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Clinically Cure with Oral Fluconazole of a Wide Spread Tinea Corporis in Immunocompromised Patient

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Abstract:- Tinea Corporis is a commonly superficial fungal infection that mainly affects the skin either immunocompetent or immunocompromised host. Widespread Tinea corporis has been rarely reported. We report an extensive superficial fungal infection with a successful clinical cure with oral Fluconazole. A 38-year-old male presented generalized acuate and annular elevated erythematous scaly border with central clearing distribute on the trunk, both hand and leg. The blood test was confirmed positive for human immunodeficiency virus. KOH preparation was requested which was shown a positive result. The diagnosis was widespread tinea corporis. He was misdiagnosed and received inappropriate treatment with various topical steroid and systemic antihistamine and steroid for several months without any improvement. We emphasized the necessary mycological intervention that enables fast and provides the correct diagnosis and thus medical care. Furthermore, in extensive skin lesions immunocompromised comorbidity should be requested. Mycology detection such as fungal culture and PCR were important tools diagnoses to detect agent-causal, however, it was costly and required a period of time. KOH preparation is one of the in-office methods effective and fast in assisting in an appropriate diagnosis.

Keywords:- *Tinea Corporis, Widespread, KOH, HIV, Immunocompromised.*

I. INTRODUCTION

Tinea Corporis is the most common superficial fungal infection mainly affecting the skin either immunocompetent or immunocompromised. Dermatophytes species were preferable agents which included Microsporum, Epidermophyton, and Trichophyton (1). The clinical presentation of the tinea corporis was distributed on the scalp, body, face, groin, nails, and hair, which provides different diagnoses in different variances (2). The mode of transmission of the fungi was anthropophilic (human to human), zoophilic (animal to human), and geophilic (soles to human (3). Dermatophytosis in immunocompromised hosts is more varied and often more severe than in immunocompetent hosts. It is a clinically atypical, multiple, or widespread lesion more frequent in those who have insufficient immunity such as immunodeficiencies virus syndrome, organ transplantation, diabetes, hemopathies, and under immunosuppressive agents (4,5).

Dermatophyte infection is common worldwide; however, most of the severe or atypical forms have a high prevalence in immunocompromised patients and require further investigation. Atypical forms of fungal infection might interfere with the seeks of correct diagnosis and provide an inappropriate treatment (6). The diagnosis of Dermatophytosis was clinical; however, a fungal culture is the most preferable tool for diagnosis which was able to define the agent causal. The diagnostic tools for superficial fungal infection were clinical, KOH preparation, and Fungal culture, and the invasive method was PCR. However, some tests require costly laboratory setups (7).

In this study, we describe an unusual case that was rarely reported: a widespread tinea corporis on an unknown immunocompromised patient, diagnosis confirmed with 20% KOH preparation, and successful clinical cure with oral antifungal and anti-retrovirus.

II. CASE PRESENTATION

A 38-year-old man with an arcuate, circinate, and annular rash on the trunk, both hands, both legs, and groin for several months visited the clinic. Historically, he consulted and received various treatments from many different physicians, the symptoms subsided down during the unknown medication; however, after one week off the medication, the symptoms were flaring up and worsened. The last medication he brought with him was oral prednisolone, antihistamine, and a combination of topical Betamethasone, Clotrimazole, and Neo-mycine. He denied underlying diseases such as diabetes or hypertension, and no other supplement medication. There is no pet at his house. He was concerned about unintentionally losing weight which was notable by the waist pants. On full-body examination revealed a normal finding. On the skin, the examination found that multiple arcuate, circinate, and annular polycyclic scaly erythematous

