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Case Report

A case report of drug resistant Tinea corporis

Md. Saiful Kabir[1], Wazeda Begum[2], Md. Maruf-Ur-Rahman[3], Nehal Warish[4]

[1]Prof (CC) & Head, Dept. of Dermatology & Venereology, Dhaka National Medical College, [2]Registrar, Dept. of Dermatology & Venereology, Dhaka National Medical College, [3]Associate Professor (CC), Dept. of Biochemistry, Dhaka National Medical College, [4]Registrar, Dept. of Dermatology & Venereology, Dhaka National Medical College.

Abstract

Superfecial fungal infections of the skin are a major health problem and associated with morbidity due to chronic itching and inflammation of skin. Tinea corporis is known as ringworm, a superficial fungal infection (dermatophytosis) of the arms and legs, especially on glabrous skin. Treatment includes systemic and topical antifungals with variable duration depending upon the site of infection and the antifungal chosen. Choosing the right treatment is not always simple because of the possibility of drug interactions and drug resistance. Recently Clinical failure and relapses have been observed frequently in patients treated with antifungal drugs. Now a days, Antifungal drug resistance is becoming an emerging problem in management of fungal infections. In this article we report a case of drug resistant Tenia Corporis, its management & treatment outcome.

Key words: Ringworm, Dermatophytosis, Tinea corporis, Antifungal drug, Drug resistance.

Introduction

Tinea corporis is a superficial dermatophyte infection characterized by either inflammatory or noninflammatory lesions on the glabrous skin, i.e skin regions except the scalp, groin, palms, and soles. It is known as Ringworm, Tinea circinata or Tinea glabrosa.[1] Tinea corporis is a common infection more often seen in typically hot, humid climates. T rubrum is the most common infectious agent in the world and is the source of 47% of tinea corporis cases. Trichophyton tonsurans is the most common dermatophyte to cause tinea capitis, and people with an anthropophilic tinea capitis infection are more likely to develop associated tinea corporis. Therefore, the prevalence of tinea corporis caused by T tonsurans is increasing. Microsporum canis is the third most common causative organism and associated with 14% of tinea corporis infections.[2]

Tinea corporis is characterized by one or more circular, sharply circumscribed, slightly erythematous, dry, scaly, usually hypopigmented patches. An advancing scaling edge is usually prominent. Progressive central clearing produces annular outlines that give them the name "ringworm." Lesions may widen to form rings many centimeters in diameter. In some cases concentric circles or polycyclic lesions form, making intricate patterns. Widespread tinea corporis may be the presenting sign of AIDS, or may be related to the use of a topical corticosteroid or calcineurin inhibitor.[3]

Symptoms, contact history, recent travel, and international residence are relevant clues in the history of a person with tinea corporis. Infected patients may have variable symptoms. Patients can be asymptomatic. A pruritic, annular plaque is characteristic of a symptomatic infection. Patients occasionally can experience a burning sensation. HIV-positive or immunocompromised patients may develop severe pruritus or pain. Tinea corporis may result from contact with infected humans, animals, or inanimate objects. The history may include occupational (eg, farm worker, zookeeper, laboratory worker, veterinarian), environmental (eg, gardening, contact with animals), or recreational (eg, contact sports, contact with sports facilities) exposure.[4]

A few clinical variants are described, with distinct presentations. Majocchi granuloma, typically caused by T rubrum, is a fungal infection in hair, hair follicles, and, often, the surrounding dermis, with an associated granulomatous reaction. Majocchi granuloma often occurs in females who shave their legs. Tinea corporis gladiatorum is a dermatophyte infection spread by skin-to-skin contact between wrestlers. Tinea imbricata is a form of tinea corporis found mainly in Southeast Asia, the South Pacific, Central America, and South America. It is caused by Trichophyton concentricum. Tinea incognito is tinea corporis with an altered, nonclassic presentation due to corticosteroid treatment.[5]

