Case study

Successful elimination of a recalcitrant dermatosis using acyclovir and antifungal treatment in a patient with high HSV IgG antibodies

Abstract:

The prevalence of recalcitrant or widespread dermatophytosis is increasing, posing a significant challenge for dermatologists globally. The efficacy of antifungal regimens in treatment has historically been high, attributed to their broad-spectrum antifungal properties. However, there has been a noticeable increase in treatment failures in recent times. The infection caused by Herpes Simplex Virus type 1 (HSV-1) has a moderating effect on the ability of monocytes to effectively eliminate fungi that have been engulfed during phagocytosis. In the reported patient, the HSV I antibody titre was high, so the systemic antiviral (acyclovir)was added in remission dose to the existing antifungal regimen. The eradication of dermatophytes was nearly achieved within a fortnight following the administration of therapy. Therefore, it is advisable to consider obtaining HSV type I IgGs for every patient who presents with a widespread or recalcitrant superficial fungal infection, and to begin a combined antiviral and antifungal treatment approach.

Key words: Recalcitrant dermatophyte infection; HSV-I antibodies; Acyclovir antifungal combination therapy, dermatophytosis.

Introduction:

Dermatophytes, non-dermatophytic molds, and commensal yeasts are the main culprits behind superficial fungal infections.[1] Dermatophytosis is a superficial fungal infection with a preference for keratin rich tissues, including skin, hair, and nails. Recalcitrant tinea infection is a generic phrase that can refer to relapse, recurrent, reinfection, persistent, or chronic infection.[2] Due to its resistance to existing oral and topical antifungal medications, recalcitrant dermatophytosis has become a significant obstacle to establishing a complete cure in recent years. It is necessary to uncover the elements hiding behind the stubbornness of this infection. Dermatophyte infections are common and cause sufferers significant social, emotional, and financial distress. Recurrent dermatophytosis is increasingly becoming a challenge for dermatologists. [3-5]

The case Report:

The first visit:

ABangladeshi 31-year-old male, sought medical care at a dermatology clinic due to the presence of generalised, broad annular erythematous patches distributed across his body, including the facial and genital regions. The lesions were characterised as diminutive annular formations that subsequently enlarged with elevated edges. The historical timeline extends to a period of 8 months. Throughout this period, he underwent a series of topical and systemic antifungal drugs, such as the administration of itraconazole, ketoconazole, fluconazole and terbinafine in both cream and tablet forms. These therapies were prescribed following the diagnosis of tinea infections. The diagnosis was established through an evaluation of the patient's clinical symptoms and the confirmation of positive potassium hydroxide (KOH) test results, without the use of a culture.

The patient's medical history was largely uneventful, apart from the occurrence of oral and lip ulcers that resolved spontaneously 10 months ago. Given the description of the symptoms, there was a suspicion of Herpes Simplex Virus infection (HSV). During the last three weeks of his first presentation to our clinic , the patient was not undergoing any medical therapy. Consequently, I prescribed a regimen consisting of itraconazole capsules (100mg twice daily) and topical terbinafine cream for duration of two weeks. I scraped the most recent fresh lesion edges for KOH test, and requested the IgG antibodies for both HSV type I and HSV type II, an HIV screening test, a complete blood count, and fasting blood glucose analysis. All laboratory tests yielded normal results, except for the KOH examination, which indicated the presence of a dermatophyte component and the HSV type I IgG titre was found to be significantly positive (table 1).

The second visit:

After a two-week interval, the patient revisited for follow up. Despite theexcellent compliancedisplayed by the patientto the treatment, no discernible improvement was observed. In fact, the patient experienced the emergence of more lesions during treatment period. In the present instance, alongside the prior antifungal treatment regimen of itraconazole in combination with terbinafine cream for additional three weeks, I added a

systemic antiviral medication, acyclovir, at a dosage of 400mg administered three times daily for a duration of 14 days.

The third visit:

The patient returned for re-evaluation after a two-week period, during which no new eruptions were observed by the patient and existing lesions have either fully disappeared or are now in the process of subsiding. The administration of the antifungal treatment was extended for an additional week to guarantee the attainment of full remission. This successful result was afterwards confirmed and documented two weeks following the completion of the regimen.

