

Allergic Contact Dermatitis Due to Antifungals – A Pilot Study

Dear Editor,

Dermatophytosis has become a challenging problem in the Indian subcontinent. Many patients require prolonged treatment while few patients require repeated treatment. Itching is a major problem during infection, and in some patients, itching persists even after treatment and clinical remission. These patients are exposed to many topical antifungals and other drugs, mostly topicals that are sold over the counter (OTC). The OTC drugs include steroids, antifungals, antibiotics, etc. Apart from the drugs, the topicals contain vehicles and preservatives. Anyone who is exposed to chemicals for a prolonged duration can develop allergic contact dermatitis (ACD). ACD to topical preparations especially antibiotics and preservatives,^[1] and to antifungals^[2,3] are reported. This study is undertaken to determine whether patients on long-term antifungal treatment, both systemic as well as topical, develop sensitivity to the drug or the excipients and preservatives present in the topical preparations.

A total of 11 patients with a history of dermatophytosis of more than six months duration, and a history of using multiple topical preparations and systemic drugs for the treatment of dermatophytosis, were patch tested with nine commonly prescribed commercially available topical antifungal and antibiotic preparations available in the market, and with pramoxine hydrochloride containing anti-itch preparation (Atarax®itch relief cream, Dr.Reddy's Laboratories Ltd., Sirmaur district, India) [Figure 1]. In addition, a patch test was done using topical preparations used by the patients, and with preservatives and vehicles from the Indian standard series (ISS). Consecutive patients who reported with active disease and had used multiple drugs in the past were included. Few of them were on active treatment but most of them had discontinued treatment by themselves or on advice. Patch testing was done after discontinuing both topical and systemic treatment inclusive of antifungals and antihistamines in all patients. Patch test was not done in children below 18 years, pregnant women, and patients on immunosuppressive drugs inclusive of steroids. Patch test was done by a standard method using



Figure 1: Topical preparations used for patch testing

aluminum chambers and readings were obtained on day two and day three.

Of the 11 patients, two patients tested positive for propylene glycol, and one each for parabens mix, sertaconazole nitrate, gentamicin, clotrimazole, terbinafine hydrochloride, oxiconazole nitrate, eberconazole, miconazole nitrate, fragrance mix, and pramoxine hydrochloride cream containing propylene glycol, mono- and diglycerides, shea butter, cetyl alcohol, cyclomethicone, glycerin, mango butter, cocoa butter, aloe butter, steareth-21, dimethicone 10 cst, phenoxyethanol, disodium EDTA, zinc oxide, and fragrance (Atarax®itch relief cream, Dr. Reddy's Laboratories Ltd., Sirmaur district, India) [Figures 2 and 3]. One patient who tested positive for miconazole nitrate at 48 h and negative at 72 h was considered as negative. Complete details of the patients who tested positive are mentioned in Table 1.

This pilot study reveals that ACD is not uncommon among patients using topical preparations for dermatophytosis. Recognizing the possibility of ACD by patch testing patients will enable the physician to avoid using topicals to which the patient is sensitive, since the application of the drug may result in dermatitis. In many cases, dermatitis may not be obvious since the erythema may be masked by the pigmentation. In addition, some of the drugs that are applied are also administered systemically, for example, terbinafine. The possibility of systemic contact dermatitis to the antifungals should also be considered in these cases.^[4] Cross-sensitivity between structurally similar drugs has also been reported and should be considered while prescribing antifungals to the patient.^[5] ACD to topical antifungals using specific antifungal agents from the antifungal series and commercially available topical antifungals has been reported.^[6] Positive patch testing to clotrimazole has been reported by Abhinav *et al.*,^[3] and to amorolfine by Saha and Mukherjee,^[2] using commercially available preparation, "as is." Since the standard antifungal series



Figure 2: Patch test positive for oxiconazole nitrate and atarax itch relief cream® at 72 h

Table 1: Details of the patients tested positive

Number of patients	Age	Sex	Occupation	Current topical antifungal being used and its duration	Exposure to topical antifungals in the past at some point in their lifetime	Current systemic antifungal being used and its duration	Systemic antifungal used in the past and its duration
1	36	Female	Homemaker	Ciclopirox olamine for one month	Clotrimazole cream and ketoconazole creams	Itraconazole for one month	Terbinafine for five weeks
2	34	Female	IT professional	Nil	Amorolfine cream, eberconazole cream, and luliconazole cream	Nil	Fluconazole for six weeks (weekly twice)
3	41	Male	Business	Nil	Clotrimazole cream, oxiconazole nitrate cream, ketoconazole cream, and terbinafine cream	Nil	Terbinafine for one month and itraconazole for six weeks
4	30	Male	Works in bank	Nil	Terbinafine cream, luliconazole cream, and clotrimazole cream	Nil	Itraconazole for six weeks
5	19	Male	College student	Luliconazole cream for two weeks	Amorolfine cream and terbinafine cream	Itraconazole for two weeks	Terbinafine for six weeks
6	45	Female	Homemaker	Nil	Miconazole, eberconazole, luliconazole, and sertaconazole cream	Nil	Fluconazole weekly twice for one month and terbinafine for three weeks

