

Short Communication

Allergic contact dermatitis from disodium ethylenediamine tetra-acetic acid (EDTA) in a local anaesthetic

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Case Report

A 34-year-old man was referred with a history of foot dermatitis and recurrent otitis externa. In addition, he gave a history of swelling and redness of the face on 2 separate occasions approximately 24 h after receiving Lignospan® local anaesthetic prior to dental treatment. The swelling resolved both times within 36 h.

Patch testing (using Finn Chambers and Scanpor tape) was performed with our standard series, dental and ear series. At 2 and 4 days, an erythematopapular reaction (++) to disodium EDTA 1% pet. was seen; ++ reactions were also seen to gentamicin sulfate 20% pet. and potassium dichromate 0.5% pet. There was no reaction to ethylenediamine 1% pet. Other relevant negative results included rubber allergens, local anaesthetics, metals (including mercury) and a prick test to latex. 50 control subjects showed no reaction to disodium EDTA 1% pet.

Discussion

Since Raymond & Gross (1) described EDTA preservative dermatitis in 1969, dermatologists have become increasingly aware of contact sensitization to the additives in pharmaceutical and cosmetic products. EDTA is a widely used preservative in ear and nose drops, local anaesthetics and ophthalmic solutions. Although EDTA does not possess primary antibacterial properties, in

these materials, it enhances the antibacterial actions of benzalkonium chloride and thimerosal in disrupting the lipid/protein complex of micro-organisms' cell walls. EDTA can also be found in certain foodstuffs such as salad oil and wine. It is a sequestering agent based on its ability to bind metallic ions such as nickel, calcium and magnesium, forming insoluble inactive complexes, thus preventing oxidation and discolouration of the aforementioned preparations. Its chelating properties can be further used in the treatment of systemic disease such as urinary calculi, calciferous corneal deposits, hypercalcaemia and lead poisoning. Despite its ubiquitous nature, EDTA is a rare sensitizer (2), and does not consistently cross-react with ethylenediamine, despite its structural similarities (3).

In the light of our patient's positive patch test results, we concluded that, in addition to his foot dermatitis caused by chromate allergy, he had a contact allergy to EDTA contained in Lignospan® (lignocaine hydrochloride 2%, plus adrenaline 1:80,000).

References

1. Raymond J Z, Gross P R. EDTA preservative dermatitis. *Arch Dermatol* 1969; 100: 436-440.
2. Fisher A A. Does ethylenediamine hydrochloride cross-react with ethylenediamine tetra-acetate? *Contact Dermatitis* 1975; 1: 267-268.
3. Fisher A A. Cross sensitisation between ethylenediamine and ethylenediamine tetra-acetate. *J Am Acad Dermatol* 1982; 7: 808.