Table 1: Result of study investigation

Investigation	Result	Comment
Herpes simplex virus Type I (HSVI1) IgG Antibody	20.81	RR Non reactive < 0.61 Gray zone > or = 0.61 - < 1 Reactive > or = 1
Herpes simplex virus Type II (HSV-II) IgG Antibody	Negative	
KOH	Negative	
Complete blood count	Normal	
HIV screening test	Negative	

Figures

Fig. 1. Pre acyclovir administration during first visit

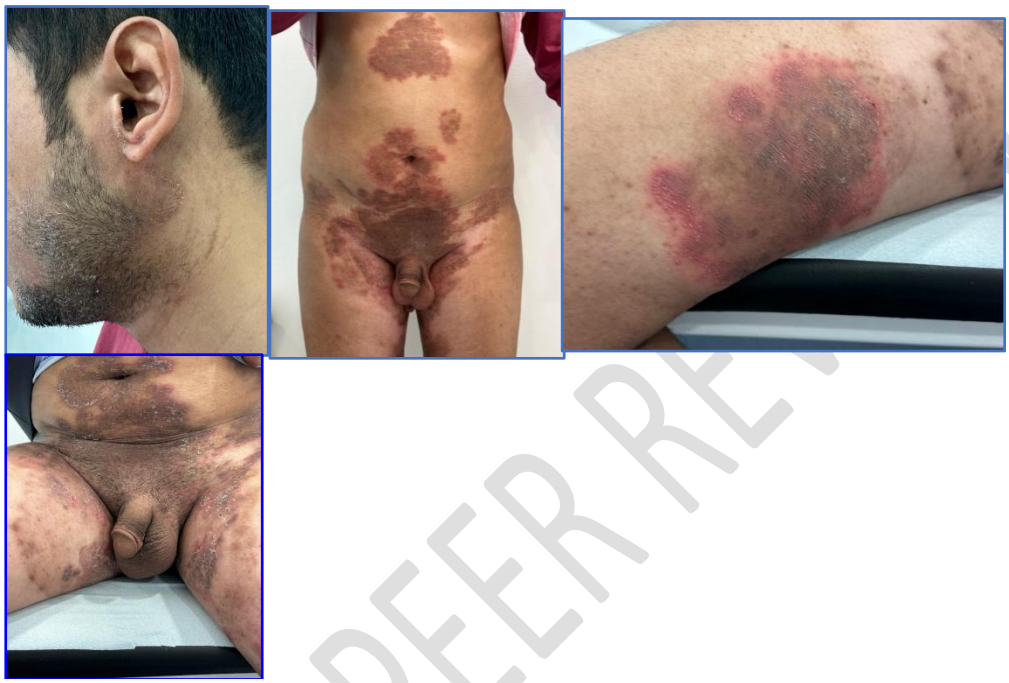


Fig. 2. Pre acyclovir administration during second visit

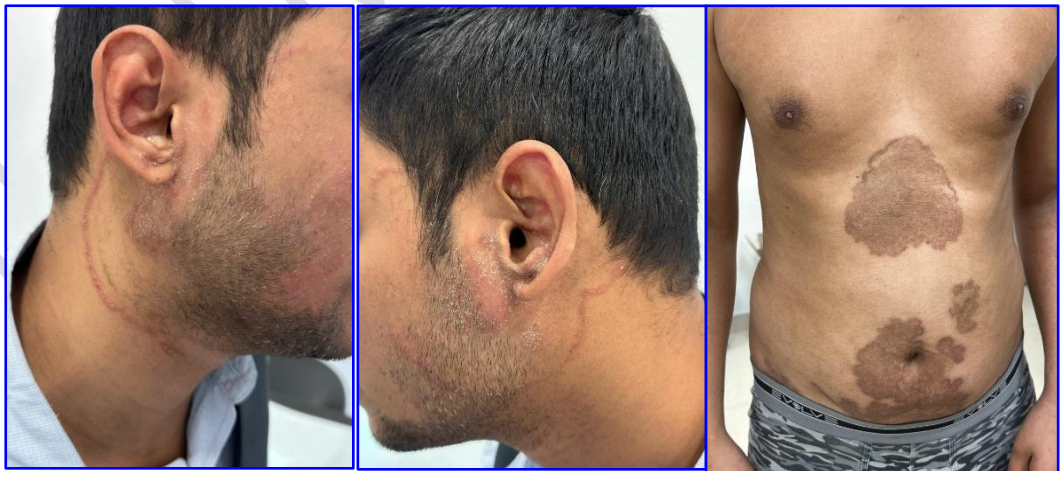
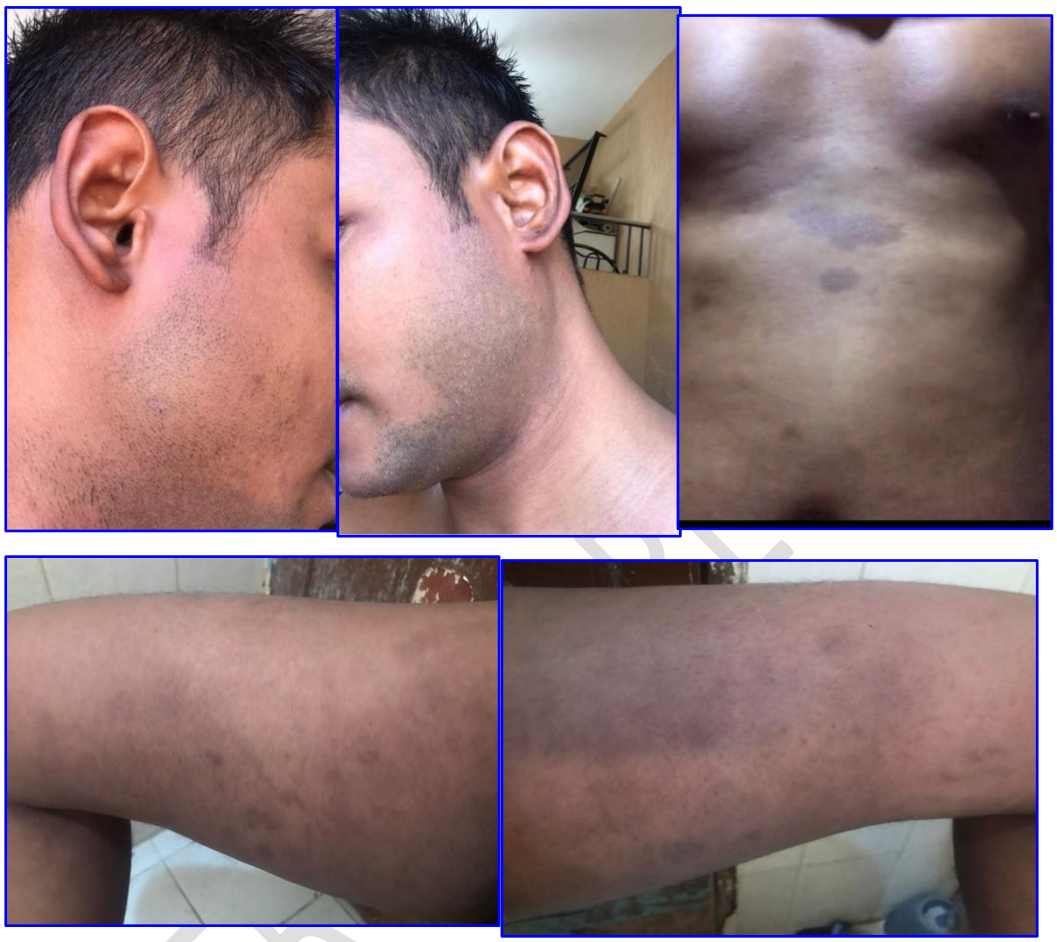