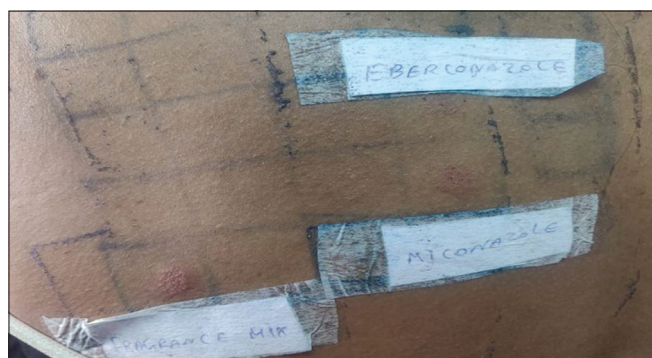


Figure 3: Patch test positive for eberconazole, miconazole nitrate, and fragrance mix at 72 hours

is not available for patch testing in India, we tested with the topical preparation commonly used by the patient. It is well known that, there is, forever a change in the allergens-inducing sensitivity depending on the changing pattern of occupation and use of day-to-day articles and topical preparations, and hence searching for newer allergens and watching out for older allergens that are more frequently used is justified.^[7]

We recommend that all patients who have used topical antifungals for a prolonged duration should undergo patch test screening with antifungal series, to avoid prescribing antifungals to which they may be allergic.

Limitations

The limitations of the study are low sample size, not all preservatives and vehicles were available in the ISS for testing, and although topical steroids may rarely cause sensitivity, it was not included in the present pilot study

but will be included during further studies. We have used commercially available antifungals and not standardized antifungal preparations for the study. We plan to conduct further studies by using antigens at the recommended concentrations made by using analytical grade antifungal drugs to prepare the antigens for patch testing.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

**Nithya Satish, Laxman Besra¹,
Chakravarthi R. Srinivas¹, Surendranath Lal**

Consultant Dermatologist, Ranga's Centre of Dermatology, R. S. Puram, Coimbatore, Tamil Nadu, ¹Department of Dermatology, Venereology and Leprology, Kalinga Institute of Medical Sciences (KIMS), Bhubaneswar, Odisha, India

Address for correspondence:

Dr. Nithya Satish,
Ranga's Centre of Dermatology, 18, Cowley Brown Road, R. S. Puram,
Coimbatore – 641 002, Tamil Nadu, India.
E-mail: Hamlet.nithya@gmail.com

References

1. Kar S, Srinivas C R, Balachandran C, Shenoï S D. Patch test with preservatives. *Indian J Dermatol Venereol Leprol* 1992;58:25-26.
2. Saha K, Mukherjee S. Amorolfine-induced allergic contact dermatitis. *Indian J Drugs Dermatol* 2021;7:95-6.
3. Abhinav C, Mahajan VK, Mehta KS, Chauhan PS. Allergic contact dermatitis due to clotrimazole with cross-reaction to miconazole. *Indian J Dermatol Venereol Leprol* 2015;81:80-2.
4. Janjua SA, Pastar Z, Iftikhar N, Ammad S. Intertriginous eruption induced by terbinafine: A review of baboon syndrome. *Int J Dermatol* 2017;56:100-3.
5. Goday JJ, Yanguas I, Aguirre A, Ihardia R, Soloeta R. Allergic contact dermatitis from sertaconazole with cross-sensitivity to miconazole and econazole. *Contact Dermatitis* 1995;32:370-1.
6. Liu J, Warshaw EM. Allergic contact dermatitis from ketoconazole. *Cutis* 2014;94:112-4.
7. George NM, Gangaiah N, Thimmappa V, Potlapati A. Changing allergen pattern in allergic contact dermatitis. *Clin Dermatol Rev* 2020;4:155-9.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online	
Website: https://journals.lww.com/idoj	Quick Response Code 
DOI: 10.4103/idoj.idoj_638_22	

How to cite this article: Satish N, Besra L, Srinivas CR, Lal S. Allergic contact dermatitis due to antifungals – A pilot study. *Indian Dermatol Online J* 2023;14:729-31.

Received: 26-Nov-2022. **Revised:** 04-Feb-2023.
Accepted: 12-Feb-2023. **Published:** 25-May-2023.

© 2023 Indian Dermatology Online Journal | Published by Wolters Kluwer - Medknow