

Contact allergy to (meth)acrylates in gel nail polish in a child: An emerging risk for children

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Acrylates and methacrylates are well-known contact sensitizers in non-occupational (dental or orthopedic prostheses, electrodes for medical devices, artificial nails)¹⁻³ and occupational settings (dentists, dental technicians, nail artists).^{1,4} In this broad context, the main sources of contact sensitivity to (meth)acrylates are nowadays nail cosmetics,^{5,6} mostly reported in adults. Allergic contact dermatitis from nail (meth)acrylates has rarely been reported in adolescents^{1,7,8} and only once in a child.⁹

CASE REPORT

A 10-year-old non-atopic girl presented with eczema on the dorsal aspect of the thumb (Figure 1A) and vesicular and bullous lesions on her fingertips (Figure 1B,C), associated with itching and burning. The history revealed that the skin lesions appeared about 10 days after

she applied her mother's gel nail polish for fun. The girl admitted frequent application of the same nail cosmetic during the last 4 months, without any problem, but frequently getting her fingertips soiled. The gel nail polish was immediately removed and the lesions disappeared within 2 weeks with betamethasone dipropionate ointment (twice daily) and cetirizine tablets (once daily). Allergic contact dermatitis was suspected, and 1 month after complete healing, patch tests with the SIDAPA (Società Italiana di Dermatologia Allergologica, Professionale e Ambientale) baseline series (FIRMADiagent, Florence, Italy) and the gel nail polish 1% pet. were performed. Patch testing was carried out with the Haye's Test Chambers (Haye's Service, Alphen aan den Rijn, The Netherlands) on Soffix tape (Artsana, Grandate, Italy) and readings were done on day (D)2, D4, and D7.¹⁰ At D4, strong (++) positive reactions to 2-hydroxyethyl methacrylate (2-HEMA) and to the gel

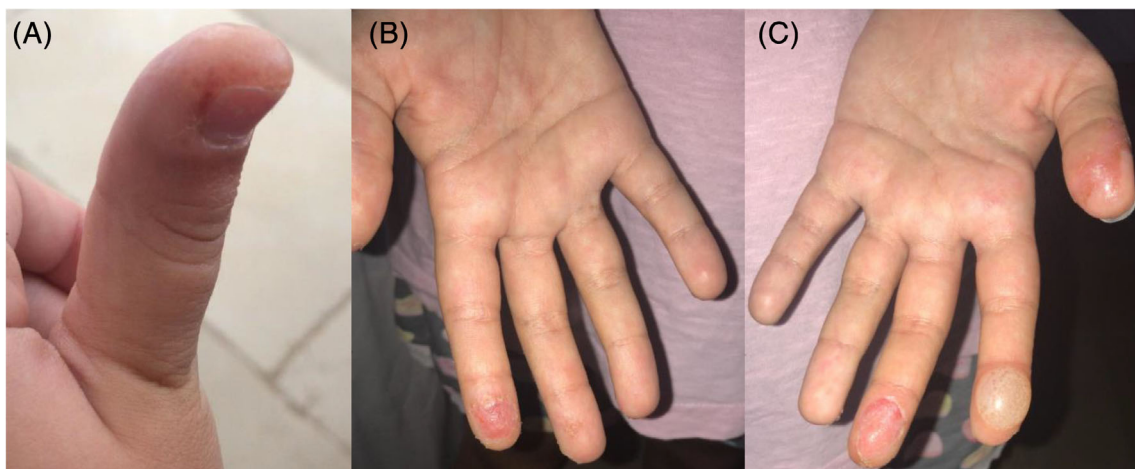


FIGURE 1 Eczematous dermatitis on the dorsal aspect of the thumb (A), and vesicular and bullous lesions on fingertips (B,C)

nail polish were observed. Patch testing with the same gel nail polish in 20 healthy subjects was negative. In a second round, methyl methacrylate (MMA) 2% pet., 2-hydroxypropyl methacrylate (HPMA) 2% pet., and ethylene glycol dimethacrylate (EGDMA) 2% pet. were patch tested, with strong (++) positive reactions to HPMA and EGDMA.

DISCUSSION

Contact sensitivity to nail (meth)acrylates is an emerging health problem. In Italy, we recently documented that nail (meth)acrylates were responsible for positive patch test to 2-HEMA in 80.5% of patients, more in consumers (72.7%) than in nail technicians (27.3%).⁶ All these patients were adults, as also reported in a large Portuguese study on 230 cases of allergic contact dermatitis caused by nail (meth)acrylates. In this study no differences regarding occupational and non-occupational exposure (24.4% consumers, 23.9% nail technicians, 51.7% both) were observed.⁴

In childhood, allergic contact dermatitis caused by nail (meth)acrylates is exceptional. To the best of our knowledge, this is the second case described in a pediatric patient. The first case was recently reported by Alves et al in an 11-year-old girl with persistent, recalcitrant eczema affecting predominantly the dorsal aspects of the fingers.⁹ The girl was found sensitized to 2-HEMA, HPMA, EGDMA, hydroxyethyl acrylate (HEA), and urethane dimethacrylate (UDMA). In our case, we point to the bullous aspect of the fingertip lesions, probably due to the fact that her fingertips were exposed to traces of gel nail polish.

In adolescents, reported cases of allergic contact dermatitis due to nail (meth)acrylates were described not only in acrylic nail consumers, but also in young nail and beauty technicians,^{1,7,8} forcing them to change jobs. The often young age of nail technicians emphasizes the need for educational programs and preventive measures to reduce the risk of early occupational contact dermatitis.

In conclusion, the increasing trend of nail fashion and, with it, the risk of (meth)acrylates sensitization also in children has severe consequences for future job choices and possible need of dental and orthopedic prostheses and medical devices, respectively.

CONFLICT OF INTEREST

All authors have no interests to report.

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