

use of glue-on preformed acrylic nails.

Case Report

A 38-year-old woman economist with childhood eczema and asthma had suffered from hand dermatitis since the age of 15. The eczema typically cleared during summer and erupted during winter. When seen by a dermatologist for the first time, a vesicular excoriated eczema was present distally on most dorsal fingers and around the nail plates. A standard patch test was positive to nickel sulfate (D3+; D7+) and myroxylon pereirae (D3-; D7+), without any evident clinical relevance. The eczema was considered to be an atopic hand eczema. 2 years later, the patient reappeared with severe exacerbation of the fingertip dermatitis since several months with onycholysis of several fingernails, which were hypertrophic and had a yellowish discoloration. There was also a vesicular eczema on the fingertips. She was treated by a dermatologist with a potent topical corticosteroid cream plus ultraviolet (UV) B treatment, and she was also given sick leave. The diagnosis was again atopic dermatitis. Because of continuous severe skin problems affecting the fingertips and nail folds, despite her topical corticosteroid plus UV treatment and sick leave, she was referred to us 2 months later. The localization and course of the dermatitis with regard to the treatment and sick leave strongly indicated an exogenous background. First, she did not disclose any information about any hazardous factor, but when directly questioned about artificial nails

because of the now dystrophic nails (Fig. 1), she admitted to using glue-on preformed acrylic nails intermittently to conceal her dystrophic nails. A new patch test session followed with testing to the standard, corticosteroid, spice (slight suspicion of food allergy), and nail acrylics series was performed. Readings showed not only nickel allergy (D3+; D7+) but also contact allergy to ethylcyanoacrylate (ECA) 10% pet. (D3+; D7++). The glue used by the patient to affix the artificial nails was also tested in 10% (D3+++), and 1% (D3++) pet. After cessation of the glue-on nail procedure, the patient substantially improved and went back to work.

Discussion

Even if atopic dermatitis is an endogenous disease that can manifest itself as eczema in skin folds and on hands, such a patient can also get sensitized to various allergens and get an allergic contact dermatitis either on previously normal skin or superimposed on diseased skin. This case with occupational consequences was partly because of an undiscovered contact allergy to nail acrylics. To miss a contact allergy is always possible, but it may be more likely to do it in patients with an already existing endogenous dermatitis such as atopic dermatitis. Although having been patch tested some years ago, when the demonstrated contact allergy was without any known clinical relevance, new sensitization may occur, which must be considered (1).

Artificial nails can be achieved either with acrylic gels or with acrylic

Allergic contact dermatitis from ethylcyanoacrylate in an office worker with artificial nails led to months of sick leave

Contact Dermatitis 2007; 57: 346–347

M. Isaksson, I. Siemund and M. Bruze

Department of Occupational and Environmental Dermatology, Malmö University Hospital, Lund University, SE 20502 Malmö, Sweden

Key words: allergic contact dermatitis; ethylcyanoacrylate; nail cosmetics; occupational; patch test; plastics.

Skin problems caused by nail cosmetics of acrylate/methacrylate origin are usually from the use of artificial nails made from acrylic gels or liquids and powder. Very few reports concern the



Fig. 1. The patient showing dystrophic nails on all fingers.

