

CASE AND RESEARCH LETTER

[Translated article] Photoaggravated Allergic Contact Dermatitis Due to Isoamyl p-Methoxycinnamate in a Pediatric Patient



Dermatitis de contacto alérgica fotoagravada a isoamil p-metoxicinamato en paciente pediátrico

To the Editor:

A 5-year-old girl with atopic dermatitis (onset at 6 months of age) and no known history of allergy was assessed for the presence of erythematous scaly plaques and edema affecting the face, trunk, and skin folds that appeared after exposure to sunlight and application of several sunscreens (Fig. 1).

The clinical picture had been diagnosed as “sun allergy” by her pediatrician, leading her to avoid exposure to sunlight. This affected her quality of life considerably, as she was unable to take part in normal activities for her age.

Her clinical history indicated allergic or photoallergic contact dermatitis possibly associated with the use of sunscreens.

Patch testing was performed with the standard series of the Spanish Contact Dermatitis and Skin Allergy Research Group (T.R.U.E. Test, SmartPractice, extended with allergens from Chemotechnique Diagnostics) and photopatches with the sunscreen series (Chemotechnique Diagnostics). Patch testing was also performed with her own products, which were mainly sunscreens. The study had to be carried out over several weeks owing to poor collaboration on the part of the patient, who ripped the patches off completely on several occasions.

The patch test results were read according to the recommendations of the International Contact Dermatitis Research Group.¹ The results for the Spanish standard series were negative. With the patient’s own products (3 different sunscreens), positive results were recorded only for the



Figure 1 Erythematous, scaly plaques and edema on the face, trunk, and skinfolds after exposure to sunlight.

Carreras ultra 80 children’s sun cream. The photopatch reading at 96 hours with duplicate sunscreens and UV-A (5 J/m²) at 48 hours revealed weak positive results for isoamyl p-methoxycinnamate in half. This allergen was present in the Carreras sunscreen.

The patient was diagnosed with photoaggravated allergic contact dermatitis caused by isoamyl p-methoxycinnamate with present relevance.

Treatment consisted of avoidance of the sunscreen involved. The patient experienced no further skin lesions associated with sun exposure and was able to live a normal life.

UV absorbers are classified as physical (inorganic) and chemical (organic). The latter, together with topical nonsteroidal anti-inflammatory drugs, are the group of substances that most frequently cause photoallergic reactions.^{2,3} Consequently, many are recommended in the standard series for photopatch testing in Europe.⁴

A 2012 European multicenter study⁴ revealed that the absorbers that most commonly caused photoallergic contact

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dermatitis were octocrylene, benzophenone-3, and butyl methoxydibenzoylmethane. Allergic contact dermatitis was less frequent than photoallergic contact dermatitis, with the most common absorbers being methylene bis-benzotriazolyl tetramethylbutylphenol (Tinosorb M), octocrylene, and benzophenone-3. Methylene bis-benzotriazolyl tetramethylbutylphenol is solubilized in a surfactant known as decyl glucoside, which could be the causative allergen in some cases and must be patch tested.

In the case we report, the patient was diagnosed with photoaggravated allergic contact dermatitis with present relevance caused by isoamyl p-methoxycinnamate. The compound belongs to the cinnamate group. Sunscreens containing this substance absorb UV-B radiation and are chemically associated with cinnamon-related flavoring agents and aroma compounds, with which they can cross-react. Balsam of Peru and fragrance mix I contain cinnamic alcohol and cinnamic aldehyde, which could cross-react with isoamyl p-methoxycinnamate. However, patch testing with these substances was negative in the present case.

Isoamyl p-methoxycinnamate has been approved in Europe and Asia, but not in the United States of America. It is used mainly in sunscreens labeled as "waterproof" owing to its low solubility in water.² Photoallergy has been reported more frequently than contact allergy, and there has also been a report of a case of contact urticaria.^{2,3} Isoamyl p-methoxycinnamate 10% pet is one of the allergens included in the European standard photopatch test.⁴

In the present case, the positive result on contact between the patch and this substance increased from weak to moderate with UV-A light. Therefore, it was interpreted as photoaggravated or photoaugmented contact allergy.

Management of these reactions basically involves identification and avoidance of the causative allergen. If patch testing is not available but suspicion is high, physical sunscreens can be recommended directly.⁵ Symptoms can be treated with topical or systemic corticosteroids, topical calcineurin inhibitors, and immunosuppressants.

Given the difficulty involved in diagnosing photoaggravated allergic contact dermatitis, prevalence is probably underestimated. The absence of a clear photodistributed pattern can complicate identification of this condition. Cases of photoaggravated allergic contact dermatitis caused by isoamyl p-methoxycinnamate are very rare, and reporting

these findings is very important for updating and standardization of allergens in the basic photopatch series.⁶

The case we report also demonstrates the difficulty involved in performing patch testing in children, whose unwillingness to cooperate necessarily requires more time for testing. In addition, the small area of a child's back necessitates accurate selection of the allergens to be tested. The collaboration of trained nurses and parents is a key aspect of this process.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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