

UC Davis

Dermatology Online Journal

Title

Systemic contact dermatitis related to alcoholic beverage consumption

Permalink

<https://escholarship.org/uc/item/3zq853qv>

Journal

Dermatology Online Journal, 25(9)

Authors

Ramachandran, Vignesh
Cline, Abigail
Summey, Brett T
et al.

Publication Date

2019

DOI

10.5070/D3259045584

Copyright Information

Copyright 2019 by the author(s). This work is made available under the terms of a Creative Commons Attribution-NonCommercial-NoDerivatives License, available at <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Systemic contact dermatitis related to alcoholic beverage consumption

Vignesh Ramachandran¹ BS, Abigail Cline¹ MD PhD, Brett T Summey² Jr MD, Steven R Feldman^{1,3,4} MD PhD

Affiliations: ¹ Center for Dermatology Research, Department of Dermatology, Center for Dermatology Research, Wake Forest School of Medicine, Winston-Salem, North Carolina, USA, ²Boone Dermatology Clinic, Boone, North Carolina, USA, ³Department of Pathology, Wake Forest School of Medicine, Winston-Salem, North Carolina, USA, ⁴Department of Social Sciences & Health Policy, Wake Forest School of Medicine, Winston-Salem, North Carolina, USA

Corresponding Author: Vignesh Ramachandran, Center for Dermatology Research, Department of Dermatology, Wake Forest School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157, Email: vig.ramachandran@gmail.com, Tel: 512-431-2236

Abstract

Systemic contact dermatitis is a rash secondary to systemic exposure to allergens after sensitization. Numerous agents are implicated including Balsam of Peru, a plant-derived compound often used for flavoring and fragrance. Alcoholic beverages can contain many possible allergens, including cinnamon, vanilla, citrus peels, and Balsam of Peru. Herein, we describe two patients presenting with recurrent, diffuse, erythematous, and pruritic cutaneous eruptions suspicious for contact dermatitis. Based on clinical history, exam, and formal and at-home patch testing results, we believe the most likely etiology was Balsam of Peru within the alcohol beverages leading to systemic contact dermatitis. Both patients markedly improved after avoidance of their alcoholic beverages. Overall, systemic contact dermatitis secondary to alcohol consumption is a rare phenomenon, whereas Balsam of Peru is a relatively common allergen. Suspicion must be high to identify possible allergens (including Balsam of Peru) exposure within alcoholic beverages such as artificial flavorings, aromas, and mixtures.

Keywords: Balsam of Peru, systemic contact dermatitis, alcohol, ingestion, patch test

Introduction

Systemic contact dermatitis (SCD) is a cutaneous eruption secondary to systemic exposure to allergens (e.g. inhalation, ingestion, or injection) after sensitization [1]. The dermatitis is believed to arise by means of hematogenous hapten transfer to the skin, resulting in a delayed-type hypersensitivity

reaction (Type IV) driven by memory T cells [2]. Numerous agents are implicated in SCD, including Balsam of Peru (BoP), a plant-derived compound often used for flavoring and fragrance [3]. Alcoholic beverages can contain many possible allergens, including cinnamon, vanilla, citrus peels, and Balsam of Peru (BoP), [4]. Herein, we describe two patients with SCD secondary to alcoholic beverage consumption presumably related to BoP.

Case Synopsis

Case 1

A 68-year-old man presented for evaluation of a diffuse, erythematous, and pruritic rash involving his scalp, back, arms, trunk, and legs. The eruption was intermittently present for years. Prior treatments for presumed ACD were extensive, including fexofenadine, narrow-beam ultraviolet B, methotrexate, and mycophenolate mofetil. Two prior biopsies demonstrated eczematous dermatitis and peri-folliculitis (**Figure 1**). Prior patch testing was positive (1+ reaction) for BoP. Exposure history revealed nightly consumption of tequila with margarita mix. On examination, there were widespread erythematous, spongiotic-appearing patches and papules (**Figure 2**).

The patient was advised to continue avoiding products containing BoP. He was also recommended to avoid tequila and margarita mix. Triamcinolone 0.1% ointment was prescribed for affected areas along with 1 week of prednisone taper. Home patch tests to tequila and margarita mix (performed after the prednisone taper) were positive compared to

