

CONTACT POINT

Allergic contact dermatitis caused by 2-hydroxyethyl acrylate in a moisturizing face pack in a handmade acrylic accessory enthusiast

Junko Mukaijo¹  | Naoko Inomata¹  | Mai Higashihira¹ | Nao Koh¹ | Yui Togashi¹ | Chika Asai¹ | Yuko Watanabe¹ | Seiichi Kurihara² | Michiko Aihara¹

¹Department of Dermatology, Yokohama City University School of Medicine, Yokohama, Japan

²Shonan Dermatology Clinic, Hiratsuka, Japan

Correspondence

Naoko Inomata, Department of Dermatology, Yokohama City University School of Medicine, 3-9 Fukuura, Kanazawa-ku, Yokohama 236-0004, Japan.
Email: ninomata@yokohama-cu.ac.jp

KEYWORDS: 2-hydroxyethyl acrylate, acrylic accessories, allergic contact dermatitis, case report, cosmetics, cross-reaction, (meth)acrylates, patch test

Reports of allergic contact dermatitis (ACD) caused by (meth)acrylates have been increasing. Causative products range from dental resins as a classic cause to various other products, including adhesives. We report a case of ACD caused by 2-hydroxyethyl acrylate (2-HEA) from 2 different sources of sensitization.

CASE REPORT

A 42-year-old woman was referred to our clinic for skin reactions after producing acrylic accessories and applying a facial moisturizing pack (Figure 1A,B). She had started making acrylic accessories such as earrings and necklaces as a hobby ~4 months previously, on an almost daily basis. One month before presentation, she had noticed skin reactions in terms of erythema and papules on her hands, and had consulted a dermatologist. The skin reactions improved upon application of a topical corticosteroid. The patient suspected that the reactions were attributable to contact with the acrylic accessories, and thus stopped making these. However, she subsequently developed face dermatitis half a day after a first facial treatment, that is, the application of a cream-type moisturizing pack at a beauty salon.

Patch tests were performed with the hardened acrylic accessory (Chemitech, Tokyo, Japan) as a flat plate ~7 mm in diameter "as is", the moisturizing pack "as is", and the components of the moisturizing pack at the concentrations used in the product (C'BON, Kanagawa, Japan), the Japanese baseline series recommended by the Japanese Society for Cutaneous Immunology and Allergy, and a (meth)acrylate series. Finn Chambers and patch test panel(s) (Sato, Tokyo, Japan) were applied to the patient's upper back with Medipore tape (3M, St

Paul, Minneapolis) for 2 days. The reaction was read according to ICDRG criteria on day (D) 2, D3, and D7. Positive reactions were seen to the acrylic accessory (D2, +++; D3, +++; D7, +) and the moisturizing pack (D2, +; D3, ++; D7, +) (Figure 1C,D). The manufacturer of the acrylic accessory components disclosed that they contained 0.94% 2-hydroxyethyl acrylate (2-HEA) and 40% to 50% of other (meth)acrylate monomers. Among the components of the moisturizing pack (Figure 1E), only 2-HEA showed a positive reaction (D2, +; D3, ?+, D7, -). In the patch test with the (meth)acrylate series, positive reactions were observed to several (meth)acrylates, including 2-HEA (D2, +; D3, +; D7, +), 2-hydroxyethyl methacrylate (2-HEMA) (D2, +; D3, +; D7, +), 2-hydroxypropyl methacrylate (2-HPMA) (D2, + D3, +; D7, +), and ethyleneglycol dimethacrylate (EGDMA) (D2, ?+ D3, +; D7, +).

DISCUSSION

Our patient apparently became sensitized to (meth)acrylates while making acrylic accessories, and subsequently developed allergic face dermatitis after the first application of a face pack containing the same acrylate as found in the accessories, that is, 2-HEA.

To date, only 1 case of ACD caused by a facial cosmetic cream containing 2-HEA has been reported.¹ The patient presented in that report had never experienced an allergic reaction to other products, suggesting that the cream might have been the sensitizer. Our patient was, moreover, found to be allergic to 2-HEMA, 2-HPMA, and EGDMA, which are well known as sensitizers of contact dermatitis caused by, for example, acrylic nails.²



FIGURE 1 (A, B) Clinical appearance of contact dermatitis caused by acrylic accessories (A) and cosmetic products (B). (C–E), Results of patch tests with the acrylic accessory plate (+++) (C), the moisturizing pack cream (“as is”) (++) (D) and a component of the moisturizing pack, 2-hydroxyethyl acrylate (+) (E), on day 2

In conclusion, dermatologists should be aware of the possibility of sensitization to acrylates in the context of particular hobbies, and the risk of subsequent reactions to other products containing (meth)acrylates, including products for which this would not be expected.

Conflict of interest

The authors declare no potential conflict of interests.

ORCID

Junko Mukaijo  <http://orcid.org/0000-0001-8650-1591>

Naoko Inomata  <http://orcid.org/0000-0002-1989-9824>

REFERENCES

1. Lucidarme N, Aerts O, Roelandts R, Goossens A. Hydroxyethyl acrylate: a potential allergen in cosmetic creams? *Contact Dermatitis*. 2008;59: 321–322.
2. Gonçalo M, Pinho A, Agner T, et al. Allergic contact dermatitis caused by nail acrylates in Europe. An EECDRG study. *Contact Dermatitis*. 2017;78:254–260.

How to cite this article: Mukaijo J, Inomata N, Higashihira M, et al. Allergic contact dermatitis caused by 2-hydroxyethyl acrylate in a moisturizing face pack in a handmade acrylic accessory enthusiast. *Contact Dermatitis*. 2018;1–2. <https://doi.org/10.1111/cod.13088>