

Prevalence and Interest in the Practice of Scratch Testing for Contact Urticaria: A Survey of the American Contact Dermatitis Society Members

Quinn Orb, BA,* Jillian Wong Millsop, MD, MS,†‡ KaLynne Harris, MD,§ and Douglas Powell, MD§

Background: Contact urticaria (CU) is the development of a wheal and flare on the skin after topical exposure to a particular chemical or compound. It can be diagnosed through a variety of techniques. Many chemicals that cause a type IV allergy can also cause CU. The incidence of CU to these chemicals is unknown.

Objective: The aim of this study was to evaluate the opinions of the American Contact Dermatitis Society members regarding CU and scratch testing.

Methods: We distributed an electronic survey to the American Contact Dermatitis Society members regarding observed prevalence of CU, frequency of scratch testing in clinical practice, and interest in learning about scratch testing in diagnosing CU and other skin contact conditions.

Results: We distributed 508 surveys and received 133 responses. Seventeen percent reported that CU was extremely rare, 32% reported that CU was rare, and 38.9% reported that CU was infrequent. Alternatively, 10.7% believed that CU was common, and 1.5% believed that CU was extremely common. A minority, 19.1%, performed scratch testing on patients with suspected CU. Most respondents, 54.6%, were interested in learning about scratch testing.

Conclusions: Additional education regarding scratch testing could increase comfort and use of scratch testing in clinical practice. Further studies are needed to evaluate the prevalence of CU in the general population and better guide the use of testing for dermatologic patients.

Contact urticaria (CU) is the development of a wheal and flare on the skin upon direct exposure to an exogenous chemical or compound in the environment in the classical definition.¹ The reaction usually occurs within 15 to 20 minutes of exposure to the substance and will often subside within 24 hours.² Symptoms are heterogeneous, and the intensity varies with the chemical, site of exposure, and mode of exposure. The symptoms can range from mild tingling, itching, burning, and erythema to severe systemic urticaria and dermatitis.³ The varying intensity of symptoms has been described in stages of a CU syndrome. Stages I and II consist of local symptoms at the site of exposure. Symptoms of a stage I reaction include mild erythema, slight

swelling, and dermatitis. Stage II consists of the more typical wheal and flare response associated with CU. Extracutaneous symptoms can also occur, but they are rarer. Stage III consists of systemic reactions including bronchial asthma, rhinitis, conjunctivitis, orolaryngeal swelling, and gastrointestinal symptoms. In the stage IV response, exposure to the compound results in an anaphylactoid reaction.¹⁻⁴

Contact urticaria is caused by either immunologic or nonimmunologic mechanisms. Immunologic CU (ICU) results from a type I sensitivity reaction with preformed IgE antibodies and mast cells.^{1,3} Unlike ICU, non-ICU occurs without previous sensitization to the chemical and is not IgE mediated. The exact mechanism for non-ICU is not well understood, but nonspecific release of histamine from mast cells and prostaglandins are thought to be involved in the skin response.^{1,3}

The incidence of CU, aside from the incidence of latex allergy, in the general population is unknown, and determining the prevalence of CU is difficult due to underreporting, misdiagnosis of the condition, and a lack of studies. Contact urticaria, according to 1 author, "may be a relatively common and underrecognized phenomenon."² Because CU can present clinically as dermatitis, it may not be considered in the differential diagnosis when a patient is being evaluated.² Certain occupations carry a greater risk of CU such as patients working in health care, food handling, hair

From the *University of Utah School of Medicine, Salt Lake City; †Department of Internal Medicine, California Pacific Medical Center, San Francisco; ‡Department of Dermatology, University of California Davis, Sacramento; and §Department of Dermatology, University of Utah, Salt Lake City.

Address reprint requests to Quinn Orb, BA, Department of Dermatology, University of Utah, 30 N 1900 E, 4A330, Salt Lake City, UT 84132.
E-mail: Quinn.Orb@hsc.utah.edu.

Dr KaLynne Harris is deceased.

Conflict of Interest: Mr. Orb, Dr Millsop, Dr Harris, and Dr Powell have no conflicts of interest to disclose.

