

CONTACT POINT

“Slime”: A new fashion among children causing severe hand dermatitis

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“Slime” is a homemade play gel obtained by mixing several cosmetic and household products, including shaving foams, boric acid-containing contact lens solutions, glues, and liquid detergents. It has recently gained immense popularity among children and adolescents, and its use even appears to be advised in paediatric (functional) therapies.¹ We here report on 2 children with severe, vesicular hand dermatitis in whom contact sensitization to ingredients present in “slime” was observed.

CASE REPORTS

The first case concerned an 11-year-old non-atopic girl, referred for a second opinion on a severe, palmar vesicular dermatitis, which had been present for a few months. Her history showed that she had had contact with several recreational do-it-yourself products, including textile glue (Figure 1A,B), which she used, together with household detergents and (food) colorants, for the creation of her own home-made “slime”. Moreover, her mother acknowledged that she also regularly played with a ready-made play gel (Bouncing Putty; Toys, Amsterdam, The Netherlands).

The second case concerned an atopic 9-year-old boy who presented with a vesicular hand dermatitis (Figure 2A) following contact with a similar “slime” as used by the first patient. Moreover, he also enjoyed playing with another brand of play gel (Play-Doh; Hasbro, Pawtucket, Rhode Island), which, according to the mother, seemed to aggravate his skin lesions.

Both children, whose hand dermatitis was also difficult to control, underwent patch testing with a baseline and a cosmetic series (all allergens from Chemotechnique Diagnostics, Vellinge, Sweden); in the girl, a ready-made play gel was also patch tested (“as is”, under occlusion).

All tests, mounted on Allergeaze patch test chambers (SmartPractice, Calgary, Canada), applied on the upper back, and occluded for 2 days with Fixomull stretch (BSN Medical, Hamburg, Germany), were read, according to ESCD guidelines,² on day (D) 2 and D4. The following reactions were observed:

- Case 1: methylchloroisothiazolinone (MCI)/methylisothiazolinone (MI) 0.02% aq. (++) (Figure 1C), MI 0.2% aq. (+), methylidibromoglutaronitrile (MDBGN) 0.5% pet. (+), linalool hydroperoxides 1% and 0.5% pet. (both ?+), and Bouncing Putty gel (+).
- Case 2: paraben mix 16% pet. (++) (Figure 2B), fragrance mix I 8% pet. (?+), *Myroxylon pereirae* 25% pet. (+), amercinol L101 50% pet. (?+), limonene hydroperoxides 0.3% and 0.2% pet. (both ?+), and linalool hydroperoxides 1% and 0.5% pet. (both ?+). Additional patch tests with all 4 constituents of the paraben mix showed sensitization to methyl paraben (++) and ethyl paraben (+), but not to (structurally larger) propyl and butyl paraben.

In the first case, MCI/MI was a key ingredient in the textile glue that the girl used to prepare “slime” (Figure 1B); also, household detergents, which are used to prepare “slime”, have been shown to contain high concentrations of isothiazolinones.^{3,4} The culprit ingredients in the Bouncing



FIGURE 1 (A, B) A textile glue containing methylchloroisothiazolinone/methylisothiazolinone, used for the preparation of homemade “slime”. (C), Positive patch test reaction to methylchloroisothiazolinone/methylisothiazolinone 0.02% aq. in Case 1

Putty play gel could not, however, despite our repeated efforts to contact the manufacturer, be retrieved, although it is not unlikely that, besides fragrances,⁵ such children's toys probably also contain preservatives. In the second case, with regard to the boy's play gel (Play-Doh), an internet search showed that a patent held by the US manufacturer mentions, among other ingredients, the potential presence of methyl and ethyl paraben, as well as fragrances, in their play gel (<https://patents.google.com/patent/US6713624>; last accessed June, 22 2018).

Following the advice to stop making “slime”, to avoid play gels in general, and to use cosmetics and topical pharmaceuticals free from the demonstrated allergens (including paraben-free corticosteroid creams in the second patient), the recalcitrant hand dermatitis in both children finally resolved.

DISCUSSION AND CONCLUSION

Recently, several cases of irritant contact dermatitis (ICD), nail changes (eg, onychomadesis), and chemical (alkali) skin burns from “slime”, the last of these resulting from the use of boric acid to provide its elastic properties, have been highlighted in the popular and scientific literature.^{1,6,7} The cosmetic products, household detergents and glues that are used in the homemade preparation of “slime” may contain not only irritating ingredients (eg, sodium lauryl sulfate) but also sensitizing ingredients (eg, preservatives and fragrances), the latter being potentially present in higher concentrations in undiluted detergents and glues,^{3,4} and hence, with prolonged and/or repeated skin contact, able to induce skin sensitization.

We suspect that, in our cases, ICD developed first, followed by allergic contact dermatitis caused by strong allergens, such as isothiazolinones and fragrances, but also by low-risk allergens such as parabens. The potential presence of these allergens, not only in “slime” but also in ready-made play gels, probably led to further elicitation (ie, aggravation) of the hand dermatitis. The presence of, and contact sensitization to, preservatives in play gels (ie, parabens and formaldehyde releasers such as diazolidinyl urea) has already been reported.⁸ Moreover, as such allergens are also widely present in cosmetics, and even in topical pharmaceuticals (eg, parabens or parahydroxybenzoates in corticosteroid creams), adequate treatment of hand dermatitis, as in both cases reported here, can become very difficult.

Contact sensitization to MDBGN in the young girl, for which no relevance could be found, might have resulted from the use of non-human cosmetic products (eg, dog shampoo) or non-EU cosmetics,⁹



FIGURE 2 (A), Severe, vesicular hand dermatitis in Case 2. (B), Positive patch test reaction (+) to paraben mix 16% pet

but also from the use of non-cosmetic products, which, apart from isothiazolinones, might still contain MDBGN.¹⁰

Both of our cases emphasize the importance of questioning parents about the play habits of their children, and to bring children's toys to a contact allergy consultation. Moreover, as we were initially not aware that parabens might be present in play gels, sensitization to these preservatives would have been missed if the paraben mix had not been included in a (screening) baseline series, highlighting the importance of still including low-risk sensitizers in such series, especially when they are widely present in cosmetic and non-cosmetic products.

The potential dangers of "slime", mainly skin burns, were recently also highlighted by the Belgian anti-poison centre (<https://www.antigifcentrum.be/andere/wees-voorzichtig-met-slijm>; last accessed June 28, 2018), but, hitherto, no cases of allergic contact sensitization have been published. As "slime" appears to be a new fashion among children, we expect to see more cases in the near future.

To conclude, we present 2 cases of severe hand dermatitis in children to raise awareness of the deleterious skin effects of "slime", which is a widely hyped homemade play gel, as this may cause, besides ICD and skin burns, skin sensitization to preservatives and fragrances.

Conflict of interest

The authors declare no potential conflict of interests.

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