

Allergic contact dermatitis from dibucaine hydrochloride, chlorpheniramine maleate, and naphazoline hydrochloride in an over-the-counter topical antiseptic

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Case Report

An 89-year-old male presented with pruritic lesions over his left knee. Several years previously, he had developed eczema following the repeated use of an over-the-counter antiseptic, and there had been several further episodes after use of similar products. Twenty days before presentation to us, he had visited hospital with a wound on his left knee; this was treated with the daily application of povidone iodine 10%. Two days before we saw him, he had applied another over-the-counter antiseptic,

and pruritic erythematous papules and vesicles over the knee with linear extension down onto the lower leg appeared the next day.

The antiseptic the patient used in the current history contained benzalkonium chloride, dibucaine hydrochloride, chlorpheniramine maleate, naphazoline hydrochloride, and a mixture of fragrance ingredients. The product was sold in pharmacies. The dermatitis was treated with topical steroids.

Patch testing (International Contact Dermatitis Research Group criteria; Finn Chambers[®] on Scanpor[®] tape; Epitest Ltd, Tuusula, Finland) using the over-the-counter antiseptic produced a positive reaction to the product 'as is' at D2 (++) and D3 (++) . A second patch test with the same method and reading was performed only with the ingredients of the antiseptic and a fragrance mix 8% pet. (Brial allergen GmbH, Greven, Germany) (Fig. 1). The manufacturer provided us with the ingredients. They did not know the precise components of the fragrance because they purchased it from another company.

Twenty healthy volunteers showed negative reactions to naphazoline hydrochloride 1% pet. at D2, D3, and D7. We diagnosed the patient as having allergic contact dermatitis caused by dibucaine hydrochloride, chlorpheniramine maleate, and naphazoline hydrochloride in the over-the-counter antiseptic.

Discussion

The present patient had contact sensitivity to three substances: dibucaine hydrochloride, chlorpheniramine maleate, and naphazoline hydrochloride. We believe that sensitization occurred during the previous use. The three components are commonly used in Japanese over-the-counter antiseptics. Dibucaine hydrochloride and chlorpheniramine maleate are well known to be contact allergens (1–3). While dual concomitant sensitization to dibucaine hydrochloride and chlorpheniramine

	D2	D3	D7
Benzalkonium chloride 0.1% aq.	–	–	–
Benzalkonium chloride 0.01% aq.	–	–	–
Dibucaine hydrochloride 1% pet.	++	++	++
Naphazoline hydrochloride 1% pet.	–	+	++
Chlorpheniramine maleate 1% pet.	+	++	++
Fragrance mix 8% pet.	–	–	–



Fig. 1. Patch test reaction to dibucaine hydrochloride, naphazoline hydrochloride, and chlorpheniramine maleate at D7.

maleate in an over-the-counter antiseptic has been previously reported in Japan (1), this is the first report of allergic sensitization to naphazoline hydrochloride.

Dibucaine hydrochloride is an amide local anaesthetic (1, 2). The frequency of sensitization (96 positive reactions in 10 061 patch-tested persons) shows that sensitization to dibucaine hydrochloride is not uncommon (4). Chlorpheniramine maleate is an antihistamine that is orally and intravenously administered and topically applied (3). Topical application is believed to be responsible for the sensitization (5). Naphazoline hydrochloride stimulates the peripheral alpha-2 adrenergic receptors and acts as a vasoconstrictor. It is used in over-the-counter antiseptics and eyedrops.

This case suggests the possibilities of either multiple sensitization or cross-sensitization. We speculate that sensitization to these three agents occurred sequentially during previous episodes. The induction of regional

allergic contact dermatitis caused by an initial sensitizer may facilitate sensitization to other agents because of the inflammation.

To our knowledge, this is the first case of allergic contact dermatitis caused by naphazoline hydrochloride (CAS 835-31-4). Caution should be exercised in using over-the-counter antiseptics or eyedrops containing naphazoline hydrochloride as it may have allergenic properties.

References

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