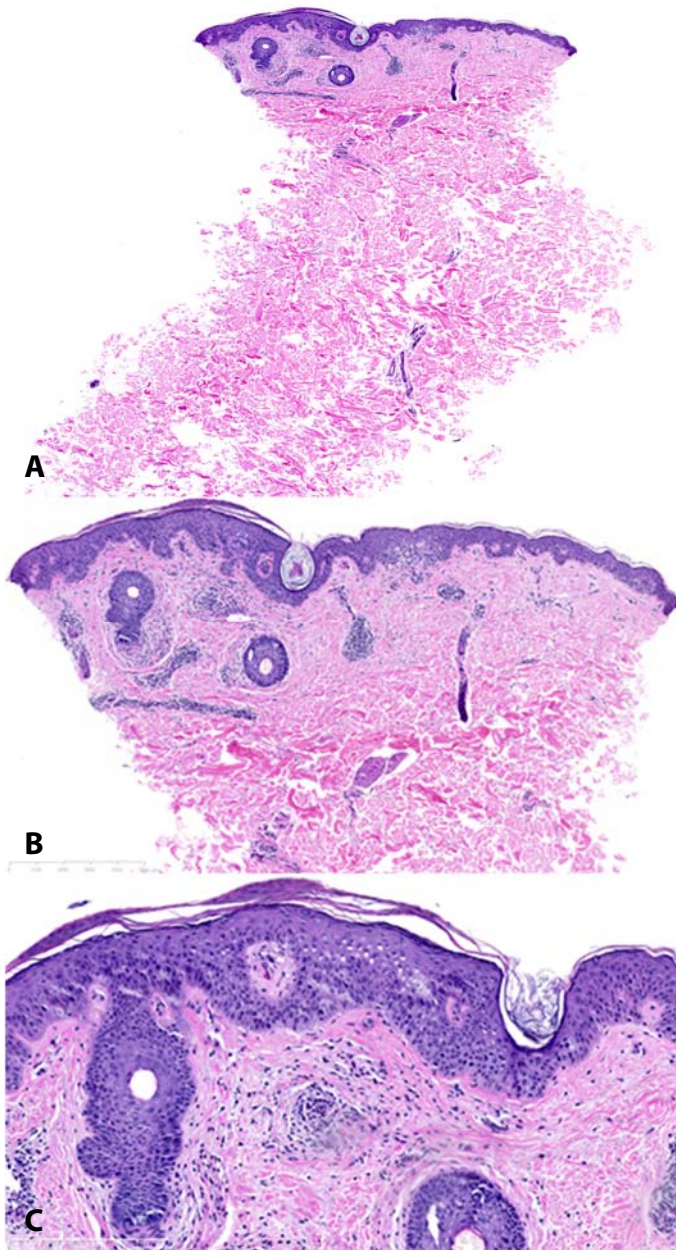


Figure 1. Biopsy for Case 1, hematoxylin and eosin staining. Low-power punch biopsy showing superficial perivascular infiltrate. Spongiosis and parakeratosis are evident. **A)** 2 \times , **B)** 7 \times . **C)** High-power showing parakeratosis and spongiosis of the epidermis. The dermal perivascular and interstitial infiltrate is composed of mononuclear cells, 16 \times .

control adhesive bandage (**Figure 3**). At four-week follow-up, he had marked symptom improvement and felt the best he had in years.

Case 2

A 77-year-old man presented for evaluation of an intermittently present erythematous, pruritic rash for two years. Some chronic lesions had thickened.

Previously prescribed treatments included fluocinonide 0.05% cream, triamcinolone 0.1% cream, intramuscular prednisone, and even a 14-day course of oral prednisone. These treatments provided short-lived relief until recurrence. To eliminate possible allergens, he had replaced his home's carpet with hardwood floors, reupholstered his furniture and car interior, used only fragrance-free and allergen-free soaps or detergents, and no longer used dyes or perfumes. Exposure history revealed nightly consumption of blended whiskey. On exam, numerous erythematous, scaly, and lichenified plaques of the forehead, posterior scalp, and volar wrists in addition to erythematous, excoriated, and spongiotic papules of the back were present.

He was maintained on fluocinonide 0.05% cream as needed to lichenified plaques. Formal patch testing was positive (1+ reaction) to BoP. The patient was advised to avoid BoP products, including whiskey which may contain BoP, and conduct at-home patch testing to his blended whiskey. He was also started



Figure 2. Clinical Photograph of Case 1 Patch Tests. At-home patch test results to tequila (top, right arm) and margarita mix (bottom, left arm) both showing erythema, infiltration, and subtle papules, overall indicative of positive reaction.



Figure 3. Clinical Photograph of Case 2 Patch Test. At-home patch test results to blended whiskey (right posterior arm) showing erythema, infiltration, and subtle papules, overall indicative of positive reaction.

on azathioprine 50mg daily, which was eventually increased to 100mg daily. He had a positive home patch test to the blended whiskey compared to control adhesive bandage (**Figure 4**). At two- and four-month follow-ups, the patient had stopped drinking blended whiskey and reported marked improvement in his rash. Azathioprine was discontinued. Topical corticosteroids were used for flares.