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papules coalescing to plaque elevated border with central clearing distribute on the trunk, hand, posterior and anterior of the thigh, on the butt, and groin, approximately 30 centimeters for the largest and 5 centimeters for the smallest **(Figure1)**. The provisional diagnosis was proposed as superficial fungal infection a widespread tinea corporis, sub-acute lupus erythematosus, erythema annulare centrifugum, interstitial granuloma annulare, secondary syphilis, erythema marginatum. Routine blood test was requested such as CBC, Ac HCV, Ag HBS, LFT, RFT, Rheumatoid Factor, ANA, anti-Ro/La. Additionally, Treponemal and non-treponema testing and HIV testing were requesting a consent form from the patient. Moreover, skin biopsy, Koh preparation, and fungal culture were requested to differentiate the inflammatory skin diseases and fungal infections. Unfortunately, the patient denied skin biopsy and fungal culture but agreed to Koh's preparation. The blood result reveals normal findings on CBC, LFTs, RFT, negative of hepatitis B Hepatitis C, negative of rheumatoid factor, ANA negative, Anti-Ro/La negative, and treponema and non-treponema was negative. However, the Human immunodeficiency virus was positive. Koh preparation reveals a positive result with hyaline septate hyphae with arthroconidia. Widespread tinea corporis was a highly suspected diagnosis. As the patient denied skin biopsy and fungal culture as well as fungal PCR even, we attempted the explain the benefit of the test. We commenced the treatment with oral fluconazole 300mg once daily associated with desloratadine 5mg daily, ketoconazole soap, and topical terbinafine cream. The patient was requested to do additional testing such as CD4 count and PCR HIV quantitative. The result showed a very low level of CD4 count less than 300 cells/ml with a high viral load. The infectiologist has started anti-retroviral which was LTD the combination Tenofovir disoproxil, lamivudine, and dolutegravir. In the second month of the following the skin lesion gradually subsided with hyperpigmentation on the border (**Figure2**). We continued for another two months with the same dose and medication to complete the treatment. In the third month followed we observed the skin lesion was clear without any infection signs and hyperpigmentation remaining **(Figure 3).** We discontinued the anti-fungal tablet and cream there were no new lesion recurrences in the next following month; however, the patient has continued following up with an infectiologist for the current human immunodeficiency virus.

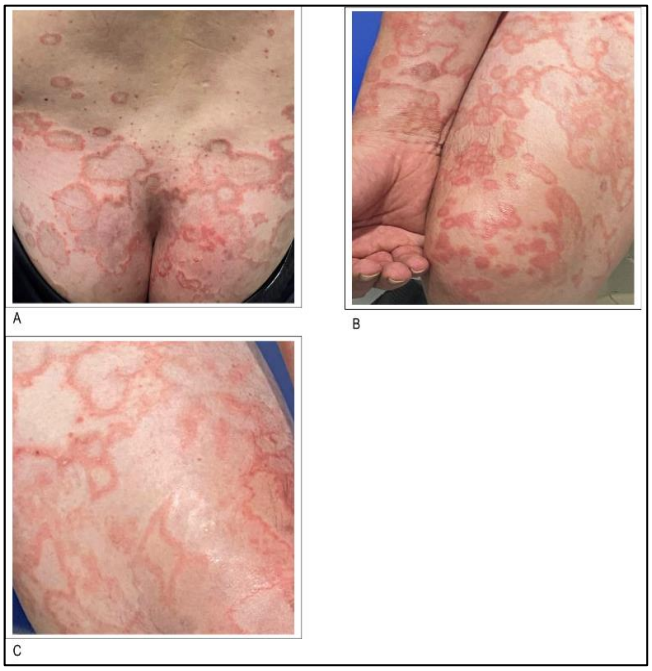

Fig 1: A, B, C: Multiples Arcuate, Circinate, Annular Polycyclic Erythematous Elevated Border WTH Sligthly Scale at the Margine Distributed on the Both Hands, Tight, Buttock and Lower Back

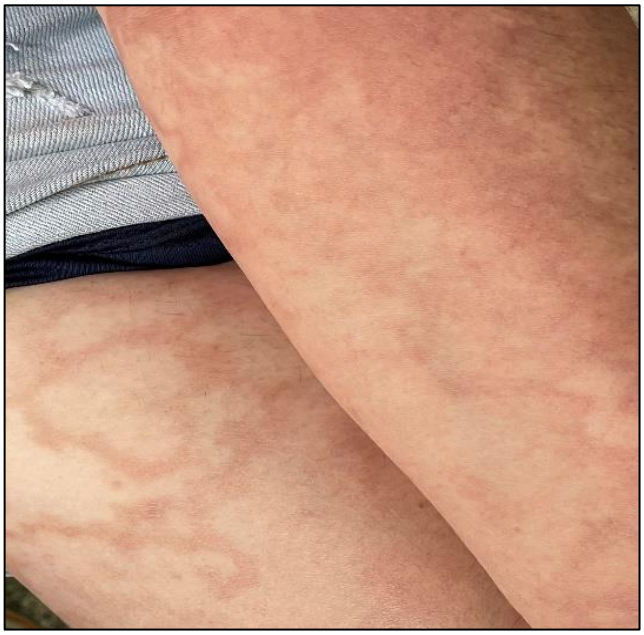

Fig 2: On the Second Month Follow Up: The Skin Lesion Significantly Imrpovement with Remaining Hyperpigmentation on the Margine

