

Bilateral Eyelid Contact Dermatitis and Toxic Conjunctivitis due to Acrylate-Containing Glue

Yong Joon Kim, Jin Kwon Chung

Department of Ophthalmology, Soonchunhyang University Seoul Hospital, Soonchunhyang University College of Medicine, Seoul, Korea

Dear Editor:

Acrylates are plastic materials that are formed by the polymerization of monomers derived from acrylic or methacrylic acid and are commonly used as instant adhesives¹. They are present in a wide variety of products and cause occupational or nonoccupational allergic contact dermatitis. We report a case of bilateral eyelid contact dermatitis caused by an acrylate-containing glue used as a false-eyelash adhesive.

A 49-year-old woman presented with an itching sensation

and swelling of both upper eyelids, 3 days after attaching false eyelashes by using an acrylate-containing glue, a commercial product for eyelash attachment (Missha Make-up Double Eyelid Glue; Able C&C Co., Ltd., Seoul, Korea). On initial examination, both upper lids showed erythema, vesicle formation, and swelling. There were remaining glue materials on the eyelids (Fig. 1A, B). Slit-lamp examination showed chemosis and conjunctival injection. Diagnostic patch testing was performed with Finn Chambers[®] (Epitest Ltd. Oy, Tuusula, Finland) on

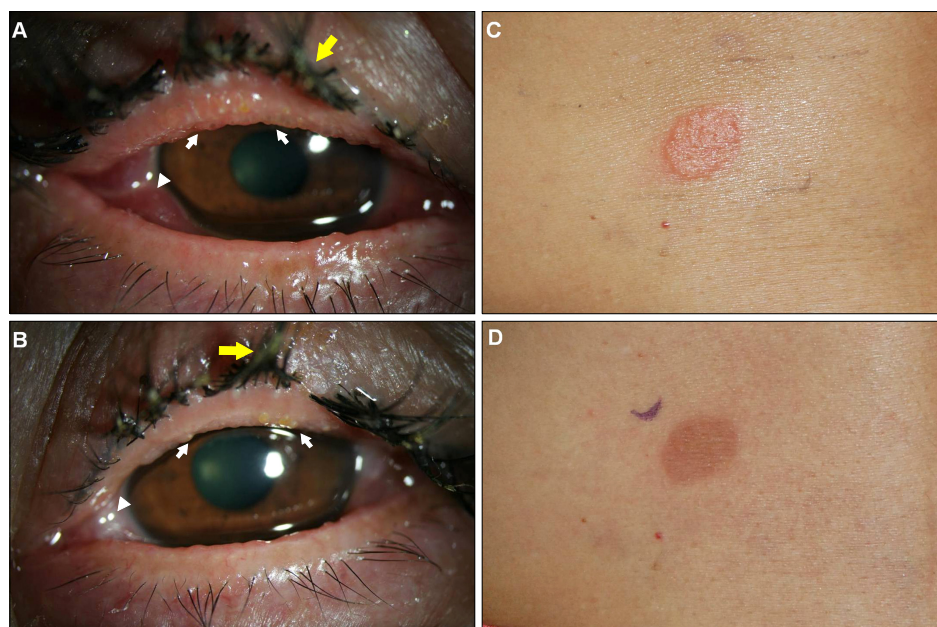


Fig. 1. (A) Right eye. (B) Left eye. Color photographs of eyelids showing erythema, vesicles (white arrows), swelling, and conjunctival chemosis and injection (white arrowheads). Glue materials attached on the eyelids and eyelashes are visible (yellow arrows). (C) Day 2. (D) Day 4. Result of patch test with 0.05% ethyl acrylate in the petrolatum. The patient had ++ and + reactions with erythema and vesicles on days 2 and 4, respectively.

Received August 29, 2013, Revised September 4, 2013, Accepted for publication September 10, 2013

Corresponding author: Jin Kwon Chung, Department of Ophthalmology, Soonchunhyang University Seoul Hospital, 59 Daesagwan-ro, Yongsan-gu, Seoul 140-743, Korea. Tel: 82-2-709-9354, Fax: 82-2-710-3196, E-mail: schcornea@schmc.ac.kr

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Scanpor[®] tape (Alpharma AS, Oslo, Norway). Ethyl acrylate and butyl acrylate were dispersed in the petrolatum at 0.05% and 0.05% concentration for the patch test, respectively. The prepared patches were applied to the upper back of the patient. Reading was performed on days 2 and 4 according to the International Contact Dermatitis Research Group criteria. The patient had ++ and + reactions to ethyl acrylate on days 2 and 4, respectively (Fig. 1C, D). On the basis of the above findings, diagnoses of bilateral eyelid contact dermatitis and toxic conjunctivitis caused by acrylate-containing false-eyelash glue were made. These were completely resolved with systemic antihistamine and steroid for the eyelid dermatitis, and 0.2% olopatadine hydrochloride (Pataday; Alcon Laboratories, Fort Worth, TX, USA) and conservative-free artificial-tear eye drops for the toxic conjunctivitis during a 2-week treatment, in addition to the removal of residual glue.

Allergic contact dermatitis presents as an inflammatory response to small molecules and involves both skin resident cells and activated skin infiltrating T cells². Those allergic reactions classify as delayed-type hypersensitivity. Erythema, papules, vesicles, edema, and itching sensation are common in allergic contact dermatitis. Itching sensation, edema, erythema, and vesicles were found in our patient.

Acrylates have found numerous applications in varnishes and adhesives in the industrial and medical professions. Several studies about contact allergy to industrial and cosmetic acrylate have been reported³. Teik-Jin Goon et al.⁴ reported a retrospective study of patch test reaction pattern to acrylate series and nail acrylic series and suggested several screening allergens in a population with suspected allergy to acrylate/methacrylate allergens. Acrylates can cause delayed-type hypersensitivity reactions. Those reactions can be localized or diffusely visible.

The cosmetic false-eyelash glue used by our patient

consists of butyl acrylate, 2-ethylhexyl acrylate, ethyl acrylate, and propylene glycol. The positive results of patch testing with ethyl acrylate played a critical role in the diagnosis of this case. Mimura⁵ reported a case of bilateral eyelid dermatitis caused by latex glue. However, to the best of our knowledge, nonoccupational contact dermatitis due to an acrylate-containing glue has been rarely reported. Because of the growing use of false eyelashes or other temporary beauty enhancements, users should keep in mind that acrylate-containing glue can cause allergic contact dermatitis or toxic conjunctivitis when it is applied around the eyelids. Testing on the wrist before using an eyelash glue might prevent unpredictable allergic reactions.

ACKNOWLEDGMENT

This work was supported by the Soonchunhyang University Research Fund.

REFERENCES

1. Sasseville D. Acrylates in contact dermatitis. *Dermatitis* 2012;23:6-16.
2. Alase A, Wittmann M. Therapeutic strategies in allergic contact dermatitis. *Recent Pat Inflamm Allergy Drug Discov* 2012;6:210-221.
3. Kiec-Swierczynska M, Krecisz B, Swierczynska-Machura D, Zaremba J. An epidemic of occupational contact dermatitis from an acrylic glue. *Contact Dermatitis* 2005;52:121-125.
4. Teik-Jin Goon A, Bruze M, Zimerson E, Goh CL, Isaksson M. Contact allergy to acrylates/methacrylates in the acrylate and nail acrylics series in southern Sweden: simultaneous positive patch test reaction patterns and possible screening allergens. *Contact Dermatitis* 2007;57:21-27.
5. Mimura T. Bilateral eyelid erythema associated with false eyelash glue. *Cutan Ocul Toxicol* 2013;32:89-90.