A potassium hydroxide (KOH) examination of skin scrapings may be diagnostic in tinea corporis. A KOH test is a microscopic preparation used to visualize

fungal elements removed from the skin's stratum corneum. The sample should be taken from the active border of a lesion because this region provides the highest yield of fungal elements. The KOH helps dissolve the keratin and leaves fungal elements intact, revealing numerous septate, branching hyphae amongst epithelial cells.[6]

A fungal culture is often used as an adjunct to KOH for diagnosis. Fungal culture is more specific than KOH for detecting a dermatophyte infection; therefore, if the clinical suspicion is high yet the KOH result is negative, a fungal culture should be obtained.[6]

Following culture inoculation, potential fungal growth is monitored for 2 weeks. Positive culture results vary depending on the medium used. If the above clinical evaluations are inconclusive, the molecular method of polymerase chain reaction for fungal DNA identification can be applied.[7] A skin biopsy with a hematoxylin and eosin staining of tinea corporis demonstrates spongiosis, parakeratosis, and a superficial inflammatory infiltrate. Neutrophils may be seen in the stratum corneum, which is a significant diagnostic clue. On occasion, septate branching hyphae are seen in the stratum corneum with hematoxylin and eosin stain, but special fungal stains (eg, periodic acid-Schiff, Gomori methenamine silver) may be required.[6] Other diseases that may closely resemble tinea corporis are pityriasis rosea, impetigo, nummular dermatitis, secondary and tertiary syphilids, seborrheic dermatitis, and psoriasis. These are distinguished by KOH examination and culture.[3]

Case report

Mrs. Nasima Sultana 38 years old hailing from Savar, Dhaka with the complaints of pruritus & multiple erythematous patches over different parts of the body for 5 months. With these complaints she attended at OPD of Dermatology & Venereology, Dhaka National Medical College on 8 July 2017. According to the statement of the patient, she was a housewife. She always worked in hot kitchen. Suddenly she develoved 2-3 circular sharply circumscribed, scaly usually hypopigmented patches with central clearing. She took Cap. Fluconazole 150 mg weekly for 2 months. But she noticed that the lesion gradually increase in size and number around 10-15 lesions are developed over trunk. Then she consulted with a local doctor & took Tab. Terbinafine 250mg for 1 month & verious ointment but name could not be mentioned. After taking Tab.Terbinafine she noticed that the lesions partially resolved. But after discontinuining the drug, lesions again developed all over the body. Again she took Tab.Terbinafine & antihistamine for several weeks. But at this time she noticed that the lesions were not improving rather increased in size & number. With these complaints she was attended in OPD of Dermatology & Venereology, Dhaka National Medical College. On examination, we found wide spread circular, sharply circumscribed, slightly erythematous, dry scaly usually hypopigmented patches over chest, back & abdomen. An advancing scaly edge is usually prominent & progressive. Continual clearing produces annular outline. In same areas lesions were polycystic. No abnormalities were detected in scalp, hair, nail, palm, soles & mucous membrane. Some laboratory investigations were done like skin scraping for fungus & KOH microscopy. Other baseline investigations such as CBC, Urinary for R/M/E, RBS, SGPT, Serum Creatinine & Lipid profile were done to find out any associated diseases or any immunesuppression. Results of baseline investigations were within normal limit. VDRL test was also done & Secondary Syphilis was ruled out. Specific investigation KOH microscopy revealed septate & branching hyphea amongst epithelial cells. From above mentioned history, clinical examinations & laboratory investigations that patient was diagnosed as a case of drug resistant tenia corporis. And she was advised Tab. Griseofulvin 500mg daily for 2 months, Tab. Hydroxychloroquine 200mg (approx. 6.5 mg/kg body weight) daily for 2 months. Ketoconazole soap for washing of the affected areas. After taking these drugs, dramatic response was found. Previous lesions were subsided & gradual decrease of pruritus but post inflammmatory hyperpigmentation was left.

