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Allergic contact dermatitis

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INSTRUCTIONS

Credit can now be obtained, free for a limited time, by reading the review article in this issue and completing all activity components. Please note the instructions listed below:

- Review the target audience, learning objectives and all disclosures.
- Complete the pre-test online at http://www.annallergy.org (click on the CME heading).
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Release Date: July 1, 2014
Expiration Date: June 30, 2016
Estimated Time to Complete: 60 minutes
Target Audience: Physicians involved in providing patient care in the field of allergy/asthma/immunology
Learning Objectives:
At the conclusion of this activity, participants should be able to:

- Describe the clinical and pathophysiologic presentation of allergic contact dermatitis
- Define the appropriate use of testing modalities to identify causative agents in allergic contact dermatitis
- List common sources where the common allergens that cause allergic contact dermatitis are found

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Clinical Vignette

A 35-year-old woman with a history of atopic dermatitis (AD) presents with a 2-year duration of patchy, pruritic facial rash that involves both cheeks, the upper and lower eyelids, the left side of her neck, and around her lips. She reports changing to all natural botanical cosmetics. She is a hairdresser but does not notice a difference in the rash at home or at work. Previous hand dermatitis had been controlled with the use of vinyl gloves at work. Her hobbies consist of reading and jogging. A thin-layer rapid use epicutaneous test (T.R.U.E Test) result was positive to balsam of Peru (BOP) and quaternium 15. Despite avoidance of these allergens by reading cosmetic labels, she continued to have breakthrough lesions. She reports that tomatoes made her breakout on both buttocks and axilla, but a recent skin prick test result to tomatoes was negative.

A subsequent patch test, including an expanded cosmetic panel and personal products, had a 2+ reaction to Fragrance Mix II (FM-II), BOP, and quaternium 15, all deemed to have probable relevance. She strictly adhered to a list of safe products from a database for 2 months with some improvement but would still break out occasionally on the buttocks and axillary area. Because systemic contact dermatitis (SCD) was suspected, a low-BOP diet was prescribed, and the patient had marked improvement after 1 month.

Definition

Contact dermatitis is defined as an inflammation of the skin that results from direct contact of a substance with the surface of the skin. The 2 main types are irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD). The most common form is ICD, which occurs when substances, such as solvents or other chemicals, irritate the skin directly after exposure, resulting in red, often more painful than itchy, patches on the involved skin areas.[1] This reaction occurs without a prior immunologic sensitization. In contrast, ACD results from a type IV hypersensitivity reaction. On first exposure, a substance penetrates the skin surface, is processed by antigen-presenting cells, and then is carried to the regional lymph nodes, where they are introduced to T cells. Allergen-specific T cells then proliferate. On subsequent exposures, circulating memory T cells home to the skin, recognize the antigen, and induce an immunologic cascade, resulting in pruritic dermatitis. This reaction usually takes 8 to 48 hours but can occur as early as 2 to 3 hours after a subsequent exposure and can appear up to 96 hours after contact with the allergen.[2]

Diagnostic Approach

The diagnosis of ACD requires a comprehensive history, including an occupational and social history, current and past profession, hobbies (Table 1), disease course, seasonal variation, response to treatment, presence of pruritus, and a history of AD. Patients who had AD as a child have a 3-fold increase in the risk of hand eczema (which may be either ICD or ACD).[3] Patients with AD who are not responding to therapy (flares with treatment, no response to treatment, or flares when they try to discontinue treatment) or who have unusual distributions should be suspected of having ACD. Most importantly, ACD is almost always pruritic but can also cause stinging, burning, or pain. Lastly, it is important to explain to the patient that ACD can occur with chemicals (cosmetics) that they may have used for years and that even occasional exposure may still elicit a reaction.[4]

A physical examination should identify the location(s) of the dermatitis and morphologic features of the lesions. ACD lesions typically are pruritic, erythematous plaques that develop into vesicles and sometimes tense bullae. In chronic cases, the skin appears pink-red, dry, fissured, and lichenified and can often be confused with AD.[5] Particularly high-yield locations for ACD include eyelids, face, lips, hands, dorsal feet, upper back, and proximal and lateral parts of the arms. Each distribution confers an increased risk for a specific allergen. Interestingly, the latest North American Contact Dermatitis Group data list the most common body locations of contact dermatitis as scattered or generalized distribution on the hands and face (Table 2).[6]

Eyelid Dermatitis

ACD is the most common cause of periorbital and eyelid dermatitis.[7] ACD should be considered if the lesion itches and extends beyond the eyelid and an ectopic allergen source (ie, nail polish) if one eyelid is worse than the other. Some common products that cause eyelid dermatitis are shampoo, conditioners, soap, hand moisturizer, and nail cosmetics. Frequently reported allergens were formaldehyde, nickel, BOP,[8] and gold.[9]

Facial and Neck Dermatitis

The main differential diagnoses for peripheral face (preauricular, submental, or jawline) dermatitis are ICD, seborrhea, and ACD. The products most likely to cause an ACD in this area are shampoos, conditioners, and facial cleansers. In contrast, the products most likely to cause a central facial dermatitis (cheeks, forehead) are makeup and moisturizers. Personal care products, preservatives, and fragrances represent the most common relevant allergens in those diagnosed as having ACD of the face. ACD that affects the lateral aspect of the neck is most likely secondary to perfumes or colognes and nail cosmetics.[10]

Table 1
History taking in the evaluation of allergic contact dermatitis

Evaluation	Variables
Demographics	Age, sex, race, ethnicity
Family medical history	Allergic rhinitis, asthma, eczema
Personal medical history	History of atopic dermatitis or other allergic disease, existing medical conditions, implantation of medical devices, including implants, braces, crowns/bridges, stents, or fillings
Occupational history	Current job title, job description, regular and occasional chemical exposures, materials used at work, location of employment, length of time at current job, previous employment, symptoms at work
Dermatitis-specific history	Onset of rash: date and/or duration, initial areas affected, severity, type, pattern and progression of eruption, previous treatment (physician and self-treatment modalities)
	Current: areas affected, severity, when does the rash occur, worsen or improve (during workweek, after weekend)
Sports/hobbies	Types of activities, frequency, equipment or materials used, symptoms with sports or hobbies
Personal care	Hand-washing frequency and type of soap, use of cosmetics and other common personal care products (deodorant, lotion, perfumes, toothpaste, nail polish, mouthwash, shampoo, conditioner)
Jewelry and tattoos	Number of body piercings, types of jewelry and frequency of use, history of permanent, temporary, or henna-based tattoo, symptoms with jewelry or tattoos