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Transfer contact dermatitis caused by rosin use in bowling

Amir Aboutalebi MD, C Stanley Chan MD, Rajani Katta MD

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Department of Dermatology, Baylor College of Medicine, Houston, Texas

Abstract

The diagnosis of allergic contact dermatitis due to colophony may be challenging as this allergen is found in a number of products and used in a variety of settings. Diagnosis becomes more difficult when the distribution of dermatitis does not coincide with typical patterns of use of the allergen. We present a case of transfer contact dermatitis of the face due to rosin use in bowling.

Introduction

Colophony, also known as rosin, and its derivatives are ubiquitous in the home, recreational, and occupational environment. As evident in patch test clinics, allergy to colophony is relatively common and rising in prevalence. This may be attributed to its prevalence in an increasing number of products as well as evolving variations in manufacturing techniques which increase the allergenic components [1].

As rosin exhibits the property of tackiness, rosin and rosin bags are used in multiple sports to enhance grip. Such sports include baseball, rock-climbing, weight lifting, gymnastics, tennis, golf, and as in our case, bowling. While most cases of allergic contact dermatitis would be expected to result in hand dermatitis due to direct contact with the allergen, transfer contact dermatitis may also occur. In this situation, also referred to as ectopic contact dermatitis, an allergen is transferred from one area of the body to another with elicitation of dermatitis at the final site of transfer. Such cases often pose diagnostic dilemmas, as the distribution of dermatitis does not correspond to the typical pattern of contact with the allergen.

Case report

An 84-year-old retired nurse presented with a 2-year history of severely pruritic and extensive erythematous scaly patches that initially began on the face, neck, and back, and progressed to the trunk and extremities. Her most severe involvement was on the face. She reported temporary improvement with systemic corticosteroids and was unable to identify any triggers.

Patch testing utilizing IQ chambers with the NACDG standard series (Chemotechnique®) and selected cosmetic and textile allergens revealed a 1+ reaction to colophony (10% in petrolatum) and abietic acid (2% in petrolatum) at D3. She also reacted to neomycin, benzophenone, and benzocaine; all of which were of past relevance only.

A review of her facial products found that none contained rosin or its derivatives. However, the patient frequently bowled and used rosin every time. She was advised to stop and was treated with topical 0.025

percent desoximetasone ointment to the trunk and extremities and 1 percent hydrocortisone ointment to the face. At 3 weeks, her trunk and extremities had cleared markedly, but she had persistent facial dermatitis. Though she had personally stopped rosin use, she reported that the allergen was very prevalent in the bowling alley, and therefore she limited her bowling to once weekly. At 10 weeks she had complete resolution of her symptoms.

Discussion

This patient experienced transfer contact dermatitis in which allergen was transferred from her hands to a remote site. Understandably, given the distribution of her eruption, the patient focused on facial products as potential precipitants. Diagnosis can be challenging in such cases, in which distribution may prove to be a distracter rather than a clue.

Allergens in bowling include epoxy resin in the manufacture of bowling balls [2], as well as colophony, fragrance, and epoxy resin in "bowler's grip" [3, 4]. Our patient used rosin to enhance grip. This is commonly used by bowlers, typically in the form of "rosin bags" or "grip sacks." These small sacks may be held between play and are often set down indiscriminately, such that chairs, tables, and bowling racks may be covered by rosin. Our patient improved only when she decreased the frequency of play, a fact she attributed to residual rosin on tables, chairs, and the ball return.

A review of the literature finds only one other similar case of transfer contact dermatitis due to colophony. Blair described a case related to the game of bowls [5], a sport popular in the United Kingdom and Australia and typically played outdoors on grass or on a synthetic surface. As in our case, the patient developed blotchy erythema confined to the face with no mention of hand involvement. The patient tested positive only to resin and colophony. Upon discontinuing use of the "bowls grip," the dermatitis resolved.

Two other cases describe allergic contact dermatitis to bowls grip with attendant positive reactions to colophony on patch testing. In these cases, only the hands were involved [4]. Rosin is well-recognized as a potential cause of allergic contact dermatitis in athletes; however, few cases are actually reported. While a Pubmed literature search uncovers a number of cases of allergic contact dermatitis caused by a variety of occupational and non-occupational exposures (ranging from violin playing to woodwork hobbies), we were able to locate only 4 cases related to the use of rosin in sports, all pertaining to bowling. We believe that allergy to colophony use in sports is underreported, and it is probable that some cases are not recognized. This may be the case especially in patients who participate in recreational sports intermittently and exhibit contact dermatitis remote from the site of direct contact.

Downs and Sansom offer a thorough review of the allergenic components of both modified and unmodified colophony [1], a systematic summary of earlier studies including exhaustive work undertaken by Karlberg, Gäfvert, and colleagues [6-10]. Colophony is a heterogenous compound derived from *Pinus* species which has undergone distillation of its terpene components. Unmodified rosin itself consists of 90 percent resin acids along with a 10 percent neutral fraction, which is rarely sensitizing. The resin acids consist of abietic acid types and primaric acid types, among which the abietic acid types more readily undergo oxidation [1, 11]. The oxidation products are typically the most potent sensitizing components.

Sensitivity depends on the length of exposure, the concentration of the allergen, the type of skin exposed, as well as its integrity, and the chemical composition of the rosin [1]. The composition of rosin is contingent upon its source and on the method of its extraction and storage [11]. The recovery process and storage are critical in so far as they determine the degree of oxidation products [6, 12].

Colophony and its derivatives are found in a wide range of settings. In the case of such a ubiquitous allergen, patient education must include a thorough review of potential exposures. As in our case, patients do not typically review hand exposures when discussing facial problems. Only an in-depth review of the allergen and its uses will uncover all potential sources of allergen transfer. Undoubtedly, there are many more cases of contact allergy to rosin among athletes and recreational players, and with a greater degree of suspicion regarding the possibility of transfer dermatitis, more patients may be identified and treated accordingly.

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