Case Discussion

Balsam of Peru is difficult to avoid. It is derived from the bark of the tree *Myroxolon balsamum var. pereirae* and is among the most common allergens [5]. Owing to its 60-70% cinnamoin composition (combination of cinnamic acid, cinnamyl cinnamate, benzyl benzoate, benzoic acid, and vanillin), BoP smells of cinnamon and vanilla, which explains its widespread use in fragrance and flavoring, including alcoholic beverages [4, 6]. Typically, these liquors are spiced such as brandy, gin, whiskey, and rum (all of which

may have anise, cloves, cinnamon, and vanilla), [6]. In our patient (Case 2), blended whiskey is likely to contain several compounds with BoP including cinnamon flavoring, citrus peel, and other spices.

In our first patient (Case 1), his SCD is likely related to BoP from the margarita mix, which contains natural and artificial flavoring and aromas. Tequila, unlike the other liquors previously described, is likely devoid of BoP as its aroma and flavoring comes from organoleptics (higher order volatile alcohols, methanol, esters, carbonyls, terpenes, and furans), [7]. However, his consumption of tequila always coincided with margarita mix, which is likely to contain BoP and the most likely cause of his SCD given his positive BoP patch test. His positive patch test to the tequila may be secondary to local irritant contact dermatitis. Alcohol-related SCD is very rare and less likely [8, 9].

Conclusion

Systemic contact dermatitis secondary to alcohol consumption is a rare phenomenon, whereas BoP is a relatively common allergen. Suspicion must be high in order to identify possible allergen (including BoP) exposure within alcoholic beverages such as artificial flavorings, aromas, and mixtures. At-home patch testing may be a way to assess allergic response.



Figure 4. Clinical Photograph of Case 2 Patch Test. At-home patch test results to blended whiskey (right posterior arm) showing erythema, infiltration, and subtle papules, overall indicative of positive reaction.

Potential conflicts of interest

Dr. Feldman has received research, speaking and/or consulting support from a variety of companies including Galderma, GSK/Stiefel, Almirall, Leo Pharma, Boehringer Ingelheim, Mylan, Celgene, Pfizer, Valeant, Abbvie, Samsung, Janssen, Lilly, Menlo, Merck, Novartis, Regeneron, Sanofi, Novan, Qurient, National Biological Corporation, Caremark,

Advance Medical, Sun Pharma, Suncare Research, Informa, UpToDate and National Psoriasis Foundation. He is founder and majority owner of www.DrScore.com and founder and part owner of Causa Research, a company dedicated to enhancing patients' adherence to treatment. Dr. Cline and Mr. Ramachandran have no conflicts of interest to disclose.

References

1. Aquino M, Rosner G. Systemic contact dermatitis. *Clin Rev Allergy Immunol*. 2019;56:9-18. [PMID: 29766368].
2. Thyssen JP, Maibach HI. Drug-elicited systemic allergic (contact) dermatitis – update and possible pathomechanisms. *Contact Dermatitis*. 2008;59:195–202. [PMID: 18844694].
3. Salam TN, Fowler JF Jr. Balsam-related systemic contact dermatitis. *J Am Acad Dermatol*. 2001;45:377-381. [PMID: 11511833].
4. Ngan V. Balsam of Peru allergy. 2002. <https://www.dermnetnz.org/topics/balsam-of-peru-allergy/>. Accessed on March 22, 2019.
5. Scheman A, Rakowski EM, Chou V, Chhatriwala A, Ross J, Jacob SE. Balsam of Peru: past and future. *Dermatitis*. 2013;24:153-160. [PMID: 23857009].
6. Dermatitis Academy. Balsam of Peru Diet. 2016. <https://www.dermatitisacademy.com/bop-diet/#toggle-id-7>. Accessed on March 22, 2019.
7. Arellano M, Gschaedler A, Montserrat A. Major Volatile Compounds Analysis Produced from Mezcal Fermentation Using Gas Chromatography Equipped Headspace (GC–HS). In: Gas Chromatography in Plant Science, Wine Technology, Toxicology and Some Specific Applications. Salih B, Çelikbıçak Ö, editors. 1st ed. IntectOpen; 2012. p. 1-18.
8. Wolverton W, Gada S. Systemic contact dermatitis to ethanol. *J Allergy Clin Immunol Pract*. 2013;1:195-196. [PMID: 24565459].
9. Ophaswongse S, Maibach HI. Alcohol dermatitis: allergic contact dermatitis and contact urticaria syndrome. A review. *Contact Dermatitis*. 1994;30:1-6. [PMID: 8156755].