DOI: 10.1097/DER.0000000000000086

© 2014 American Contact Dermatitis Society. All Rights Reserved.

salons, and maintenance. Despite the transient nature of CU, serious adverse reactions can, but rarely, occur.^{2,5} Many allergens that are reported to cause CU are standardly available for patch testing but are not standardized for evaluation of CU. Such allergens include the following: balsam of Peru, cinnamic aldehyde, bacitracin, neomycin, benzocaine, metals (nickel, cobalt, copper, etc), colophony, ammonium persulfate, benzophenone, and many more.⁶ Because these chemicals are commonly applied to patients' backs for 48 hours during patch testing, severe reactions to them would seem to be very unlikely or extremely rare, but the urticarial reactions would often subside before the first patch test read, which typically occurs 2 days after the initial exposure.

Accurate diagnosis of CU requires performing a thorough history and physical examination and performing a skin test with the suspected substance. Open skin testing by application of the compound directly to the skin, closed chamber testing, prick testing, scratch testing, and intradermal testing are used to diagnose the condition.⁷ Prick testing is considered the "key" diagnostic tool when utilizing standardized allergens such as in an allergist's office. In prick testing, a small lancet is placed through the material on the skin, and a slight prick is obtained. Scratch testing is used when thicker/more solid nonstandardized allergens are used.⁷ In scratch testing, the physician carefully makes a small scratch on the back or forearm of the patient and then applies a small amount of the test material into the scratch. Negative and positive controls are used when performing skin tests. At 15 minutes, the physician reads the results. The presence of a wheal that is 3 mm greater than the control indicates a positive result.⁸

In the current study, we surveyed members of the American Contact Dermatitis Society (ACDS). Our goal was to assess the opinions of the ACDS members on how prevalent they felt CU was in their patients, and how often they assessed for it—including assessment for other allergens besides latex. We assessed the number of ACDS members treating patients with CU, their use of scratch testing, and their level of comfort with the technique. The questionnaire did not use the term *prick testing*, partly because it was felt that most dermatologists did not know the exact difference between prick testing and scratch testing and also because they would likely to be using nonstandard allergens. We also evaluated the level of interest of practicing ACDS members in learning more about the use of scratch testing in the diagnosis of CU and other skin contact conditions. Although most of the members of the ACDS are dermatologists, it is noted that a few allergists also belong to the society.

METHODS

We developed a survey of 8 questions (Table 1) through SurveyMonkey, an online electronic survey Web site (<https://www.surveymonkey.com/>). The survey was then distributed electronically in 2010 to 508 members of the ACDS, and we received a total of 133 responses.

TABLE 1. List of Questions From the Survey Distributed to the ACDS

Survey Questions

1. How long have you been in practice?
2. In what setting do you practice?
3. Do you currently scratch test patients you suspect may have CU?
4. How frequently do you scratch test to assess for CU?
5. Do you feel comfortable with scratch testing technique and interpretations?
6. Are you interested in learning more about scratch testing?
7. How common do you believe that CU is in your practice?
8. Have you diagnosed or treated patient(s) with CU to alcohol?

We distributed the survey in a multiple-choice format, and the respondents answered each question by choosing their responses from a predetermined list of choices. After completion of the survey, the responses were returned electronically. A space was also provided for ACDS members to give comments.

RESULTS

Respondents

Of the 133 ACDS members who responded to our survey, 59.1% (78/132) had been in practice for more than 15 years; 16.7% (22/132) of the respondents had been practicing for less than 5 years. Of all respondents, 64.4% (85/132) were involved in private practice with most of these physicians either in a small group or single practice. Respondents involved in academic medicine made up 31% (41/132) of the total respondents.

Perceived Prevalence of Contact Urticaria

Physicians were asked about the frequency of CU in their practices. Seventeen percent (22/131) believed that CU was extremely rare, 32% (42/131) stated that CU was rare, and 38.9% (51/131) believed the condition to be infrequent (Fig. 1). In contrast, only 10.7% of the respondents (14/131) believed the condition to be common, and only 1.5% (2/131) of the respondents stated that CU was extremely common (Fig. 1).