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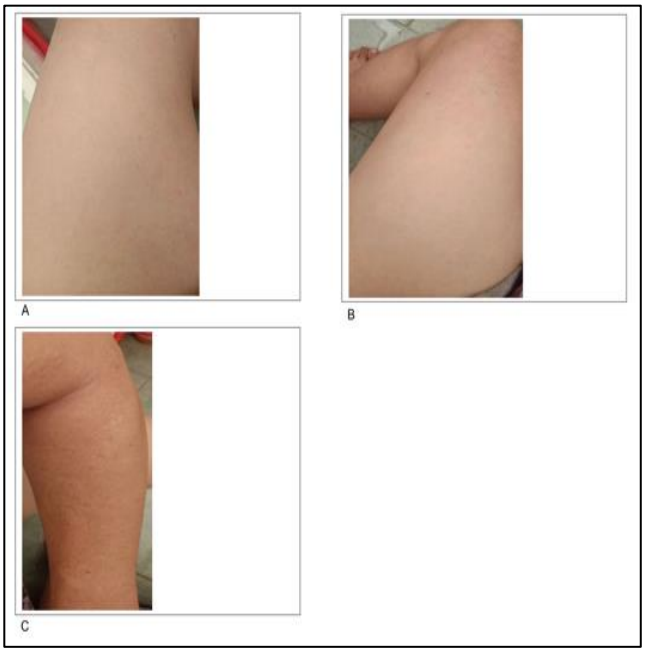

Fig 1: A,B,C: Third Month Follow Up the Skin Lesion Completely Recover Without Any Post Inflamatory Hyperpigmentation

III. DISCUSSION

This case illustrated the unusual manifestation of dermatophytosis in HIV patients with whom extensive polymorphism of the skin lesions contributed to different erroneous diagnoses. Although dermatomycoses were clinically suspected, the disease was not confirmed. The long-standing and progressive dissemination of the skin lesions could be related to successive misdiagnoses and the use of topical steroids in an immunocompromised host. The characteristic of clinical presentation in our patient is seen to be serious and beyond the dermatophytosis. The atypical manifestation of arcuate, annular polycyclic erythematous usually appears on inflammatory skin diseases such as lupus erythematosus, interstitial granuloma annulare, erythema maginatum, erythema annulare centrifigum, psoriasis, lymphocytic infiltration of other skin condition (8).

Dermatophytosis is a worldwide superficial infection disease caused by the main three fungi families likewise: Microsporum, Epidermophyton, and Trichophyton which belong to the Arthrodermataceae Family. These fungi affect keratinized tissues of the skin, hair, and nails (9). The incubation period is up to one week, and the disease is named according to the anatomic location of the lesion, followed by the anatomic site of infection (10). The superficial fungal infection affects both immunocompetent and immunocompromised patients; however, they are predominantly immunocompromised most especially on people who live with human immunodeficiency virus with the skin barrier dysfunction (11). Innated or acquired immunocompromised was considered the risk factor for fungal infection. A review by Rouzaud et al, reported the association of immunocompromised and extensive skin lesions were solid organ transplant, HIV infection, systemic corticosteroid treatment, other immunosuppressive treatments, Hematological malignancy, Liver disease, topical steroid only, Cushing disease, Congenital, Adrenal hyperplasia, Atopy, Diabetes mellitus, CARD9 deficiency (12).

The mechanisms of the occurrence of anergic, extensive, or multiple lesions of dermatophytosis in HIV patients are not yet explainable. Some authors hypothesized that loss of function in $CD4^+$ T lymphocytes, changes in the balance between Th1 and Th2 immune responses, and damage to cellular immunity, which occur in the progression of HIV infection, might be the occurrence of this clinical manifestation (13). A study by Costa et al illustrated the prevalence of tinea infection among 305 HIV patients was predominantly on tinea corporis 70% followed by 35% tinea ungums, 25% tinea cruris, and 5% tinea pedis. The Etiology agent identified 55% was Trichophyton genus which was Trichophyton rubrum, Trichophyton tonsurans, Trichophyton mentagrophytes, and succeeding by Epidermophyton floccosum (14). This hypothesis is supported by the fact that dermatophytosis can occur throughout the HIV infection, most of the reported cases of atypical widespread lesions have transpired in compromised patients who had immunological status $CD4^+$ T lymphocyte count below 100 cells/mm^3 or with opportunistic diseases that characterize the AIDS stage of the HIV infection (15).