liquid and powder, which both need polymerization before setting or by affixing a preformed plastic nail to the nail plate. In the present case, the latter was performed. The preformed nails contain various methacrylates/acrylates, which are polymerized with most likely residual low levels of monomers and hence do not sensitize. The glue always contains cyanoacrylates, most often ECA, which is an extremely rare sensitizer, said to be as a result of immediate bonding of ECA to surface keratin (2). Only some 10 cases have been published (3–6) and only 1 in which the dermatitis was incapacitating enough to render sick leave as in the present case (4). In a Belgian study, 1 of 7 cases with contact allergy to nail acrylics was allergic to ECA (7). Not 1 among our 7 patients with nail acrylic tested during 10 years was hypersensitive to ECA (8). Reactions were instead seen to ethylene glycol dimethacrylate (11 of 14 tested patients), 2-hydroxyethyl methacrylate (9 of the 14), and triethyleneglycol dimethacrylate (9 of the 14) (8). ECA, also called Krazy Glue or Super Glue, therefore seems to have a low sensitizing potential. It is patch tested in 10% in contrast to most acrylates which are tested in 0.1%. If ECA is tested in serial dilutions in a solution, for example acetone, a metal chamber like the Finn Chamber® (Epitest Ltd. Oy, Tuusula, Finland) should not be used because the aluminium acts like a catalyst and this may lead to polymerization of the ECA monomers, which may render false-negative patch test reactions in a sensitized individual (4). 3 former studies suggested that ECA did not cross-react with other acrylates (9–11), while 1 study claimed that ECA did (12). According to our own experience, ECA does not cross-react with other acrylates/methacrylates; so a patient hypersensitive to ECA should be able to wear artificial nails made from acrylic gels or liquids and powder. However, the risk of sensitization is higher with the latter chemicals. The nail plate may in itself get dystrophic from exposure to acrylics, which are both sensitizing and irritant in nature. Paraesthesia with a duration of many months and irreversible loss of the nail plate has also been described after sensitization to acrylics, the latter, however, uncommon (13).

References

1. Bruze M. Principles of occupational hand eczema. In: *Hand Eczema*, 2nd edition, Menné T, Maibach H I (eds); Boca Raton, CRC Press, 2000: 181–194.
2. Calnan C. Cyanoacrylate dermatitis. *Contact Dermatitis* 1979; 5: 165.
3. Tomb R R, Lepoittevin J P, Durepaire F, Grosshans E. Ectopic contact dermatitis from ethyl cyanoacrylate instant adhesives. *Contact Dermatitis* 1993; 28: 206–208.
4. Bruze M, Bjorkner B, Lepoittevin J P. Occupational allergic contact dermatitis from ethyl cyanoacrylate. *Contact Dermatitis* 1995; 32: 156–159.
5. Jacobs M C, Rycroft R J. Allergic contact dermatitis from cyanoacrylate? *Contact Dermatitis* 1995; 33: 71.
6. Conde-Salazar L, Rojo S, Guimaraens D. Occupational allergic contact dermatitis from cyanoacrylate. *Am J Contact Dermat* 1998; 9: 188–189.
7. Constandt L, Hecke E V, Naeyaert J-M, Goossens A. Screening for contact allergy to artificial nails. *Contact Dermatitis* 2005; 52: 73–77.
8. Goon A T J, Bruze M, Zimerson E, Goh C L, Isaksson M. Contact allergy to acrylates/methacrylates in the acrylate & nail acrylics series in Southern Sweden: simultaneous positive patch test reaction patterns and possible screening allergens (Accepted for publication *Contact Dermatitis*).
9. Fisher A A. Adverse nail reactions and paresthesias from "photobonded acrylate 'sculptured' nails". *Cutis* 1990; 45: 293–294.
10. Fisher A A, Baran R L. Adverse reactions to acrylate sculptured nails with particular reference to prolonged paresthesia. *Am J Contact Dermat* 1991; 2: 38–42.
11. Kanerva L. Ethyl cyanoacrylate does not cross-react with methacrylates and acrylates. *Am J Contact Dermat* 1997; 8: 54–55.
12. Koppula S V, Fellman J H, Storrs F J. Screening allergens for acrylate dermatitis associated with artificial nails. *Am J Contact Dermat* 1995; 6: 78–85.
13. Barnett J M, Scher R K. Nail cosmetics. *Int J Dermatol* 1992; 31: 675–681.

Address:
 Marlene Isaksson
 Department of Occupational and
 Environmental Dermatology
 Malmö University Hospital
 Lund University
 SE 20502 Malmö
 Sweden
 Tel: +46 40 337859
 Fax: +46 40 331192
 e-mail: marlene.isaksson@skane.se