a group of fungi that usually remain localized to the superficial layers of the skin, hair, or nails. These fungi are classified in the anamorphic genera *Epidermophyton*, *Microsporum*, and *Trichophyton*. While *T. rubrum* is the most common agent. As *T. ajelloi* is an unusual isolate of superficial dermatophytosis, so the case is presented. The prevalence of an individual species in a given geographic location, and hence the disease it causes, is dependent on a number of factors including population migration patterns, lifestyle practices, primary host range, secondary host susceptibility, standard of living, and climatic preference. The present case was 47 year old male, laborer by occupation came in the skin outpatient department with history of itchy, hyperpigmented scaly lesions on buttocks and groin since 2 months. He had history of antifungal treatment (Clotrimazole 1%) candid cream but never used topical steroids. The diagnosis was done by studying the macroscopic and microscopic characteristics of their culture. Texture, rate of growth, topography, and pigmentation of the front and the reverse side of the cultures were employed to characterize fungi macroscopically. Lactophenol cotton blue mount of each fungal isolate was used to characterize fungal isolates microscopically. Many mycological laboratory texts and manuals were used as reference materials in process of identification.

Keywords: Dermatophytes, Skin infection, Keratinophilic fungi

Introduction

Superficial mycosis refers to fungal infections of skin and its appendages hair and nail. It has been estimated that superficial mycoses is seen in 20-25% of the world's population [1]. Dermato-mycoses is by far the most common fungal disease in human beings. Even though world-wide in distribution, they are mostly prevalent in tropical and sub-tropical countries like India. Hot and humid climate is supposed to aggravate the infection [2]. The principal causative agents are dermatophytes, and their geographic distribution is variable. This is reflected in the differing patterns of dermatophytosis seen in different parts of the world. The epidemiology of dermatophyte infection has changed as a result of migration, lifestyle, drug therapy, and socioeconomic conditions [3]. All the dermatophytes are classified into three ecological groups namely geophilic (soil), zoophilic (animals) and anthropophilic (human) They may infect human and animals

during direct contact with the contaminated soil. The examples include *Trichophyton ajelloi* and *Trichophyton terrestre* [4].

The genus Trichophyton is characterised morphologically by the development of both smooth-walled macro- and microconidia. Macroconidia are mostly borne laterally directly on the hyphae or on short pedicles, and are thin- or thick-walled, clavate to fusiform, and range from 4-8 × 8-50 µm in size. Microconidia are spherical, pyriform to clavate or of irregular shape and range from 2-3 × 2-4 µm in size. The various antifungal agents now available for clinical use against dermatophytes are terbinafine, itraconazole, fluconazole, ketoconazole and voriconazole. However, their activity against different species of dermatophyte has not yet been fully investigated [5].

Case Report

A 47 years old male presented to the Outpatient Department (OPD) of Dermatology, Dr. D. Y. Patil Medical and Hospital Research, Pune. His chief complaints were itchy, hyperpigmented asymmetrical scaly lesions on buttocks and groin (Figs. 1, 2) since past two months. History of use of antifungal treatment of candid cream was obtained. He had no history of diabetes mellitus or use of steroids. On examination his lesions were hyperpigmented mainly present on the groin and buttocks varying from 2-5 cm in diameter. Skin scrapings from the lesions were taken and collected on a sterile piece of paper after cleaning the site thoroughly with 70% alcohol. The collected sample was sent to the Department of Microbiology for examination. On receipt, part of the sample was placed in a drop of freshly prepared aqueous solution of 10% of Potassium Hydroxide (KOH) in a sterile glass tube. KOH preparations were examined first under low and high power. Hyaline septate hyphae of width 2-3µm with acute angled branching was seen. The rest of the specimen was processed for fungal culture. The culture was done on Sabouraud cycloheximide agar, Sabouraud cycloheximide chloramphenicol agar and dermatophyte test slants in a set of two, one incubated at room temperature and another in the incubator at 37^0C. After 14 days of incubation the growth was examined. The colonies were flat, powdery, and cream to tan in color, with a blackish-purple submerged fringe on the reverse (Fig. 3). It showed color change on Dermatophyte Test Medium (DTM) from yellow to red. Lactophenol Cotton Blue (LPCB) of isolate was done and examined under low and high-power microscopy. It revealed numerous macroconidia which were smooth, long (5-10 to 20-65 µm) thick-walled, cylindrical and contained 5-12 cells (Fig. 4). They were borne singly or in clusters and varied in shape. Species identification was done by referencing various texts and manuals for the morphology. The diagnosis was made as Tinea cruris caused by *Trichophyton ajelloi*. Antifungal susceptibility test was done at Sri Ramchandra Institute of Higher Education and Research, Porur, Chennai and the result was interpreted as per CLSI guidelines M38-A2. Based on the test report, the patient was prescribed itraconazole 200 mg three times a day for 1 month. In addition, terbinafine ointment was also given. He recovered after the treatment and was asked for follow up in case the lesions reappear.

