

## Fixed Drug Eruption to Levocetirizine Detected by Patch Testing

Dear Editor,

Fixed drug eruption [FDE] is a cutaneous adverse reaction due to type IV [delayed cell mediated] hypersensitivity, recurs at the same site and resolves spontaneously after discontinuation of the causative drugs with residual hyperpigmentation.<sup>[1]</sup> Many drugs have been implicated, but FDE with levocetirizine and diagnosis by patch testing is rare.<sup>[2]</sup> Here we report a 11-year-old boy who was tested positive to levocetirizine by patch testing.

An 11-year-old boy gave a history of four episodes of FDE to multiple drugs after taking the medications for upper respiratory tract infection. His last episode was three years back. List of drugs implicated was noted down and patch test was done with implicated drugs like ofloxacin, cefixime, cefuroxime, paracetamol and levocetirizine. Levocetirizine was the common drug taken by the patient during each episode. Implicated drugs were taken, crushed and mixed with petrolatum, applied “as is” on aluminium finn chamber and occluded for 24/48 hours in the pigmented site [involved site]. The readings were performed on day 2 and day 4 according to the criteria of International Contact Dermatitis Research Group.<sup>[2]</sup> Patch test was positive for levocetirizine (+) in the involved site and negative for all other drugs. To detect cross-reaction, patch test was repeated with hydroxyzine, cetirizine and levocetirizine “as is” on both involved and uninvolved sites. On day 2 and day 4, the readings for all three drugs were (++) in involved site [Figure 1], but were negative in uninvolved site.

FDE is a delayed-type hypersensitivity reaction mediated by CD8 + T cells and the drug functions as a hapten that binds to basal keratinocytes, which increases inflammatory cytokines and upregulates intercellular adhesion molecule-1 [ICAM 1] which help T cells (CD 4 and CD 8) to migrate to the site of an insult and cause tissue damage.<sup>[3]</sup> When inflammatory response decreases, IL-15 from keratinocytes ensures the survival of CD8+ memory T cells and thus when re-exposure occurs, more rapid response develops in the same site,<sup>[4]</sup> resulting in a more intense patch test reaction on retesting as seen in our patient.

Levocetirizine, a piperazine antihistamine, is a safe and effective treatment for allergic diseases and very rarely cause FDE and cross-reaction is known to occur with other piperazine derivatives [cetirizine, levocetirizine, and hydroxyzine]. In such cases, piperidine group of antihistamines can be tried.<sup>[2]</sup>

Oral challenge test and patch test are usually performed to diagnose FDE. Oral challenge is a more reliable method,



**Figure 1: Positive patch test to cetirizine, levocetirizine, and hydroxyzine over pigmented site**

but we could not perform as the patient did not give consent. Although positivity to patch test is reported to be 40.4%,<sup>[5]</sup> it is useful because of the high safety profile. Patch test can be used as screening test when there is a history of polypharmacy and to detect the cross-reactivity between drugs belonging to the same group because of similar immunogenic chemical structure which is recognized by immune system as one.<sup>[5]</sup> Patch testing is safer but a negative test does not rule out drug reaction.

### *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.

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### *Conflicts of interest*

There are no conflicts of interest.

**P. Iswarya, Reena Rai**

Department of Dermatology, PSG Institute of Medical Sciences and Research, Coimbatore, Tamil Nadu, India

**Address for correspondence:**


Dr. Reena Rai,  
Department of Dermatology, PSG Institute of Medical Sciences and Research, Coimbatore - 641 004, Tamil Nadu, India.  
E-mail: drreena\_rai@yahoo.co.in

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