

A case of oral mucosal fixed eruption caused by methacrylate

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Methacrylate monomers are known to cause occupational skin allergy in dentists. We report a case of an oral mucosal fixed eruption caused by methacrylate from a dental prosthesis. This case strongly implies a risk of exposure to methacrylate monomers during dental treatment, or from continuous leakage from a prosthesis.

Case Report

A 45-year-old otherwise healthy Japanese woman had suffered from multiple ulcers on her oral mucosa and blistering erythema on her hands for 2 years. She denied taking any medicines or dietary supplements. Oral mucosal and cutaneous examination showed sharply defined ulcers and erosions of her oral mucosa, and multiple sharply defined round bullous erythemas on her hands (Fig. 1a,b). The results of laboratory examinations were normal. In the serological tests, antibody titres for herpes simplex virus (HSV)-1 and HSV-2 were not elevated in her clinical course. Also, anti-desmoglein 1 and anti-desmoglein 3 antibodies were not detected. Biopsies were obtained from the buccal mucosal lesion (Fig. 2a) and the erythema on the back of her finger (Fig. 2b). Histological examination showed apoptotic keratinocytes in the epidermis, and infiltrating lymphocytes in the epidermis and dermis. Immunofluorescence analysis showed no deposition of IgM, IgG, IgA, or serum complement (C3).

During follow-up, the patient's symptoms were exacerbated after treatment of cavities. Two days after treatment, a blister appeared on her right lower buccal

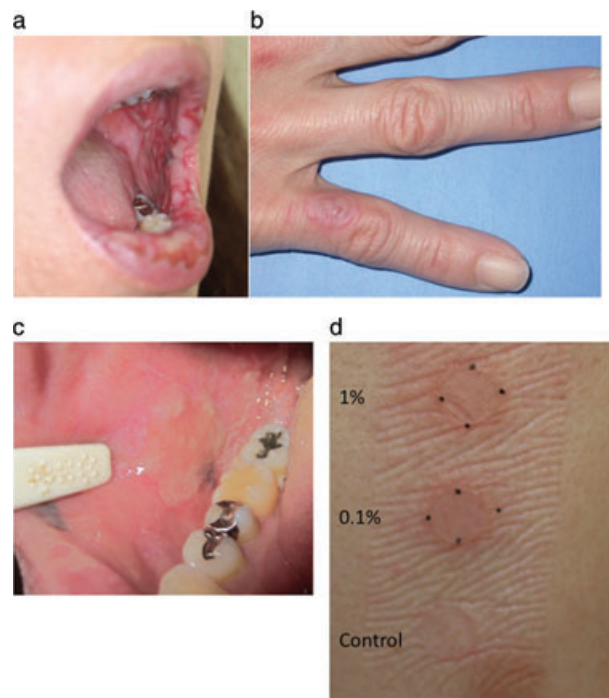


Fig. 1. (a) Sharply defined ulcers and erosions observed throughout the patient's oral mucosa. (b) A round erythematous bulla on the patient's hands. (c) A bulla attached to the dental prosthesis observed on the patient's buccal mucosa. (d) A positive patch test reaction at 48 hr after the extralesional application of 2-hydroxy methacrylate.

mucosa close to the cavity (Fig. 1c), and sharply defined ulcers, followed by erosions, spread over her oral mucosa. Approximately 1 week later, oral ulcers appeared, and multiple blisters had developed on her hands. This reaction may have been caused by substances to which she had been exposed in the dental clinic. We performed an extralesional patch test with materials used for her cavity treatment; positive reactions were observed to the materials used in the dental prosthesis (not shown).

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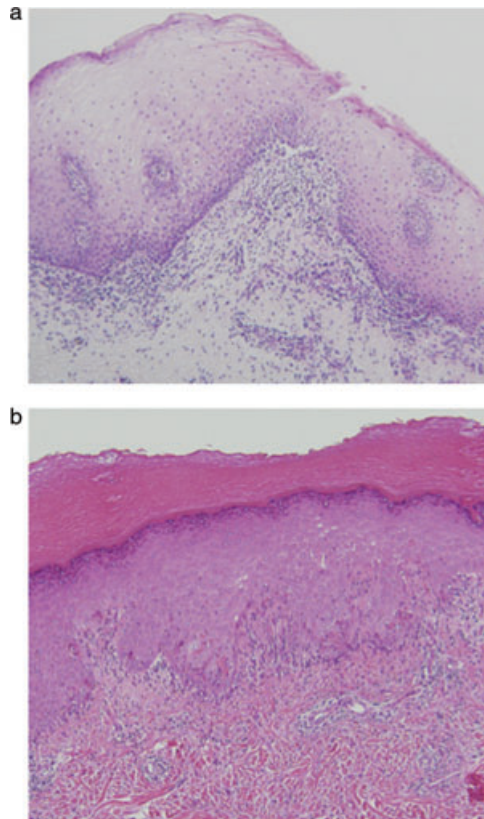


Fig. 2. Immunohistochemical analyses of biopsy specimens from a mucosal lesion (a) and a skin (b) lesion. Remarkable liquefactions with necrotic keratinocytes were observed.

Further examination revealed an allergic reaction to a representative methacrylate, 2-hydroxy methacrylate (1% and 0.1%; Fig. 1d). On the basis of the clinical and pathological findings, this patient was diagnosed with a fixed eruption caused by methacrylate.

Discussion

Methacrylates have been reported to cause an allergic reaction on contact with the skin or oral mucosa (1, 2). The allergy is induced by the residual monomer of methacrylic resin formed by incomplete polymerization (3). There are many reports showing that methacrylates are major sensitizers of occupational skin disease in dental technicians, resulting in contact dermatitis on their hands. On the other hand, sensitization during dental care is thought to be rare (4, 5). There are two possibilities regarding the route of sensitization in our case. One of them is prior exposure to the methacrylate monomer included in the materials used by the patient in her work and daily life. However, in our medical interview, we could not find any possible materials, and she did not experience any contact dermatitis on any other part of her body. Therefore, we suggest that the route of sensitization in this case was repeated contact with methacrylate monomers during dental treatment, or continuous leakage of residual methacrylate monomers from previous incompletely polymerized prostheses. This case strongly implies a risk of exposure to methacrylate monomers from dental treatment.

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