Figure 1: Skin lesions of *T. cruris*

Figure 2: Skin lesions of *T. cruris*

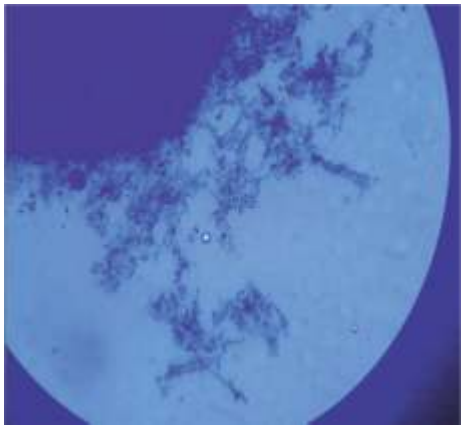

Figure 3: Macroconidia of *T. ajelloi*

Figure 4: Growth on SDA

Discussion

The increasing incidence and prevalence of fungal infection in developing countries is attributed to immunocompromised state such as use of cortico-steroids, immunosuppressive agents, anticancer drugs, HIV-positivity, etc. [5]. In India, superficial fungal infections of the skin, nail and hair account for 8-10% of all Dermatology outpatient attendance which increases during summer and monsoon. Various studies conducted in different parts of the subcontinent has revealed a prevalence rate of about 22% to 85% of dermatophytosis of all the mycological infections [2].

Fungal infections of the skin are mainly caused by dermatophytes. Taenia cruris is a dermatophytic infection of the skin pertaining to groin area. It is mainly common who are overweight with a lot of sweating. *T. rubrum* and *E. floccosum* are common dermatophyte species responsible for this clinical entity. In India, superficial fungal infections of the skin, nail and hair account for 8–10% of all Dermatology outpatient attendance which increases during summer and monsoon. *Trichophyton* species was the commonest aetiological agent in dermatomycosis, among fungal

infection of the skin in tropical countries like India. Tinea corporis (63.4%) was more common in female population and Tinea cruris among males (38.3%) according to Gupta *et al.* (1993) reported Tinea cruris as the most prevalent clinical type [6]. *Trichophyton rubrum* is the commonest pathogenic species isolated 20 (25%) [7], followed by *T. mentagrophytes* 15 (18.7%), *T. schoenleinii* 5 (6.25%), *T. tonsurans* 4 (5%), *T. violaceum* 3 (3.75%), *T. verrucosum* 2 (2.5%) and *T. ajelloi* 1 (1.25%), *Epidermophyton floccosum* 3 (3.75). *Microsporum gypseum* 2 (2.5%) are the other dermatophytes [2].

Conclusion

Although an unusual cause, *T. ajelloi* can cause tinea cruris, especially in tropical and subtropical countries. As the diagnosis can get confused with other fungi the diagnosis of proper isolate is very necessary as the antifungal drug sensitivity may differ as per fungal isolate. In the presented case, the patient is recovered by taking treatment as per antifungal sensitivity pattern of *T. ajelloi*. Further long-term epidemiological studies can be done to know prevalent dermatophytes in the given area. The clinical varieties and prevalence appear to depend mainly on environmental and socio-economic factors, which result in overcrowding, poor hygiene and malnutrition, immigration and emigration of labour together with widespread use of broad-spectrum antibiotics.

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