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Urticarial allergic contact dermatitis caused by UV-cured printing ink

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Case Report

A 17-year-old printer presented with a 3 day history of a florid erythematous rash that started on his trunk and spread to his limbs. Two weeks previously, he commenced work as a printer and reported contact with ink from posters, through his clothes onto his abdomen.

Clinical examination revealed florid erythematous urticarial papules and plaques on his trunk and limbs (Fig. 1). Some plaques were targetoid, suggesting an erythema multiforme-type reaction. A skin biopsy showed spongiosis, superficial dermal oedema, and a superficial dermal perivascular lymphohistiocytic infiltrate. The patient was treated with clobetasol dipropionate 0.05% ointment, and the rash settled over the course of a week.

Patch testing was performed with the British Society for Cutaneous Allergy baseline series, photographic chemicals, and the (meth)acrylate printing series (Chemotechnique Diagnostics, Vellinge, Sweden). Allergens were applied to the upper back with IQ ultra® chambers (Chemotechnique Diagnostics), and removed after 48 hr. Patch test reaction sites were read on days 2, 4, and 7, according to the International Contact Dermatitis Research Group criteria. Positive reactions were seen to multiple acrylic monomers (Table 1). Patch testing with epoxy resin 1.0% in the standard series gave a negative result.

Discussion

We report a case of urticarial allergic contact dermatitis in a printer caused by UV-cured printing ink containing methacrylates. This patient previously had



Fig. 1. Urticarial papules and plaques on trunk and limbs.

a scalp laceration treated with acrylate glue, which may have caused sensitization to acrylic monomers. 2-Hydroxyethyl methacrylate and 2-hydroxypropyl methacrylate are among the most common methacrylates

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Table 1. Positive (meth)acrylates patch-tested

(Meth)acrylate printing series (pet.)	Day 2	Day 4	Day 7
Ethyl acrylate 0.1%	++	++	+
2-Hydroxyethyl acrylate 0.1%	++	++	++
Hydroxypropyl acrylate 0.1%	++	++	++
Methyl methacrylate 2%	–	++	+
2-Hydroxyethyl methacrylate 2%	++	++	+
2-Hydroxypropyl methacrylate 2%	++	++	++
Triethyleneglycol dimethacrylate 2%	++	++	+
1,4-Butanediol diacrylate 0.1%	++	++	++
1,6-Hexanediol diacrylate 0.1%	++	++	++
Diethyleneglycol diacrylate 0.1%	++	++	+
Tripropyleneglycol diacrylate 0.1%	++	++	+
Pentaerythritol triacrylate 0.1%	++	++	+
Ollgotriacrylate (OTA 480) 0.1%	+	+	+
Epoxy acrylate 0.5%	++	++	+
Triethyleneglycol diacrylate 0.1%	++	++	+

causing sensitization (1). The two main sources of contact allergy in the printing industry are UV-curing inks (2) and

photopolymer prints (3). Diethyleneglycol diacrylate is an important allergen in printing work. The accompanying reactions to the other (meth)acrylates may represent cross-reactivity or concomitant sensitization. The term urticarial dermatitis describes a dermal hypersensitivity reaction with urticarial features (4). Lesions resemble urticarial papules and plaques, but may have eczematous features and typically last longer than 24 hr. It may be seen in a spectrum of conditions, including drug reactions, allergic contact dermatitis, and viral exanthems. Urticarial dermatitis is distinct from contact urticaria, which is usually short-lived and may be associated with systemic symptoms such as anaphylaxis. Urticarial dermatitis may be more widespread and may resemble a drug eruption.

In summary, we report an unusually florid presentation of urticarial dermatitis caused by contact allergy to acrylates in UV-cured printing ink.

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