

EDITORIAL

Translating Allergic Contact Dermatitis Data to the Patients and Populations We Serve

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In this issue of *JAMA Dermatology*, the North American Contact Dermatitis Group reports detailed data on 2 cohorts: male patients with facial dermatitis¹ and patients with anogenital dermatitis.² The authors are a dedicated group of experts who



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have been aggregating and reporting results of allergy patch testing for decades. The statistically significant results of both studies are interesting, but there is also tremendous value in the detailed results and in the Discussion sections. The information in these articles can help us improve our care of individual patients as well as improve health systems and population health. Readers are encouraged to thoroughly review and reflect on these articles.

Individual Patients

The value of these data are in the detailed list of allergens found to be clinically relevant. Accurately diagnosing the cause of allergic contact dermatitis and providing effective avoidance strategies can greatly improve patients' quality of life.³ Identifying an allergen allows for a cure without drugs, without surgery, and without the need for any follow-up appointments. In the tables accompanying each article, there are dozens of allergens that were clinically relevant to patients in the cohort studied. Testing each of these allergens based on the patient's exposure history is important regardless of how often they are relevant. Dermatologists should be aware of all the potential allergens for different patterns of contact dermatitis when deciding which patients to test and for which allergens.

When assisting an individual patient with dermatitis, one should review all of the patient's personal care products that touch the affected areas and then select the appropriate patch tests or conduct a repeat open application test of the product itself. That often means reviewing every active and inactive ingredient of every personal care product that the patient brings in, while explaining the nature of delayed-type hypersensitivity and empathizing with the patient's condition—all in a 15- to 20-minute visit!⁴

Health Systems, Researchers, and Payers

Warshaw et al² show that 50.6% of patients with anogenital dermatitis have 1 or more clinically relevant patch test reactions. If physicians do not test for all of the potential culprits, they will miss the diagnosis of allergic contact dermatitis. Testing that reveals 1 relevant allergen without detecting others will not result in a cure. Patch testing must be comprehensive to be of value, such that there is no "magic number" of patch tests that are appropriate for any given patient. Insurers need to understand this when covering patch test procedures.

Food was the third most common source of allergens in anogenital dermatitis, accounting for approximately 8.5% of cases.² This finding is remarkable given that foods are rarely patch tested. Patch tests for foods, sometimes referred to as atopy patch tests, require more research focus.⁵ Although skin prick tests detect immediate-type hypersensitivity manifesting as hives, patch tests and atopy patch tests detect delayed-type hypersensitivity that can cause dermatitis. Systemic contact dermatitis describes an ingested or inhaled allergen triggering dermatitis. This occurs in a subset of sensitized patients, and atopy patch tests are useful when results are negative, to narrow the list of potential ingested triggers.

The authors cite a study by Salam and Fowler⁶ on systemic contact dermatitis to Balsam of Peru, a natural flavoring in foods. Foods are weakly potent allergens, generally sensitizing only patients with impaired barrier function and a genetic predisposition to atopy and result in a T_H2 response.⁷ Cutaneous sensitization to foods resulting in systemic contact dermatitis manifests as food triggers in atopic dermatitis.⁵

We currently have the ability to detect potent allergens present in standard screening series, which cause persistent T_H1 skewed dermatitis. We lack adequate tests for weakly potent allergens (as defined by the local lymph node assay) such as foods, which sensitize patients with chronic barrier dysfunction such as atopic dermatitis.⁸ Patch tests for less-potent allergens (eg, parabens and foods) may need to be placed close to the dermatitis they elicit to see a positive result. The T_H1 response is less durable in patients with atopic dermatitis who are experimentally sensitized,⁹ and we do not know how often these patients should be retested to determine whether they remain allergic. The T_H2 immune response to the experimentally induced contact allergen is durable in these patients⁹ and likely plays a role in systemic contact dermatitis and respiratory atopy. Systemic contact dermatitis improves with dupilumab, which blocks T_H2 cytokines.¹⁰ Anogenital dermatitis is a common site of systemic contact dermatitis, and we do not know how many of the patients reported by Warshaw et al² had a systemic trigger or how many might improve with the use of dupilumab.

For patients in whom comprehensive patch testing reveals no relevant allergen, this work reminds us of alternative diagnoses. For anogenital dermatitis, the authors list the following as mimics of allergic contact dermatitis: lichen simplex chronicus, lichen planus, and lichen sclerosus et atrophicus.² In my experience, steroid addiction syndrome is another common diagnosis mimicking facial dermatitis; irritant contact dermatitis and ocular or periorificial dermatitis of the rosacea type are common diagnosis around the eyes and lips in particular. Linking checklists of alternative diagnoses

to the dermatitis diagnosis code in electronic health record systems may be a way to improve diagnostic accuracy.¹¹

Population Health

The authors speculate that increased use of facial moisturizer by men may explain the increased incidence of facial allergic contact dermatitis.¹ This possibility is concerning because it suggests that marketing may be increasing the use of emollients in the healthy population.

Although daily application of emollients to the entire skin surface except the scalp from 3 weeks of age reduces the incidence of atopic dermatitis at 6 months,¹² once skin is inflamed, the risk for allergic contact dermatitis to emollients begins. For children with atopic dermatitis, positive patch tests of their own emollient is one of the most common findings.¹³ This condition does not persist into older age groups, likely because the T_H1 response to cutaneous sensitization in patients with atopic dermatitis is more transient than in patients with nonatopic dermatitis.⁹

Emollients are helpful to suppress the innate immune response in various types of inflammatory skin disease. However, there are no data suggesting that moisturizers have medical benefits in a healthy population. Extrapolation from mouse data¹⁴ suggests that use of emollients may increase the risk of skin cancer in the general population, perhaps by depressing innate immunity. Although this risk may be mitigated by the addition of sunscreen, there is no medical need to treat asymptomatic dry skin, which is not a disease.

Some will suggest that we minimize sensitizers in emollients to mitigate the risk of allergic contact dermatitis. However, there are multiple examples of the Dillarstone effect,¹⁵ in which an identified allergen is replaced with another product that results in even more allergic contact dermatitis. Patients with atopic dermatitis sensitize to less-potent allergens, less readily detected in sensitization data from the general population, and may be at increased risk of harm due to the Dillarstone effect.

The better strategy is to minimize the use of any product that is not necessary. Including the risk of allergic contact dermatitis in any product making a “skin health” claim would be a great service to consumers and to dermatologists who appreciate the relative lack of knowledge of this condition in the patient population.

Bottom Line

Dermatitis is complicated. Patch test results in the general population with dermatitis may not reflect those in specific subpopulations because of both cutaneous immunology and exposure patterns. Data on patch test results can improve understanding if properly communicated to stakeholders, including researchers, manufacturers of personal care products, and health care payers. Ironically, the most critical messages are not necessarily the statistically significant results highlighted in the Conclusions sections in these 2 studies.^{1,2}

ARTICLE INFORMATION

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