

Smartwatch protective cover's glue: A new non-occupational acrylate allergy

Andrea Otero-Alonso¹  | Virginia Rodríguez-Vázquez¹ | Isabel López-Pesado² | Virginia Fernández-Redondo³

¹Allergy Department, Complejo Hospitalario Universitario de Santiago de Compostela, A Coruña, Spain

²Rehabilitation Department, Hospital Comarcal do Salnés, Pontevedra, Spain

³Dermatology Department, Complejo Hospitalario Universitario de Santiago de Compostela, A Coruña, Spain

Correspondence

Andrea Otero-Alonso, Allergy Department, Complejo Hospitalario Universitario de Santiago de Compostela, A Coruña, Spain.
Email: aerdnaoa@hotmail.com

KEYWORDS: acrylates, allergic contact dermatitis, case report, protective cover glue

Acrylates are used in plastics, adhesives, paints, and many other materials, and account for many cases of occupational allergic contact dermatitis (ACD).^{1,2} However, contact allergy to (meth)acrylates is increasing among non-occupational uses, such as application of acrylic

nails, or in medical items and devices, such as orthopaedic bone cement, medical adhesives, and insulin pumps.^{3,4} We report a non-occupational ACD due to acrylates from the glue of the protective cover of a smartwatch.



FIGURE 1 (A) Erythematous plaque in left wrist (acute allergic contact dermatitis). (B) Erythematous plaque with vesicles in left wrist where the watch was in contact with the skin (acute allergic contact dermatitis). (C) Erythematous and desquamative plaque (chronic allergic contact dermatitis). (D) Chronic allergic contact dermatitis. (E) Positive reaction to 2-HEMA. (F) Positive reaction to IBOA. (G) Positive reaction to 1,6 hexandiyl diacrylate, tetrahydrofurfuryl methacrylate, tetraethyleneglycol dimethacrylate (TGIC)

CASE REPORT

A 40-year-old woman was referred to our Department with suspected ACD. The patient presented an erythematous plaque of about 3 cm with vesicles and pruritus in her left wrist where the strap of her watch was in contact with the skin, after 1 month of using a digital Apple smartwatch (Figure 1).

She was treated with topical corticosteroids and antihistamines, leading to resolution. She told us that on two different occasions she had used a protective cover for her smartwatch; the first one was bought from Amazon in May 2019 and the second one was purchased from a mobile phone store, "La Casa de las Carcasas" in December 2019. (Figure 2). These covers were fixed using ultraviolet light cured glue. In the first instance, she fixed the cover herself, forgetting to remove the wrist strap, which thus came into contact with the glue. On the second occasion, the cover was fixed in the shop. The patient believed that exposure to the glue was responsible for her skin condition. Our patient denied having used acrylic, gel or any permanent nail polish. She did not have dental replacements or similar implants.

Patch testing was performed with the Spanish Contact Dermatitis Group (GEIDAC) baseline and extended series, a metal series by AllergEAZE (SmartPractice, Calgary, Canada), an acrylate series in dental adhesives, and isobornyl acrylate (Chemotechnique Diagnostics, Vellinge, Sweden). All preparations were applied in Curatest chambers (Lohmann-Rauscher, Rengsdorf, Germany) and covered with Micropore (3M Health Care Neuss, Germany). Readings were performed at day (D)3 and D7. All metals, including nickel, chrome, and cobalt, were negative.

Positive results were seen to isobornyl acrylate (++), 2-hydroxyethyl-methacrylate (2-HEMA) (+++), 2-hydroxypropyl methacrylate (+++), ethyleneglycol dimethacrylate (+++) triethyleneglycol dimethacrylate (++), 1,4 butanediol dimethacrylate (++), 1,6 hexandiol diacrylate (+++), tetrahydrofurfuryl methacrylate (+++), and tetraethyleneglycol dimethacrylate (TGIC) (+++).

DISCUSSION

Nowadays, ACD due to acrylates is increasing. This particular case shows the ubiquity of acrylates, such as glues used for protective covers, acrylic nails, and many other products.⁵ The free availability of these products must be questioned in view of their potential to cause health problems, namely, contact sensitization and subsequent risk of producing allergic reactions to medical devices.

CONFLICT OF INTERESTS

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Andrea Otero Alonso: Data curation; writing-original draft; writing-review and editing. **Virginia Rodríguez Vázquez:** Data curation. **Isabel López Pesado:** Data curation. **Virginia Fernández-Redondo:** Conceptualization; formal analysis; supervision; writing-original draft.



FIGURE 2 (A) Smartwatch protective cover bought in Amazon. (B) Smartwatch protective cover bought in a mobile phone shop "La Casa de las Carcasas". (C) Glue components used in the protective cover provided by "La casa de las Carcasas", which included isobornyl acrylate

ORCID

Andrea Otero-Alonso  <https://orcid.org/0000-0002-4527-5396>

REFERENCES

1. Schalock P. 2016 Common allergens in allergic contact dermatitis. Post TW, ed. UpToDate. Waltham, MA: UpToDate Inc. (Accessed February 26, 2020).
2. Voller LM, Warshaw EM. Acrylates: new sources and new allergens. *Clin Exp Dermatol*. 2020;45(3):277-283.
3. Herman A, Aerts O, Baeck M, et al. Allergic contact dermatitis caused by isobornyl acrylate in freestyle® libre, a newly introduced glucose sensor. *Contact Dermatitis*. 2017;77(6):367-373.
4. Herman A, de Montjoye L, Tromme I, Goossens A, Baeck M. Allergic contact dermatitis caused by medical devices for diabetes patients: a review. *Contact Dermatitis*. 2018;79(6):331-335.
5. Suzuki K, Matsunaga K, Sasaki K, Yagami A. Allergic contact dermatitis caused by tetrahydrofurfuryl acrylate in the adhesive of clip-on earrings. *Contact Dermatitis*. 2020;82(2):131-133.

How to cite this article: Otero-Alonso A, Rodríguez-Vázquez V, López-Pesado I, Fernández-Redondo V. Smartwatch protective cover's glue: A new non-occupational acrylate allergy. *Contact Dermatitis*. 2020;1-3. <https://doi.org/10.1111/cod.13586>