A Diagnostic Pearl in Allergic Contact Dermatitis to Fragrances: The Atomizer Sign

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Allergic contact dermatitis (ACD) reactions to fragrances may present in a variety of ways because of exposure to these allergens from a wide range of sources. We describe a diagnostic pearl for this common ACD, primarily seen overlying the prominentia laryngea (Adam's apple) both in women and girls, which we have called the atomizer sign.

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Allergic contact dermatitis (ACD) has been increasingly reported in the pediatric population with prevalence estimates ranging from 25% to 66%.[1-4] Common clinically relevant allergens include nickel, rubber, chemicals, and fragrances.[5] In children, ACD to fragrances classically presents on the face, specifically the eyelids; hands; and diaper area.[5] In adults, common locations for fragrance ACD include the face and hands, as well as behind the ears, neck, and axillae.[6]

A sherlockian approach often is needed to investigate the possible causes of ACD, from eliciting a comprehensive patient history to performing a thorough physical examination.[7] "A dermatologist well experienced in patch testing can predict 80% of nickel sensitivity and 50% of rubber, colophony, and fragrance sensitivities but only 10% to 20% of reactions to other allergens. A complementary history after the test shows that about 80% of positive patch test reactions are relevant and provide information to the patient."[8] Oftentimes, it is the acknowledgment of heralding clinical signs that provides the vital information on the precipitating factors in the dermatitis.

Fragrances have been used since ancient times. Girls commonly want to emulate the feminine mystique through experimentation with cosmetics and perfumes containing fragrances. Logically, reactions to these fragrances classically occur in the contact areas (eg, neck, eyelids). We describe a novel site of involvement, namely the prominentia laryngea (Adam's apple), seen primarily in women and girls sensitized to fragrances. Recognition of this clinical diagnostic sign can assist in diagnosing fragrance-based ACD.

Case Reports

Patient 1—A 49-year-old woman with atopy presented to the contact dermatitis clinic with a 1-year history of facial, eyelid, and neck dermatitis. A prior thin-layer rapid-use epicutaneous test (T.R.U.E. Test®) had demonstrated positive reactions to nickel and formaldehyde. Despite following an avoidance regimen, the patient's dermatitis did not resolve. Physical examination revealed an eczematous plaque on the central midline aspect of the neck coinciding with the site of daily perfume application. Subsequently, a patch test was conducted using the North American Contact Dermatitis Group standard 65-allergen series in addition to selected chemicals commonly used in fragrances. Clinically relevant positive reactions to cinnamyl alcohol (1+),

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A 5-year-old girl with an eczematous plaque on the midline neck overlying the prominentia laryngea in the distribution of repeated application of atomized perfumes.

menthol (1+), propolis (1+), and her perfume (1+) were present on the 96-hour reading. She was advised to follow a fragrance-free regimen including the cessation of perfumes. At the 6-week follow-up examination, the patient had resolution of her dermatitis, with postinflammatory hyperpigmentation in the neck area.

Patient 2—A 5-year-old girl with atopy was referred for evaluation of chronic eyelid dermatitis recalcitrant to tacrolimus ointment and a wide array of topical steroids. An environmental history was remarkable for the child experimenting with her mother's perfumes, a practice that she was able to gesticulate during the physical examination. On initial physical examination, in addition to the eyelid dermatitis, the child was noted to have an eczematous plaque on the midline neck overlying the prominentia laryngea in the distribution of repeated application of the atomized perfumes (Figure). Further evaluation of the patient's personal hygiene products and personal effects, including cosmetics made specifically for children, revealed that the patient was exposed to a large number of fragrances on a daily basis. An in-depth education session was performed with the family in which the probable etiologic role of fragrances and the patch test procedure were explained. The patient's parents declined patch testing because of the non–US Food and Drug Administration approval in children, opting to follow an alternative fragrance-free regimen instead. On follow-up examination at 12 weeks, the patient had substantial clearance of both her eyelid and neck dermatitis; however, the mother explained that the child's ACD flared when she resumed using perfumes. Further education was given, and with avoidance of fragrances, the patient's dermatitis cleared.

Comment

In 2007, fragrance was named Allergen of the Year by the American Contact Dermatitis Society to recognize the importance of these allergens.[9] As a cultural practice, women often spray perfumes on the neck and wrists. In fragrance-sensitized women and girls, the practice of repeated open application of fragrances to the anterior neck may result in the appearance of a dermatitic plaque in that particular region, which we have called the *atomizer sign*. This sign also may occur in other areas repeatedly sprayed with perfume (eg, chest, wrists) depending on hygiene practices. Notably, the atomizer sign resolves when perfume spray activity is ceased and fragrances are avoided. Recognition of this sign may allow for early initial therapeutic intervention, notably fragrance avoidance. The atomizer sign can be a particularly useful clue to the diagnosis of fragrance-based ACD, especially if extended patch testing is not available or declined by a parent.

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