

ALLERGIC CONTACT DERMATITIS IN A DENTAL NURSE INDUCED BY METHACRYLATES

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Abstract. Allergy to acrylic plastics is rather frequent among doctors and dental technicians. A rare case of allergy to acrylates in a dental nurse (only one reports can be found in the literature) is presented. The patient reacted to eight chemical compounds of the group under study. UV-cured composites used in conservative dentistry for tooth filling was the source of allergy in the case under report.

Key words:

Occupational exposure, Allergic contact dermatitis, Dental nurse, Methacrylates

Over the recent years, an increase in allergy to acrylates in dental technicians and dentists has been observed [1,2,3]. This type of allergy is rare in dental nurses [4].

CASE REPORT

A 40-year-old atopic woman was employed as a dental nurse in 1984–1986 and 1999–2000. Her basic occupational duties were to disinfect tools and to clean the dentist office. While performing these jobs, she used latex gloves. Occasionally, she assisted the dentist in filling carietic defects. Skin changes appeared for the first time in 2000, 15 months after she had resumed her dental nursing duties. The changes included papulovesicular erythematous lesions on the dorsal sides of the hands as well as cracks and rifts in the keratinized epidermis on finger tips. Due to frequent exacerbations of the skin disease, she was referred to our Institute for allergologic

testing. Patch tests with the standard allergen series (Chemotechnique Diagnostics, Malmö, Sweden) and disinfectants (0.1% benzalkonium chloride, 0.5% chlorhexidine digluconate, 0.5% chloramine, 0.2% glutaraldehyde, 2% gloyxal) showed sensitivity to thiuram mix 1% pet. ++, mercapto mix 2% pet. + and mercaptobenzothiazol 2% pet. ++. Therefore, additional tests were performed with the rubber additives series (Chemotechnique Diagnostics, Malmö, Sweden). Table 1 gives the results of the positive tests. The additional tests included also application of the dental screening test (Chemotechnique Diagnostics, Malmö, Sweden), which revealed allergy to the derivatives of methacrylic acid (Table 2).

Prick tests with inhalation allergens (Allergopharma, Germany), RAST with latex (Allergopharma, Germany) and prick tests with latex (Allergopharma, Germany; Staller-genes, France) were negative, whereas IgE total (Allergopharma, Germany) 578.40 kU IgE/L and RAST with house dust mites (Pharmacia, Sweden) were positive class 2.

This study was carried out under the project of the Nofer Institute of Occupational Medicine (18/MP/2002) "Prevention of Adverse Effects to Harmful Factors in the Work Environment of Medical Staff".

Received: November 14, 2002. Accepted: February 6, 2003.

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Table 1. Results of positive patch test with the rubber additives series

Allergen	Concentration and vehicle	48 h	96 h
Tetramethylthiuram monosulfide	1.0 pet	–	+
Tetraethylthiuram disulfide	1.0 pet	++	++
Dipentamethylenethiuram disulfide	1.0 pet	–	+
2-Mercaptobenzothiazole	2.0 pet	++	+++
N-Cyclohexylbenzothiazol sulphenamide	1.0 pet	+	++
Morpholinylmercapto benzothiazole	1.0 pet	+	++

Table 2. Results of positive patch test with dental screening series

Allergens	Concentration and vehicle	48 h	96 h
Methyl methacrylate	2.0 pet	++	++
Triethyleneglycol dimethacrylate	2.0 pet	+	++
Urethane dimethacrylate	2.0 pet	–	++
Ethyleneglycol dimethacrylate	2.0 pet	+++	+++
1,4-Butanediol dimethacrylate	2.0 pet	+	++
2-Hydroxyethyl methacrylate	2.0 pet	+++	+++
N,N-Dimethylaminoethyl methacrylate	0.2 pet	++	++
Tetrahydrofurfuryl methacrylate	2.0 pet	–	++

DISCUSSION

Derivatives of methacrylic acid showing strong sensitizing properties are frequent causes of allergic contact dermatitis in dentists and dental technicians [5–8]. Their jobs are associated with repeated exposure to these chemicals (in dentists, the contact with the UV-setting materials during repairing carietic defects, and in dental technicians during making dental prostheses). The most frequent sensitizers include: 2-hydroxyethyl methacrylate, ethyleneglycol dimethacrylate and methyl methacrylate. Allergy to acrylates in dental nurses has been rarely reported [4]. The present case of allergy to derivatives of methacrylic acid in a dental nurse shows that even occasional contact with these chemicals may result in the occupational skin disease. Our patient reacted not only to 2-hydroxyethyl methacrylate, ethyleneglycol dimethacrylate and methyl methacrylate, but also to other chemicals of this group (triethyleneglykol dimethacrylate, urethane dimethacrylate, 1,4-butanediol dimethacrylate, N,N-dimethylaminoethyl methacrylate, tetrahydrofurfuryl methacrylate).

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