Allergic contact dermatitis from photobonded acrylic gel nails: a review of four cases

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Artificial photobonded acrylic gel nails, used to improve the cosmetic appearance of natural nails, have gained popularity over recent years. They can cause allergic contact dermatitis both in occupational and in non-occupational settings. It affects not only the nail area but also the elsewhere on the hands, and occasionally involves the face, including the eyelids, mainly due to an occupational airborne dermatitis.

Case Reports

We observed four female patients, aged 26–41 years old (mean 33.0 years), with allergic contact dermatitis from photobonded acrylic gel nails. Two of these patients were both customers and professional nail beauticians. The two customers developed periungual eczema 3 and 6 months after the first application of acrylic gel. One of the manicurists, in spite of having had acrylic gel nails for 2 years, only developed periungual and hand dermatitis after using acrylic nail gels professionally. The other nail beautician presented with eyelid dermatitis 5 months after starting work and had no hand/periungual lesions.

Patch tests with the Portuguese baseline series of contact allergens and an extended series of acrylates (Chemotechnique) applied using Finn® Chambers on Scanpor® tape (24-h occlusion and readings at D2 and D3/D4) showed positive reactions (++/+++) to 2-hydroxyethyl methacrylate (2-HEMA) and 2-hydroxypropyl methacrylate (2-HPMA) in three patients. The occupational case presenting with eyelid dermatitis only reacted to triethylene glycol diacrylate (TREGDA). Positive reactions to other acrylates were also found (Table 1). Dermatitis resolved in all patients after they stopped working or removed their acrylic gel nails, but one of the customers had persistent distal onycholysis.

Discussion

Several studies concerning allergic contact dermatitis to artificial nails have been published, but apart from 2-HEMA (1–5) that is always used in gel nails (1), there is no consensus as to which acrylates should be used to screen for contact allergy to them (1–5). However, even in the small series presented here, 2-HEMA did not detect the occupational case that had an airborne distribution. This was a rather infrequent pattern of contact allergy to gel nails, and TREGDA was the responsible allergen.

In our series, we would only have needed 2-HEMA and TREGDA to show allergic contact dermatitis to acrylates relevant to the gel nails. We consider that these two acrylates should be used as screening substances, but when there is a strong suspicion of acrylate allergy due to photobonded gel nails, an extended acrylate series may be required to disclose reactivity to any other acrylic molecule.

References

1. Constandt L, Hecke E V, Naeyaert J M, Goossens A. Screening for contact allergy to artificial nails. *Contact Dermatitis* 2005: 52: 73–77.
2. Lazarov A. Sensitization to acrylates is a common adverse reaction to artificial fingernails. *J Eur Acad Dermatol Venereol* 2007: 21: 169–174.
3. Hemmer W, Focke M, Wantke F, Götz M, Jarisch R. Allergic contact dermatitis to artificial fingernails prepared from UV light-cured acrylates. *J Am Acad Dermatol* 1996: 35: 377–380.
4. Teik-Jin Goon A, Bruze M, Zimerson E, Goh C L, Isaksson M. Contact allergy to acrylates/methacrylates in the acrylate and nail acrylics series in southern Sweden: simultaneous positive patch test reactions patterns and

Table 1. Positive patch tests

Patch tests	Patient 1 (♀, 41 years)	Patient 2 (♀, 26 years)	Patient 3 (♀, 38 years)	Patient 4 (♀, 27 years)
Baseline series	Parabens + Thiomersal +	Negative	Nickel ++ Thiomersal ++	Negative
Acrylate series	2-HEMA +++ 2-HPMA ++ EMA ++ 2-HEA ++ THFMA ++ TREGDMA ++ TEGDMA ++ TREGDA ++ HDDA ++	2-HEMA +++ 2-HPMA +++ EMA ++ 2-HEA ++ EA ++ EGDMA ++	2-HEMA ++ 2-HPMA ++	TREGDA ++

EA, ethyl acrylate; EMA, ethyl methacrylate; EGDMA, ethylene glycol dimethacrylate, HDDA, 1,6-hexanediol diacrylate; 2-HEA, 2-hydroxyethyl acrylate; 2-HEMA, 2-hydroxyethyl methacrylate; 2-HPMA, 2-hydroxypropyl methacrylate; TEGDMA, tetraethylene glycol dimethacrylate; THFMA, tetrahydrofurfuryl methacrylate; TREGDA, triethylene glycol diacrylate; TREGDMA, triethylene glycol dimethacrylate.

possible screening allergens *Contact Dermatitis* 2007: 57: 21–27.
5. Kanerva L. Occupational allergic contact dermatitis caused by photobonded sculptured nails and a review of (meth) acrylates in nails cosmetics. *Am J Contact Dermat* 1996: 7: 109–115.

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