



Fig. 1. Glycidyl methacrylate (2,3-epoxypropyl methacrylate).



Fig. 2. Clinical appearance of her right foot after exposure to glycidyl methacrylate.

Chemical burn caused by glycidyl methacrylate

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Glycidyl methacrylate (GMA), or 2,3-epoxypropyl methacrylate (CAS 106-91-2) (Fig. 1), is a high-volume organic liquid monomer produced in Japan and the USA and used in the manufacture of paint resins and as an intermediate in the synthesis of many chemical compounds. Although GMA is known to be very irritating to the skin of animals, we are not aware of any previous reports of GMA-induced irritant skin damage in humans. Here, we report the first human case of severe irritant contact dermatitis due to GMA.

Case Report

A 21-year-old Mongolian female chemistry undergraduate student accidentally spilled GMA on her

hands and right foot during a laboratory experiment. She immediately washed her hands with large amount of running water. However, she did not wash her right foot until she went home 6 hr later because she was ashamed, she said, to show her naked foot to the class. She noticed an erythema on her foot the next morning and was prescribed a topical corticosteroid. However, large painful blisters appeared, and when she attended our dermatological clinic on the fifth day, examination showed several tense blisters, 1.5–7 cm in diameter, on the dorsal aspect of her right foot and large toe, surrounded by macerated skin (Fig. 2). Her hands were normal. The blister fluid was removed by puncture, the wounds cleansed with running, and silver sulfadiazine cream applied directly to the wounds under standard dressings. Re-epithelialization was complete by the 20th day after the injury. The patient declined patch testing.

Discussion

Two reports have described allergic contact dermatitis affecting the hands caused by occupational exposure to GMA (four cases in total) (1, 2). Patch testing was confirmatory in all cases. However, there has been no reported case of (assumed) acute irritant contact dermatitis, as we report here.

According to the 'Screening Information Data Set' (3), GMA applied topically to rabbit skin causes erythema, swelling, and blistering after 1–2 days and subdermal bleeding and ulceration after 3 days with tissue damage, which has been confirmed by histopathological examination. Consistent with this progressive, slowly developing damage, our patient's skin lesions changed progressively from erythema (D1) to blisters (D5) and finally to skin erosions. Although we did not perform a skin biopsy, the skin damage was considered to have reached the dermis because it took nearly 3 weeks for complete re-epithelialization. In contrast, her hands, washed shortly after the chemical exposure, did not show any skin damage, indicating that vigorous washing to dilute and remove the chemical can prevent skin damage. This report not only describes the consequence of long-term skin contact with GMA in humans but also alerts industrial workers, researchers, and students who need to handle GMA, to its possible harm.

References

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