Before treatment

Fig.01 Tinea corporis

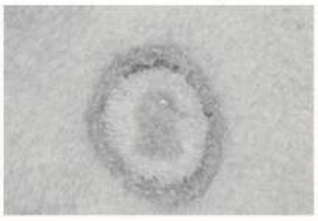

Fig.02 Tinea corporis

After treatment

Fig.01 Tinea corporis

Fig.02 Tinea corporis

Discussion

Tinea corporis is a superficial fungal infection of the arms and legs, especially on glabrous skin. Treatment includes systemic and topical antifungals with variable duration depending upon the site of infection and the antifungal chosen. Topical agents provide safe, cost-effective therapy for limited superficial fungal infections. Available agents include clotrimazole, naftifine, miconazole, ciclopirox, econazole, oxiconazole, ketoconazole, sulconazole, tolnaftate, butenafine, and terbinafine. Clotrimazole, miconazole, tolnaftate and terbinafine.[8]

Systemic therapy may be indicated for tinea corporis that includes extensive skin infection, immunosuppression, resistance to topical antifungal therapy, and comorbidities of tinea capitis or tinea unguium or when the infection involves hair follicles, such as Majocchi granuloma. The preferred treatment for tinea imbricata is griseofulvin or terbinafine, although some resistance has developed to oral griseofulvin.[9] The mode of action of griseofulvin is not completely clear, but it has been speculated that griseofulvin inhibits microtubule binding within the mitotic spindle in metaphase, causing arrest of fungal cell mitosis, weakening the cell structure .[10] A dose of 10 mg/kg/d is effective. In addition, griseofulvin induces the cytochrome P-450 enzyme system and can increase the metabolism of CYP-450–dependent drugs. It is the systemic drug of choice for tinea corporis infections in children.[11] Oral terbinafine may be used at a dosage of 250 mg/d for 2 weeks; the potential exists for cytochrome P-450, specifically CYP- 2D6, drug interactions with this agent.[12] Systemic azoles [eg, fluconazole (50-100 mg/d or 150 mg once weekly; itraconazole (100 mg/d); ketoconazole (3-4 mg/ kg/d)] function similar to the topical agents, causing cell membrane destruction.[13] Voriconazole and Posaconazole are two broad spectrum triazole antifungal agents that were recently approved. Ravuconazole[14] is a new member of the azole family and Pramiconazole is another new member of triazole class in the stages of development for the treatment of superficial infections caused by dermatophytes, yeasts and many other fungi.[15]

Unfortunately antifungal drug resistance is clearly becoming a common problem in patients with fungal infections and is inevitable due to wide availability and inappropite use of these agents. To date, this drug resistance exists to all of currently available classes of antifungal drugs. We have come across a case of drug resistant Tinea Corporis in OPD of Dermatology & Venereology, Dhaka National Medical College. We advised Tab. Griseofulvin 500mg daily for 2 months, Tab. Hydroxychloroquine 200mg (approx. 6.5 mg/kg body weight) daily for 2 months. Ketoconazole soap for washing of the affected areas. After 2 months of the treatment, dramatic response was found. Previous lesions were subsided & gradual decrease of pruritus & patient was almost cured. In this regard, Fungicidal activiy of Griseofulvin & anti inflammatory effect of Hydroxychloroquine probably exert synergistic effect to overcome the drug resistance.

Conclusion:

Tinea corporis is moderately contagious and can affect both humans and pets. The majority of people who have acquired tinea know how uncomfortable the infection can be. If a person acquires it, the proper measures must be taken to prevent it from spreading. Young children in particular should be educated about the infection and preventive measures like avoidance of skin to skin contact with infected persons and animals, avoid sharing of towels, clothing or combs with others. If pets are kept in the household or premises, they should get the animal checked for tinea. Drug resistant tinea corporis has become an important problem leading to significant negative social, psychological, and occupational health effects and quality of life. Most of the cases of fungal infections are drug resistant especially tinea corporis. Early recognition and treatment is essential to reduce morbidity and possibility of transmission. There are some treatment strategies for drug resistant tinea corporis. Combination

of Grisefulvin & Hyroxychloroquine is very much effective treatment for drug resistant tinea corporis. Hope that use of combinations of other antifungal drugs or use of adjunctive immunostimulatory therapy and other modalities of treatment will clearly be important for future treatment strategies and in preventing development of drug resistant fungal infections especially tinea corporis.

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