Use of Scratch Testing

With regards to scratch testing, 80.9% (106/131) of the respondents denied currently performing scratch testing on patients whom they suspected to have CU (Fig. 2). Of the 19.1% (25/131) of the physicians who perform scratch testing, roughly one quarter of them (6/25) stated that they only use the test for patients whom they suspect to have a latex allergy. As a result, only 14.5% (19/131) of physicians surveyed perform scratch testing for anything other than latex. This correlates fairly well with the opinions regarding frequency of CU. Most of the respondents (23/25) who reported performing scratch testing for suspected CU also reported frequency of performing the test. Among those who perform scratch

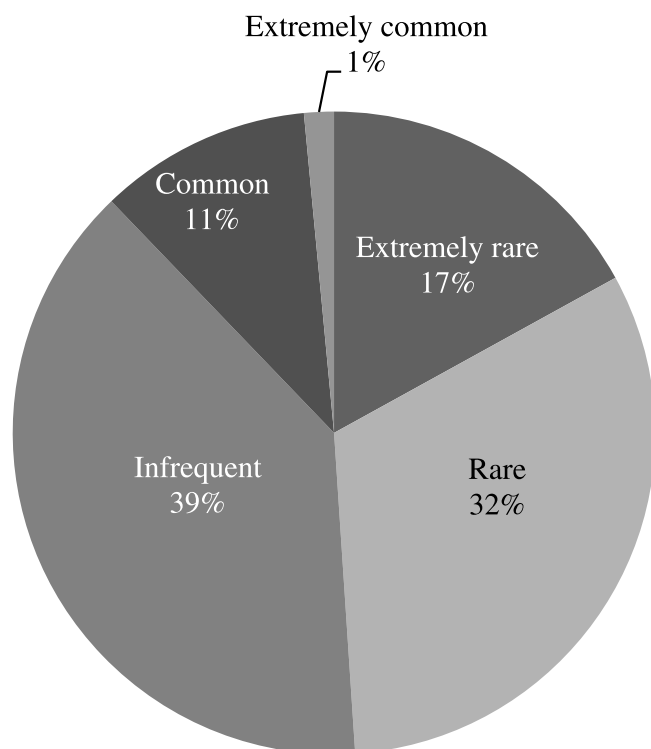


Figure 1. Frequency of CU. The perceived frequency of CU among dermatologists in their respective practices. Perceived frequency was divided into 5 categories as follows: extremely rare, rare, infrequent, common, and extremely common.

testing, 60.9% (14/23) reported using the method 1 to 5 times per year, 21.7% (5/23) used the method 6 to 10 times per year, 8.7% (2/23) used the method 11 to 20 times per year, and 8.7% (2/23) used the method more than 20 times each year.

Familiarity With Scratch Testing

Most ACDS members, 73.3% (96/131), reported that they did not feel comfortable with performing and interpreting scratch tests. They responded with statements such as, “I don’t have any confidence in my ability to perform this test,” “not trained in technique,” and “I am afraid of death!!!” Only 26.7% (35/131) of the respondents reported feeling comfortable with the technique. When asked, 54.6% (71/130) of the respondents stated that they were interested in learning more about scratch testing. Almost a quarter of respondents, 24.6% (32/130), admitted that they were not interested in learning more about the technique, and 20.8% (27/130) stated that they were unsure.

DISCUSSION

Members of the ACDS are frequently evaluating patients that present with dermatitis, stinging, and burning of the skin. Many of the allergens that they have at their disposal not only cause contact dermatitis, but can also cause CU. According to our survey, most members of the ACDS (88%) feel that CU is uncommon,

and thus, many (80.9%) do not evaluate for it in their practice. However, the incidence of CU due to many chemicals, aside from latex, that are applied to the skin and that can cause a clinical dermatitis is completely unknown.² As a result, CU may be far more common than generally believed, but the current lack of clinical evaluation for the syndrome will ensure that the incidence of CU remains undefined. Because the clinical presentation of this syndrome is on the skin, it is important for dermatologists to be able to diagnose and effectively care for patients with the condition. Accurately performing and interpreting skin tests are vital aspects of making the diagnosis of CU.⁹

Many of the respondents stated that they were interested in learning more about the test, but it would seem from the responses that few are trained in the technique. Our data suggest that a lack of familiarity with scratch testing may contribute to few dermatologists using the method to evaluate for CU. Possible ways to learn techniques of evaluating CU would include teaching during residency, learning from local allergists, and gleaning from textbooks.

