

Novel Nickel Contact Dermatitis in a Patient Taking Isotretinoin

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Abstract: There are many reports about contact dermatitis to nickel and side effects of isotretinoin, but the development of contact dermatitis to a previously tolerated allergen while taking isotretinoin is not well described. We report the case of a 19-year-old man who developed a new nickel allergy during isotretinoin treatment. We theorize that thinning of the stratum corneum by this medication allows for greater antigen presentation and thus sensitization to contact allergens.

A 19-year-old man completing month 5 of isotretinoin therapy for acne presented with new eczematous plaques underneath the case of his watch and adjacent to his belt buckle. He also reported an intermittent rash underneath his ring. He had worn these items without consequence before starting retinoid therapy. The rash under his watch persisted for 2 weeks and resolved after switching watches. The plaque on the lower abdomen remained despite changing belts (Fig. 1). The finger rash recurred with each exposure to the ring. The treatment course was also notable for a diffuse asteatotic dermatitis that developed 2 months earlier and improved with moisturizers and topical steroids.

He deferred patch testing because of cost, but a nickel detection kit was used to test his metal accessories. Two drops of demethyloxime were applied to a cotton-tipped applicator and rubbed on each item. The applicator turned pink after exposure to his watch and two belt buckles, yielding a positive test for nickel, although his ring tested negative. All control items (snaps on two pairs of jeans, two

watches, and one belt buckle) to which the patient had not reacted tested negative. Two months after isotretinoin completion, the abdominal plaque persisted but had improved.

DISCUSSION

Several adverse cutaneous effects have been described with systemic retinoid use, including cheilitis, palmo-plantar desquamation, and mucocutaneous xerosis (1). Systemic retinoids are also known to induce thinning of the stratum corneum, which may lead to increased photosensitivity and skin fragility, as demonstrated by epidermal stripping during wax epilation (2). Systemic retinoids have also been shown to upregulate the antigen-presenting activity of epidermal Langerhans cells to CD4⁺ T-cells, although the extent to which this increases cutaneous immunoresponsiveness is not fully known (3).

There are only two reported instances of development of new contact sensitivities in patients taking systemic retinoids. One case involved a medical

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Figure 1. Eczematous plaque on the abdomen where the belt buckle contacted the skin.

student who developed rubber glove dermatitis to gloves she had tolerated before starting isotretinoin. Patch testing after discontinuation of therapy was negative (4). Another case involved a young adult who developed patch test–confirmed allergies to multiple ingredients in ointments used for isotretinoin-induced xerosis, although he had not tried these products before starting isotretinoin (5).

Although our patient deferred patch testing, the presence of nickel in the offending items only is strongly suggestive of nickel allergy. The history of rash from a nickel-free ring suggests that a second metal allergy, such as cobalt, may also be present.

Because nickel allergy is common, it is also possible that the timing was merely coincidental.

This case is the first to report the development of a new contact allergy to nickel in a patient undergoing isotretinoin therapy. We propose that decreased barrier function secondary to thinning of the stratum corneum would allow for greater antigen penetration, and the upregulation of antigen-presenting activity in epidermal Langerhans cells in patients undergoing systemic retinoid therapy may enhance immunoresponsiveness to the penetrating antigens. Also, our patient had severe xerosis while taking isotretinoin, which might have promoted sensitization and subsequent allergic reaction.

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