Fig. 3. Post acyclovir administration during third visit



Discussion:

Refractory dermatophytosis is prevalent as a significant majority of dermatologists, have seen that half of the instances of dermatophytosis were characterised by a chronic nature.(6,7)

Numerous studies support the hypothesis of decreased immune system activity against fungal infections when HSV type I is concurrently present. One study demonstrates that HSV-1-infected a human leukaemia monocytic (THP-1 cells) displayed enhanced phagocytosis against fungi but a diminished ability to combat fungal infection; the enhanced ingestion by monocytes was followed by enhanced fungal survival and

replication.Cytofluorimetric analysis revealed that HSV-1-infected monocytes exhibit the following characteristics: (i) decreased expression of TLR-2 and TLR-4, which are essential for fungal recognition; (ii) decreased expression of CD38 and CD69, which are known to be important markers of monocyte activation; and (iii) increased expression of apoptosis and necrosis markers in the absence of altered cell proliferation. Overall, these results suggest that HSV-1 infection inhibits monocyte activation, resulting in a considerable impairment of the monocyte-mediated anti-fungi response; HSV-1-induced apoptosis and necrosis of monocytes also contribute to this impairment.(8)
Based on the aforementioned evidence, it is strongly indicated that the HSV infection may have the capacity to alter the immune response of the patient under consideration, resulting in a disruption of monocyte function that collaborates with the antifungal drugs to eradicate the fungal infection.To identify prior infection, the utilisation of immunoglobulin G (IgG) antibodies that specifically target herpes simplex virus type I (HSV-1) was employed. The detected heightened concentrations of these antibodies provide as supporting evidence for a prior herpes simplex virus (HSV) infection.A hypothesis was postulated that the patient showed indications of an ongoing viral immune response, thus prompting the decision to initiate treatment with acyclovir.Acyclovir has a higher degree of effectiveness against the herpes simplex virus (HSV), and its safety characteristics are noteworthy. (9)Itraconazole as monotherapy has a high antifungal efficacy and is used to treat dermatophytosis with a very high success rate in many cases, but it fails in many newly emergent resistant cases. (10)

The substantial and remarkable response displayed by the patient towards this intervention provides more support for the previously posited hypothesis.

Conclusion

In situations involving widespread and/or recalcitrant superficial fungal infection, it is recommended to utilise Herpes Simplex Virus type I as an initial screening test for the initiation of oral acyclovir treatment, which should be promptly commenced.

Ethical Consideration: written informed consent was obtained from the patient.

References

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