CONCLUSIONS

To the authors’ knowledge, this is the first survey study of dermatologists investigating the opinions on the frequency of CU and the use of diagnostic testing to evaluate for the clinical syndrome. Our study demonstrates that most ACDS members believe that CU is rare and that many of them are not testing their patients for the condition. However, due to a lack of diagnostic testing and published studies, the prevalence of CU in the general population

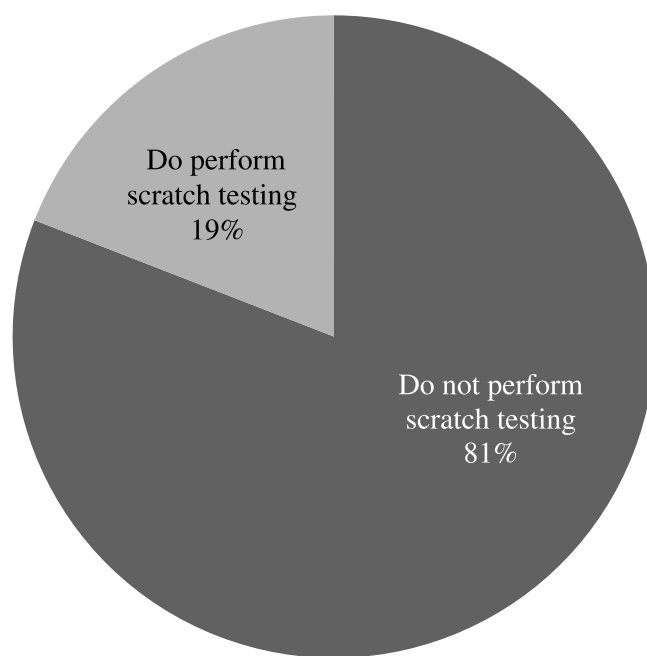


Figure 2. Frequency of performing scratch testing for suspected CU. Proportion of dermatologists who perform scratch testing when CU is a suspected diagnosis.

is currently unknown. Increased knowledge and experience with testing for CU among dermatologists would likely be helpful in better understanding the prevalence of this condition. In addition, an increase in the testing of patients for CU may aid in more accurate clinical diagnoses for dermatologic patients.

REFERENCES

1. Amin S, Maibach HI. Introduction. In: Amin S, Lahti A, Maibach HI, eds. *Contact Urticaria Syndrome*. New York, NY: Informa Healthcare USA; 1997:1–4.
2. Wakelin SH. Contact urticaria. *Clin Exp Dermatol* 2001;26:132–136.
3. Lahti A. Nonimmunologic contact urticaria. In: Amin S, Lahti A, Maibach HI, eds. *Contact Urticaria Syndrome*. New York, NY: Informa Healthcare USA; 1997:5–10.
4. von Krogh G, Maibach HI. The contact urticaria syndrome—an updated review. *J Am Acad Dermatol* 1981;5:328–342.
5. Bourrain JL. Occupational contact urticaria. *Clin Rev Allergy Immunol* 2006;30:39–46.
6. Amin S, Maibach HI. Immunologic contact urticaria definition. In: Amin S, Lahti A, Maibach HI, eds. *Contact Urticaria Syndrome*. New York, NY: Informa Healthcare USA; 1997:11–26.
7. Lachapelle JM, Maibach HI. Methodology of open (non-prick) testing, prick testing, and its variants. In: Lachapelle JM, Maibach HI, eds. *Patch Testing and Prick Testing*. 3rd ed. New York, NY: Springer; 2012:159–164.
8. Gimenez-Arnau A, Maurer M, De La Cuadra J, et al. Immediate contact skin reactions, an update of contact urticaria, contact urticaria syndrome and protein contact dermatitis—“a never ending story”. *Eur J Dermatol* 2010;20:552–562.
9. Amaro C, Goossens A. Immunological occupational contact urticaria and contact dermatitis from proteins: a review. *Contact Dermatitis* 2007; 58:67–75.