

Alcohol Urticaria Syndrome

Jillian W. Wong, KaLynne Harris, and Douglas Powell

Précis

We report the first case (to our knowledge) of alcohol urticaria syndrome presenting with a reaction to hand sanitizer, an increasingly ubiquitous product.

Case Report

A 30-year-old East Asian American nurse reported sensitivity to alcohol-based hand sanitizers, which she frequently uses at work. Approximately 20 minutes to 4 hours after applying a hand-sanitizing gel to her hands, she develops redness, pruritus, and swelling that lasts for 1 to 2 days. She develops similar symptoms after applying perfume. After drinking alcoholic beverages, she develops hives starting on the abdomen and then spreading diffusely 20 to 30 minutes later; she therefore now avoids drinking alcoholic beverages. On one occasion, after she received an albuterol inhaler (alcohol vehicle) in the emergency room for wheezing symptoms, her wheezing and respiratory distress worsened dramatically.

On examination, the patient had only slight erythema of the hands. We performed standard expanded patch testing with 85 potential allergens. We also patch-tested the patient with an isopropyl alcohol cleaning wipe, four hand sanitizers she had used, and her two perfumes. At 48 hours, she had + reactions to balsam of Peru, propylene glycol, one of her perfumes, a commercial ethyl alcohol-based hand gel, and an isopropyl alcohol-based cleansing pad; she also had ++ reactions to gold sodium thiosulfate, three additional ethyl alcohol-based hand gels, and her other perfume. At 96 hours, she continued to have + reactions to balsam of Peru and propylene glycol and + to ++ reactions to the four alcohol-based hand sanitizers, her

two perfumes, and gold sodium thiosulfate (Fig 1). Prick testing revealed positive wheal reactions to the alcohol-based hand gels, her perfumes, the isopropyl alcohol wipe, and a histamine control. She had negative prick-test results for balsam of Peru, cinnamic aldehyde, 10% ethanol, 10% and 1% acetic acid, and a negative control. Subsequent patch tests with 100% ethanol and with 100% and 10% acetaldehyde created large wheals at the ethanol and acetaldehyde sites within 5 minutes (Fig 2), at which time the patches were removed. This was associated with extreme pruritus.

Discussion

Based on our patient's clinical history of immediate urticarial reactions and her positive prick-test reactions to ethanol, ethanol-containing products, and aldehyde, we determined that she had contact urticaria provoked by both the topical application and systemic ingestion of ethyl alcohol—alcohol urticaria syndrome (AUS).

AUS is a rarely reported and poorly understood entity.¹ Patients can present with urticaria or generalized erythema or both following contact with or ingestion of alcohol. Contact urticaria such as is seen in AUS can frequently present as dermatitis and can clinically look like allergic contact dermatitis.¹ Either primary alcohols or alcohol



Figure 1. Patch-test results after 96 hours: + to ++ reactions to alcohol-based hand sanitizers and perfumes, and a negative reaction to benzyl alcohol.

From the Department of Dermatology, University of Utah, Salt Lake City, UT.

Address reprint requests to Douglas Powell, MD, University of Utah, Department of Dermatology, 4A330 SOM, Salt Lake City, UT. E-mail: doug.powell@hsc.utah.edu

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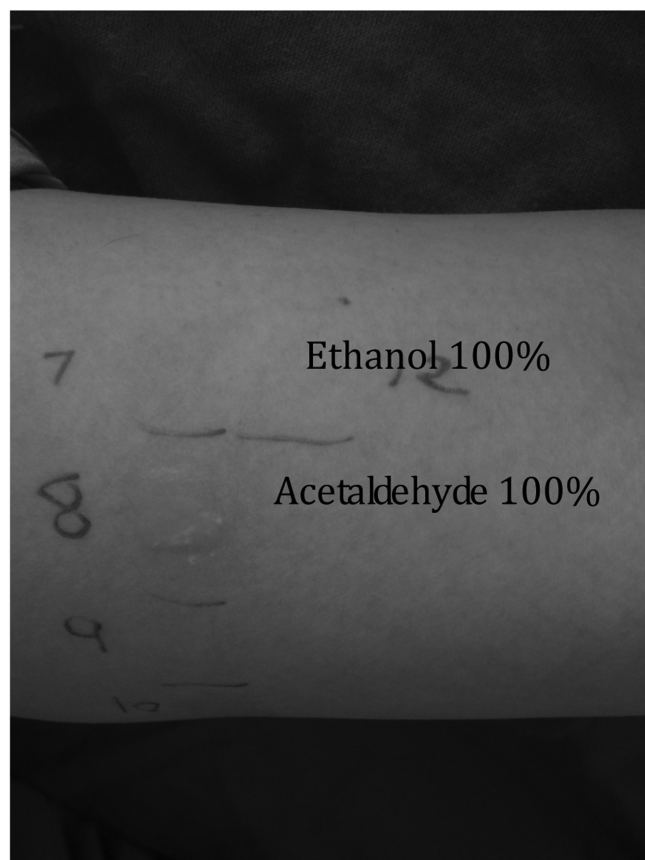


Figure 2. Patch-test results: large wheal and flare from 100% acetaldehyde and 100% ethanol within 5 minutes of occlusion on the patient's arm.

metabolites (specifically, aldehydes and acetic acid) can trigger AUS.^{1,2}

AUS may be more common among persons of East Asian descent who have aldehyde dehydrogenase deficiency, leading to increased serum aldehyde levels in alcohol breakdown.^{3–5} Three East Asian patients who reported facial flushing with oral alcohol intake were patch-tested with primary alcohols and aldehydes by Wilkin and

Fortner.² All three had positive erythematous immediate reactions to primary alcohols and aldehyde, leading the authors to conclude that aldehyde dehydrogenase deficiency and subsequent aldehyde buildup might have been causing AUS in these patients. Our patient's East Asian descent and marked reaction to acetaldehyde suggest she may have aldehyde dehydrogenase deficiency, but further genetic testing is needed to confirm such a diagnosis.

Our patient's symptoms resolved with her avoidance of oral alcohol and avoidance of alcohol-based hand sanitizers. They recurred with either ingestion of or contact with ethyl alcohol, further supporting the diagnosis of AUS.

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Both contact urticaria from alcohol and the rare AUS pose a particular problem for health care workers who frequently use alcohol-based hand sanitizers.

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