

Allergic Contact Dermatitis from Ethylenediaminetetraacetic Acid

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Précis

We report on a woman with severe facial allergic contact dermatitis from ethylenediaminetetraacetic acid (EDTA).

Discussion

A 44-year-old woman presented with a 1-year history of dermatitis that began on her upper eyelids and subsequently spread to her face, earlobes, postauricular area, forearms, legs, and right dorsal hand. She had tried various

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Figure 1. Facial dermatitis.



Figure 2. Positive patch-test reaction to ethylenediaminetetraacetic acid (EDTA).

nonprescription and prescription topical products, without relief. Results of previous patch testing with the Thin-Layer Rapid Use Epicutaneous Test (T.R.U.E. Test, Allerderm, Phoenix, AZ) and 48 additional allergens were negative.

Physical examination revealed lichenified pink scaly eczematous plaques on the upper eyelids, eyebrows, earlobes, and inferior postauricular sulcus. Ill-defined eczematous plaques were also present in the perioral area (Fig 1), cheeks, lower forehead, right neck, dorsal right hand, left antecubital fossa, and left popliteal fossa.

Patch testing was performed with the 2009 North American Contact Dermatitis Group standard series (70 allergens), corticosteroids, cosmetics, preservatives, vehicles, and perfumes and flavorings, as well as 27 personal items. Clinically relevant positive reactions were noted to EDTA disodium dihydrate 1% in petrolatum (pet) (Fig 2) and to several products containing EDTA, including two hair gels, two facial moisturizers, and one contact lens solution. A weak reaction to balsam of tolu, a fragrance and flavoring marker, was thought to be possibly clinically relevant. Irritant reactions were noted to dodecyl gallate, benzalkonium chloride, and captan. After 3 months of avoiding EDTA (and fragrance) in topical products and in foods, the patient reported significant improvement.

EDTA salts are chelating agents and preservatives commonly used in personal products, topical medications, and ophthalmic and otic solutions. They are also found in foods. Several EDTA salts (disodium, trisodium, and

tetrasodium) have been reported to cause positive patch-test reactions,¹ and several clinically relevant cases have been reported. Raymond and Gross described a man with periorbital vesicular dermatitis due to EDTA in two different ophthalmic solutions and described two other patients with positive patch-test reactions to EDTA (clinical relevance unclear).² De Groot described a patient with recurrent leg ulcers who developed a widespread dermatitis after using an EDTA-containing topical corticosteroid; patch-test reactions were positive only to the corticosteroid product and EDTA.³ Bhushan and Beck described a man with facial swelling after undergoing dental procedures; he had a positive patch-test reaction to EDTA, which was present in the dental anesthetic.⁴ Kimura and Kawada described a woman with facial dermatitis due to EDTA in a cosmetic lotion.¹ Soga and Izawa described a woman with scalp, face, and neck dermatitis who was patch test positive to EDTA as well as to three EDTA-containing products (a lotion, a cream, and a shampoo).⁵

Ethylenediamine (EED) is structurally similar to EDTA and is a well-known sensitizer. Co-reactivity to EED and EDTA was reported by Raymond and Gross in two patients² although Bhushan and Beck found no co-reactivity to EED in EDTA-sensitized individuals.⁴ Most experts do not believe that EDTA and EED cross-react.³ Our patient was patch test negative to EED.

Zebra

Patch-test experts should be aware of EDTA as a potential allergen in topical medicinal and cosmetic products.

References

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