Diagnostic tools could be clinical and mycological. In our case, the characteristic clinical manifestation was challenging to provide clinical diagnoses. Skin histopathology, fungal culture, and PCR were the most accurate and considerable methods; however, this current diagnosis method has some disadvantages such as being time-consuming, invasive, and requiring waiting time for the result, and costly. Hence, traditional diagnostic testing is non-invasive, painless, and costless. Skin scraping of the stratum corneum with a drop of potassium hydroxide reveals a hyalin or septate hyphae with or without arthroconidia. Similar to a case of Markus et al, confirmed dermatophyte infection on the foot (Tinea Pedis) by KOH preparation(16).

Our patient had never known, he had human immunodeficiency virus and adherence with anti-retrovirus treatment. Interestingly, the clinical manifestation was significantly widespread, and unintentional weight loss make us concerned about the comorbidities of dermatophytosis. An oral anti-fungal and HAART regimen was administered; consequently, the skin lesion significantly subsided. The same study by Polilli et al reported the patient was not adhering to any anti-retrovirus; moreover, the patient was treated with topical steroids caused by tinea incognito (15). Until now, there have been limited case and literature reports about an extensive skin lesion of dermatophytosis in immunocompromised patients and the effectiveness of the treatment. Antifungal treatment of dermatophytosis can be given both topically and systemically upon extension of the lesion. The selection of systemic antifungals should be aware of the patient's condition and comorbidities, some systemic antifungals could have side effects, drug interaction, and contraindications (17). In our case, oral fluconazole was a

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drug of choice which is beneficial in-patient compliance and economics.

The indication of topical or oral medicines, and non-pharmacological actions, such as the orientation to maintain clean and dry skin and to wear light and large clothes depends on the severity of the disease. Clinically treatment is divided into pharmacological measures, with topical and systemic. The localized or superficial lesions respond well to topical antifungal cream, if applied once or twice a day, for a period of two to four weeks. However, widespread lesions required systemic therapy. The most used topical agents are azoles (econazole, ketoconazole, clotrimazole, miconazole, oxiconazole, sulconazole, sertaconazole), allylamines (terbinafine), benzylamine (butenafine), ciclopirox and tolnaftate (1) . In our case, the patient well responds to oral fluconazole 300mg. A randomized pragmatic trial reported the effectiveness of oral fluconazole is superior to oral terbinafine and griseofulvin in dermatophytosis patients (18).

In summary, widespread clinical manifestation of tinea corporis immunocompromised comorbidities should be detected most especially human immunodeficiency virus infection. Early diagnosis of dermatomycosis and comorbidities detection is essential to prescribe appropriate antifungal therapy and to prevent the dissemination of skin lesions. The traditional method of 20% potassium hydroxide preparation remained an essential diagnostic tool compared to other methods such as fungal culture, tissue biopsy, and PCR even though the old method cannot define the real agent-causal, it is possible done in the office, non-invasive, suitable for economical saving. Anti-fungal azoles and allylamines are the drugs of choice to treat dermatophyte infection.

➢ *Limitation:*

There was limited information in the literature documentation on the pathophysiology and specific treatment of choice for dermatophytosis in patients with HIV.

IV. CONCLUSION

Dermatophytosis can be many clinical manifestations in patients with HIV, and most of them show extensive and disseminated lesions, such as in our case report. The most common comorbidities association is the human immunodeficiency virus. An extensive lesion of dermatophyte infection should detect the human immunodeficiency virus. KOH preparation plays an important role in assisting the diagnosed and differentiating with other conditions. Oral anti-fungal and HAART should be prescribed as soon as possible. In the treatment of patients with dermatophytosis and HIV, there can be refractoriness; however, in the study case, the therapy of choice was oral fluconazole, with remission of lesions in two months. Besides, it is important to stimulate adherence to the antiretroviral treatment so as to increase CD4 T lymphocyte count, thus minimizing the chances of recurrence.

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There is no disclosure to declare.

- Declaration: Informed consent was provided to the patient as he agreed to the case publication.

ABBREVIATION

- KOH: Potassium hydroxide,
- PCR: Polymerase chain reaction,
- HCV: Hepatitis C virus,
- HBS Ag: Hepatitis B surface antigen,
- LFT: Liver function test,
- RFT: Renal function test,
- HIV: Human immunodeficiency virus,
- ANA: Anti-nuclear antibody,
- CARD9: Caspase recruitment domain-containing protein 9,
- HAART: High active antiretroviral therapy

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