

Systemic contact dermatitis to ethanol

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Clinical Implication

- Systemic contact dermatitis (SCD) is a cutaneous eruption that follows a systemic exposure to an allergen in a sensitized individual. SCD to ethanol is rare but should be suspected in any patient who develops a relapsing dermatitis with systemic exposure to ethanol.

TO THE EDITOR:

Systemic contact dermatitis (SCD) is a skin eruption that results from systemic exposure to allergens after initial sensitization. Exposure through ingestion, inhalation, or injection can elicit a cutaneous reaction via hematogenous hapten transport to the skin.^{1,2} Although eruptions in the anogenital region, often referred to as “Baboon syndrome,” and symmetrical drug-related intertriginous and flexural exanthema are well-known forms of SCD, the skin lesions in SCD may vary in appearance and distribution. The exact mechanism of SCD is uncertain but is generally thought to be due to delayed-type hypersensitivity reaction (type IV) that involves memory T-cell activation.^{2,3}

Many causative agents have been implicated in SCD, including alcohols, and, although human skin generally serves as a great barrier, topical ethanol increases the permeability of the skin by removing lipids from the stratum corneum.^{3,4} Ethanol is widely used in topical products such as hand disinfectants, cosmetics, and also as a topical penetration enhancer in transdermal medications.⁵ In the case of transdermal medications, there is concern that an ethanol vehicle may provide the prolonged exposure necessary to cause sensitization. A previously published case report describes SCD from ingestion of ethanol after sensitization from a transdermal estrogen patch that used an ethanol vehicle for drug delivery.⁵ We describe a second case of SCD after ingestion of ethanol.

A 25-year-old woman was evaluated for a history of a recurrent rash after drinking alcoholic beverages. Her initial reaction was after her first exposure to ethanol at age 18 when she developed a rash 8 to 12 hours after ingesting a malt liquor beverage. She described a fixed, pruritic, raised erythematous rash with small areas of sparing on her upper and lower back which resolved after 1 week. Over the next several years she developed recurrence of the same rash after drinking small amounts of beer, wine, and champagne on separate occasions. With each exposure, the rash appeared with shorter latency, although the distribution, appearance, and symptoms of the rash remained unchanged. Most recently, she had a recurrence of the rash in the same location which occurred 8 hours after drinking rum and cola, and the rash was treated with antihistamines and systemic corticosteroids with resolution over the next few days. She denied ever having any extracutaneous symptoms from ethanol ingestion. Of note, she has used a transdermal contraceptive in the past, but the brand and chemical formulation of the patch were unknown. She had no



FIGURE 1. Erythematous, pruritic papules on the patient's upper and lower back 3.5 hours after ethanol ingestion.

reported sensitivity to topical alcohol preparations, that is, hand sanitizer (62% ethanol) or alcohol prep pads (70% isopropanol). On the basis of her history, the diagnosis of SCD due to ingestion of ethanol was suspected, and an oral ethanol challenge was performed in our clinic for definitive diagnosis.

The patient was given 45 mL of 40% ethanol by volume, additive-free vodka in a single dose and observed in the clinic. Three and one-half hours after ingestion she developed erythematous, pruritic papules on her upper and lower back over the exact distribution as described with previous ethanol ingestion (Figure 1). A biopsy of the lesions showed sparse perivascular and limited interstitial infiltrate with increased mast cells, neutrophils, and rare eosinophils, consistent with delayed-type hypersensitivity (type IV) as expected in SCD (Figure 2). She was treated with oral antihistamines and corticosteroids with rapid improvement in pruritus, but the rash persisted at 96 hours after challenge, with complete resolution after 7 days.

Cutaneous exposure to alcohols, including ethanol, in our society is nearly ubiquitous. Acute contact dermatitis to topical alcohols has been well documented; however, only one prior case of SCD to ethanol specifically has been reported. In general, a topical product such as hand sanitizer is applied but rapidly evaporates, which decreases the likelihood of penetration deep into the skin and subsequent sensitization. Transdermal medications, by contrast, are applied and left in place for hours to several days, depending on the product, which would allow sufficient time for deeper skin penetration and higher likelihood of sensitization.

Although SCD to ethanol has not been widely reported, it should be suspected for patients who develop a relapsing dermatitis in a fixed location with each systemic exposure to ethanol. Initial sensitization in our patient is unclear but may have been because of her previous transdermal estrogen patch

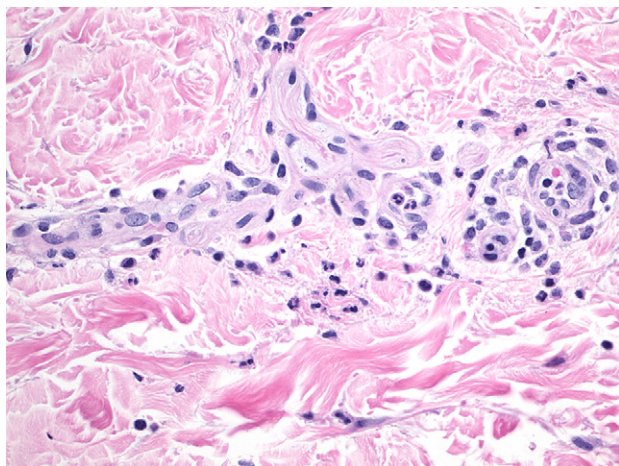


FIGURE 2. Skin biopsy shows sparse perivascular and limited interstitial infiltrate with increased mast cells, neutrophils, and rare eosinophils.

that has been described.⁵ Patch testing and oral challenges have both been successfully performed in the evaluation of SCD to ethanol and other systemic antigens.⁵⁻⁹ In our patient, an oral ethanol challenge followed by biopsy of the subsequent exanthem was used to confirm the diagnosis. Although rare, systemic reactions have been reported in SCD, and for that reason we recommended strict avoidance of ethanol. With regard to topical exposure to ethanol, we recommended continued use of rapidly evaporating topical preparations but to avoid prolonged exposure to ethanol as seen with some transdermal delivery systems because of the increased risk of systemic absorption. Regrettably, no data exist to suggest that administering increasing doses of ethanol is a viable method

of inducing immunologic tolerance and is an area for future study.

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