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Shellac: A Tertiary Care Center Experience

To the Editor:

Shellac is a purified form of resin produced by *Kerria lacca*, an insect native to Asia.¹ The resin produced by *K. lacca* has a gummy texture that hardens on exposure to air, protecting the larvae of the insect.¹ Shellac is commonly used in both medical (eg, dental moldings, pharmaceutical coating) and nonmedical products (eg, sealants, edible glazes, furniture finishings). Multiple case reports and series have reported allergic contact dermatitis caused by shellac,^{2–4} and it was named an emerging contact allergen in 2011.¹ However, few reports have evaluated the reaction rate and the reaction types in a larger series of patients.

We examined the patch test results of patients between January 1, 2014, and December 31, 2016, who were tested with shellac at our institution's 3 sites. Testing was performed with shellac in a 20% concentration with alcohol (Chemotechnique MB Diagnostics AB, Vellinge, Sweden) as part of an extended standard/cosmetic series. Reactions were rated as irritant, macular erythema, weak (nonvesicular erythema, infiltration, or papules), strong (edema or vesicles), or extreme (bullous, ulcerative, or spreading lesions).

From 2014 to 2016, shellac was tested on 612 (34.7%) of 1764 unique patients who underwent patch testing. Five patients (0.8%) had an irritant reaction. In addition, 64 patients (10.5%) had a positive reaction to shellac with reactions graded as weak ($n = 57$ [9.3%]), strong ($n = 7$ [1.1%]), or extreme ($n = 0$ [0.0%]). A further 70 patients (11.4%) had reactions graded as macular erythema; these reactions were excluded from the calculation of positive reaction rates.

Overall, our reaction rates are significantly greater than the reaction rates found in previous population-based reports (Table 1).^{2–4} Although it has been reported that shellac in alcohol tends to be a common irritant,^{3,4} we found shellac to have a relatively low irritant rate (0.8%).

TABLE 1. Shellac Reactions in Present Study Compared With Previous Reports

Report	Period	No. Patients	Positive Reaction, n (%)	Patient Population
Present study	2014–2016	612	64 (10.5)	Patch-tested patients with exposure to shellac or another allergen of the extended standard series
Zhao and Li ⁴	2014	201	6 (3.0)	Healthy university students tested with European cosmetic series
Warshaw et al ³	2011–2012	4231	66 (1.6)	All patch-tested patients tested with standard series
Warshaw et al ²	2009–2010	4301	74 (1.7)	All patch-tested patients tested with standard series

Shellac is an uncommon ingredient in skin care products. SkinSAFE,⁵ a directory of active and inactive ingredients of personal care products and for patients with particular contact allergies, contains 38,820 products, of which only 27 contain shellac. All but 3 of these products are mascaras; the exceptions are a hair spray, a nail polish, and a tooth whitening strip.⁵

In summary, we found that patch testing to shellac 20% in alcohol was associated with a relatively high reaction rate at day 5 reading (10.5%), although shellac is uncommon in skin care products, apart from mascaras.

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Piercing Metal Contact Allergy: Nothing Gold Can Stay

To the Editor:

We commend Warshaw et al¹ for calling to attention the importance of metal hypersensitivities associated with body piercings through a retrospective study analyzing the association between metal sensitivity and number of piercings for 17,912 patients who underwent patch testing by the North American Contact Dermatitis Group from 2007 to 2014.¹ Of interest, cross-sectional analysis revealed a positive, neutral, and negative association between the number of piercings and nickel, cobalt, and chromium, respectively.¹ Irrespective of age, sex, and piercing status, jewelry was identified as the most common source of nickel contact sensitization reactions.

Of note, up to 64% of Americans have their ears pierced, and 31% of all piercings were associated with complications. Titanium, surgical stainless steel, and 14-karat or higher gold jewelry is standard for the initial pierce in the United States. Discussion regarding jewelry-induced allergic contact dermatitis often emphasizes the avoidance of “less expensive” metals such as nickel in favor for “more expensive” silver and gold jewelry.² Yet, the clinical relevance of positive patch testing for gold contact sensitivity remains debated. Controversies stem from difficulties in differentiating allergic from irritant-induced dermatitis, ionized versus nonionized gold, early from late reactions, and “gold alloys” as opposed to “pure gold.”

Currently, gold is included as a hapten on both American Contact Dermatitis Society Core Allergen Series and Thin-Layer

Rapid Use Epicutaneous (TRUE Test; SmartPractice, Phoenix, AZ) patch tests.² Gold was removed from the North American Contact Dermatitis Group standard screening panel in 2009 because of a high percentage of positive tests, with a low clinical relevance.²

Nakada and colleagues³ patch testing study (n = 377) revealed that gold was the second most frequent allergen after nickel among patients with piercings. Nonaka and colleagues⁴ larger-scale metal contact dermatitis study (n = 931) from 1990 to 2009 revealed that there was a decrease in gold sensitivity between 1990s and 2000s (9.3% vs 1.0%), a phenomenon perhaps explained by the adopted use of titanium earrings as the “first pierce” across Japan. Tsuruta and colleagues⁵ gold patch test study (n = 398) demonstrated that gold allergy occurs predominantly in females compared with males (92.6% vs 7.4%), considering that females on average have more piercings. Whereas gold dental alloys (53.7%) and pierced earrings (20.3%) are the most common gold allergen sources, dental alloys elicit a disproportionately lower ratio of clinical symptoms relative to piercings (7.9% vs 76.5%).⁵ Considering the proportion of clinically significant presentations associated with piercings, select patients may benefit from patch testing to differentiate whether gold is the underlying culprit.⁵

Although gold has a lesser tendency to ionize compared with nickel, evidence indicates that gold may be less stable within the dermis than in the epidermis.³ This may explain why gold piercings elicit a much higher proportion of contact sensitization when compared with gold dental restorations.³ Thus, gold should be considered for inclusion as a screening hapten in the evaluation of patients with metal hypersensitivities associated with body piercings. Promoting the utilization of titanium over gold for the initial pierce in the United States may be an efficient approach to reducing metal contact sensitization.

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