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Airborne contact dermatitis to epoxy resin for creating herbarium

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CASE REPORT

We encountered a case of occupational dermatitis to epoxy resin used at a unique work space. A-41-year-old, otherwise healthy woman working for a florist developed pruritic rash after she created herbariums wearing work gloves 1 week earlier. The product she used was a mixture of equal parts of two agents, and the main agent contained epoxy resin in a concentration of 95%. To create a 5-cm cube, 100 ml of the product was needed. She was treated with oral prednisolone, 15 mg per day, and 0.1% diflucortolone valerate ointment by a dermatology clinic. As the lesion did not improve despite such treatment, she was referred to our Dermatology Department. Physical examination revealed edematous erythematous lesions on periorbital regions and cheeks (Figure 1A). Although administration of prednisolone, 25 mg and levocetirizine hydrochloride, 5 mg per day led to improvements, symptoms relapsed after she created more herbariums 5 days later. The dermatitis resolved over the following 2 weeks while continuing systemic corticosteroid treatment: prednisolone, 25–10 mg

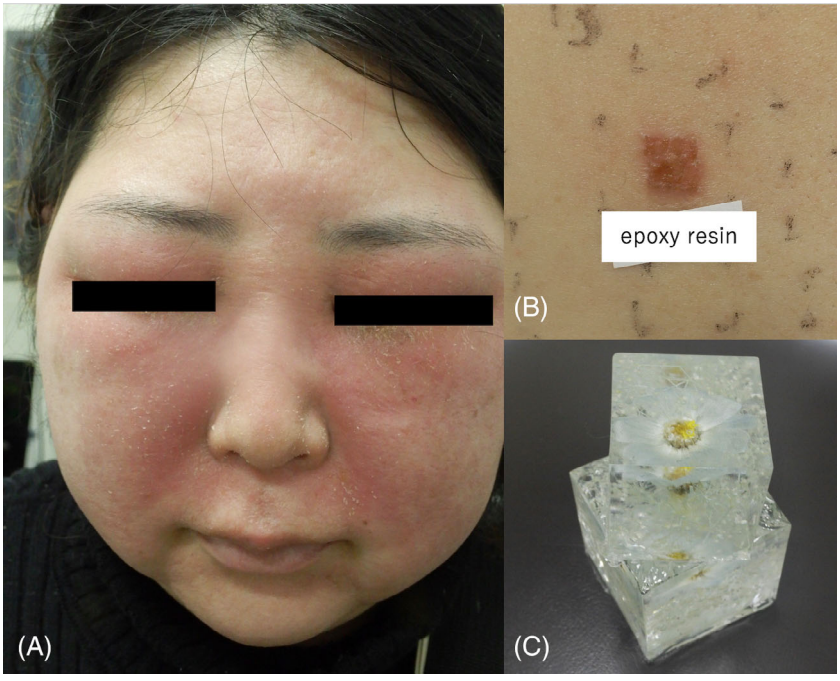

FIGURE 1 (A) Clinical findings of the initial visit: edematous erythematous lesions on face. (B) A 3+ reaction (from ICDRG system[1]) to epoxy resin (0.041 mg/81 mm^2) 7 days after application. (C) Herbariums she created

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per day. One month after the initial visit, patch testing was performed with Japanese standard series: Patch Test Panel (S) (the trade name of T.R.U.E. TEST in Japan, Sato Pharmaceutical Co.), 0.002% urushiol and 0.05% mercuric chloride (Torii Pharmaceutical Co.) applied on the back for 2 days, and the results read utilizing the International Contact Dermatitis Research Group (ICDRG) scoring system 2, 3, and 7 days after application.[1] We recorded positive reactions to epoxy resin (0.041 mg/ 81 mm^2), nickel sulphate (0.16 mg/81mm^2), and gold thiosulfate (0.016 mg/81mm^2) at Day 2, 3 and 7. Figure 1B demonstrates a strongly positive reaction to epoxy resin 7 days after application. Consent was received from the patient for the publication of clinical information.

DISCUSSION

Airborne contact dermatitis is a unique type of contact dermatitis occurring without direct allergen contact. Breuer et al. reported that this clinical behaviour is more common in patients with occupational dermatitis than those non-occupational.[2] It is well-known that epoxy resin is a cause as occupational and airborne contact dermatitis. Since it is increasingly used for coatings of floor, wall and bodywork, it is one of the most important occupational sensitizers in painters.[3] Creytens et al. reported as a new application for epoxy resin: a case occurred in the three-dimensional printing industry.[4] Our case also demonstrated another application for epoxy resin: a patient working for a florist. Herbarium is basically a collection of preserved plant specimens and associated data used for scientific study. Recently, it has become popular interior flower arrangement: a small glass jar in which flowers are soaked in oil and keep their beautiful appearance without maintenance. Epoxy resin is used to make the herbarium hard and durable. Working florists should be noted as an occupation which can cause occupational and airborne contact dermatitis to epoxy resin.

AUTHOR CONTRIBUTIONS

Sayaka Yamamoto: Writing – original draft. **Marina Seki:** Writing – original draft. **Takehiro Okusa:** Writing – original draft; methodology. **Haruko Murakami:** Data curation. **Marie Suzuki:** Methodology. **Yuta Ito:** Supervision. **Tokio Nakada:** Supervision.

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CONFLICTS OF INTEREST

The authors declare no potential conflict of interests.

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