

# Allergic Contact Dermatitis for Residents

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*Allergic contact dermatitis (ACD) is a very common skin disease faced by dermatologists. As residents, it is essential that we learn to appropriately diagnose and manage ACD and utilize helpful resources early on in our training.*

*Cutis. 2015;96:E30-E32.*

Allergic contact dermatitis (ACD) is a common inflammatory skin condition that affects more than 14 million Americans each year.<sup>1</sup> It has been estimated that the economic burden of ACD is nearly \$3 billion per year due to school absences, work time lost, and medical expenditures.<sup>1,2</sup> In fact, skin diseases rank second to traumatic injuries as the most common type of occupational disease.<sup>3</sup> As dermatology residents, we will encounter many patients with ACD, a potentially debilitating skin condition. In this column, I will discuss the different types of ACD as well as their differential diagnoses and management options according to the American Academy of Allergy, Asthma & Immunology's updated practice parameter for contact dermatitis.<sup>4</sup> The 2015 American Contact Dermatitis Society (ACDS) Allergen of the Year and the ACDS's Contact Allergen Management Program also will be discussed.

## Clinical Presentation and Pathophysiology

Allergic contact dermatitis is a widespread skin condition characterized by erythematous and pruritic skin lesions that occur after contact with external

stimuli.<sup>5</sup> It is caused by a type IV, T cell-mediated, delayed hypersensitivity reaction in which a foreign substance comes into contact with the skin and forms an antigen complex that subsequently leads to sensitization. Upon reexposure to the antigen, the sensitized T cells induce an inflammatory cascade causing the skin changes associated with ACD. Clinical presentations of ACD include vesicles and bullae with distinct angles, lines, and borders.<sup>6</sup>

## Differential Diagnosis

In contrast to ACD, irritant contact dermatitis (the more common form of contact dermatitis) is a non-immune-modulated skin reaction that occurs when an individual is exposed to a substance that causes irritation and damage to the keratinocytes.<sup>6,7</sup> It can be an acute reaction to a household cleaning product or a chronic reaction to soap if the patient has had exposure to the product for a prolonged period of time.<sup>7</sup> The clinical presentation of irritant contact dermatitis includes dry and fissured skin with less distinct borders and negative patch test results.<sup>6</sup>

Some other skin diseases that should be considered in the differential diagnosis for suspected ACD include atopic dermatitis, dyshidrotic eczema, inverse psoriasis, latex allergy, palmoplantar psoriasis, scabies, and tinea pedis.<sup>5</sup> When ACD is suspected, our diagnostic approach as dermatology residents should be based on a combination of the following factors: the clinical features of the skin reaction (eg, morphology, location, symptoms), the patient's history of exposure to an alleged allergen and lack of exposure after treatment and/or avoidance, patch test results, laboratory test results, and/or histopathologic examination to exclude other disorders with similar clinical features.<sup>8</sup>

## Management

Localized acute lesions of ACD can be successfully treated with mid- or high-potency topical steroids such as triamcinolone 0.1% or clobetasol 0.05%. If

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The author reports no conflict of interest.

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an extensive area of the skin (>20%) is affected, systemic steroid therapy often is required, generally offering relief within 12 to 24 hours. Caution should be taken when prescribing oral prednisone, such as for poison ivy, as it should be tapered over a few weeks to prevent rebound dermatitis. If treatment fails and the diagnosis or specific allergen remains unknown, patch testing should be performed.<sup>3,5</sup>

### Updated Practice Parameter

Practice parameters for contact dermatitis were updated in 2015, as commissioned by the Joint Task Force on Practice Parameters, to address recent advances in the field of contact dermatitis and the most recommended methods for diagnosis and management based on the current scientific literature.<sup>4</sup> Prior to this update, the most recent recommendations were from 2006.<sup>3</sup>

Since the publication of the original practice parameter, new questions have been addressed related to emerging clinical problems such as preoperative screening and postimplantation patch testing for metal allergy in patients undergoing joint replacement surgery. In the updated practice parameter, statements have been added that more comprehensively address evaluation and management of occupational contact dermatitis.<sup>4</sup> The potential benefits and limitations of drug patch testing in patients with maculopapular rashes, erythroderma, and nonimmediate cutaneous reactions also have been addressed. New summary statements have been included that make recommendations on the management of ACD, particularly avoidance and prevention.<sup>4</sup>

### ACDS Allergen of the Year

The purpose of this "award" is to recognize the agents that cause the most remarkable clinical effects, those that draw less attention, or those that exhibit exposure patterns that have changed. The ACDS's 2015 Allergen of the Year is formaldehyde, an inexpensive biocidal preservative used in a wide range of products such as tissue specimen and cadaveric preservation solutions, nail polish, hair-smoothing treatments, and wrinkle-free fabrics.<sup>9</sup>

Formaldehyde-releasing preservatives (FRPs) are among the leading contact allergens and are found in many personal hygiene products, medications, and household cleansers.<sup>8</sup> Specific sources of FRPs include shampoos, bodywashes, hand soaps, lotions, creams, baby wipes, mascara, disinfectants, fabric softeners, topical wart remedies, adhesives, and tissue specimen preservation solutions.<sup>10-13</sup> According to de Groot et al,<sup>14</sup> the US Food and Drug Administration's Voluntary Cosmetic Registration Program database has estimated that approximately 20% of personal

hygiene products and cosmetics contain an FRP, with imidazolidinyl urea as the most common.

It is important for patients to be aware of sources of formaldehyde exposure and understand that many products containing formaldehyde or FRPs may not list this information on their labels. In fact, one study reported that 33% of 67 moisturizers evaluated did not have proper labeling with regard to their formaldehyde/FRP content.<sup>15</sup>

### Contact Allergen Management Program

During medical school I served as the Dermatology Interest Group Contact Dermatitis Awareness Chair at the University of Texas Medical Branch (Galveston, Texas) and was fortunate to have attended the annual meeting of the ACDS where I learned about the ACDS Contact Allergen Management Program (CAMP), an online resource for dermatologists to access that provides patients a printout list of allergen and cross-reactivity information for more than 1200 products (<http://www.contactderm.org/i4a/pages/indexcfm?pageID=3489>). This information helps consumers to choose the right products based on their allergies.

### Final Thoughts

A thorough review of a patient's medical history and, if needed, skin patch testing can identify the responsible allergen and initiate an appropriate avoidance plan for the patient. With appropriate avoidance, patients can achieve resolution of their dermatitis and prevent further episodes to substantially improve their quality of life and decrease health care costs.<sup>1</sup> If left untreated, ACD can evolve from an acute form to a subacute form and eventually chronic eczematous dermatitis or progression to systemic disease.<sup>16,17</sup> Allergic contact dermatitis can negatively impact an individual's health-related quality of life, particularly in social functioning and psychological well-being.<sup>18,19</sup> Therefore, it is pertinent in our role as dermatology residents to recognize ACD before its progression to a chronic state.

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