Slime-Associated Contact Dermatitis with Active Inflammatory Border Sign Mimicking Tinea Manuum

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Abstract

Slime has become increasingly popular among children in recent years, leading to a rise in cases of hand dermatitis. In this report, we present two cases of hand dermatitis linked to slime exposure. Both cases featured the "active border sign" associated with mechanical trauma and sensitivity to isothiazolinones. Patch testing revealed positive reactions to methylisothiazolinone/methylchloroisothiazolinone, and symptoms improved after allergen avoidance. These cases highlight the importance of recognizing slime-induced dermatitis for effective diagnosis and management.

Keywords: Contact dermatitis, allergic contact dermatitis, methylisothiazolinone, patch test, tinea manuum

INTRODUCTION

In recent years, playing with slime has gained immense popularity among children, which has coincided with a notable increase in cases of hand dermatitis. The weak skin barrier in children makes them more susceptible to this condition, especially when exposed to allergens found in slime.¹ Sensitization to various allergens, notably isothiazolinones, is prevalent, particularly in homemade slime formulations. Accurate diagnosis through patch testing is crucial for identifying the causative allergen and preventing recurrent episodes.² We present two cases of hand dermatitis related to slime exposure, including the "active border sign" associated with mechanical trauma, and isothiazolinone sensitization.

CASE REPORT

A 9-year-old girl presented with hand dermatitis localized to the palms that started a year ago. When questioned about her history of slime contact, she stated that she had prepared slime at home 1 year ago. Despite discontinuation of slime contact, her symptoms persisted. Clinical examination revealed erythematous plaques with vesicles and vesicle residue on the palmar surfaces of both hands (Figure 1a). A mycologic examination was conducted due to the presence of the active border, and the result was negative. The second patient, an 8-year-old girl, presented with an 8-month history of hand dermatitis. She reported involvement in homemade slime preparation using liquid soap, dishwashing detergent, and unspecified additives prior to the onset of symptoms.

Submissison: 19-Nov-2024 Acceptance: 13-Mar-2025

Quick Response Code:

. . . Web Publication: 04-Jun-2025

Website: www.turkjdermatol.com

Access this article online

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How to cite this article: Odyakmaz Demirsoy E, Diremsizoğlu E, Kazan D. Slime-associated contact dermatitis with active inflammatory border sign mimicking tinea manuum. Turk J Dermatol. 2025;19(2):104-106.

Clinical examination revealed an erythematous plaque with an active border and residual vesicular debris on the right palm, showing partial regression (Figure 1b). Both patients underwent patch testing with the European Baseline Series, utilizing IQ Ultra Chambers from Chemotechnique Diagnostics (Vellinge, Sweden). Positive reactions (++) to the methylisothiazolinone/methylchloroisothiazolinone (MI/MCI) 0.02% aqueous solution were observed at 48 and 72 hours in both cases (Figure 2a,b). Patients were advised to avoid products containing isothiazolinones. Over the subsequent one-year follow-up period, no recurrence of symptoms was noted. Informed consent for publication was obtained from the patient's family.

DISCUSSION

Slime is often made from liquid soap, glue, detergent, borax, and food coloring. MI/MCI is a preservative found in many cleaning products and cosmetics, including slime.¹ In addition to MI/MCI, other allergens such as parabens and fragrances in slime ingredients can also cause hypersensitivity reactions.



Figure 1. (a,b) The active inflammatory border is indicated by arrows on the palms of both patients

Children exposed to homemade or industrial slime may develop eczematized plaques with vesicular remnants on their palms, raising suspicion of isothiazolinone sensitivity.



Figure 2. (a,b) Patch test results at 72 hours showed a 2+ reaction to methylisothiazolinone/methylchloroisothiazolinone

Patch testing in our study confirmed this sensitivity.² Since isothiazolinones are common in hygiene and household products, it is important to identify them to prevent future occurrences.³ In our cases, avoiding contact with these allergens led to significant improvement without recurrence. In both cases, the mechanical trauma from repeatedly sticking and pulling slime off the skin contributed to irritant contact dermatitis, especially on the palmar surfaces of the hands. This "active border sign" has been observed in reported cases and may be confused with tinea manuum.¹⁻³ We postulate that this clinical finding is related to the repetitive mechanical damage caused by slime adhering to the palm during play, along with the irritating effects of the substances in the slime. This study is notable for identifying both allergic and irritant contact dermatitis in patients exposed to slime and recognizing the "active border sign," which indicates mechanical trauma. These cases, by considering both allergic and irritant components, may provide insights into the understanding, diagnosis, and management of slime-induced dermatitis.

In conclusion, while slime is a common and seemingly harmless activity among children, its potential to cause hand dermatitis, both irritant and allergic, should not be overlooked. Early identification through patch testing and educating parents on avoiding specific allergens can improve clinical outcomes, as shown in our cases.

Ethics

Informed Consent: Informed consent for publication was obtained from the patient's family.

Footnotes

Authorship Contributions

Surgical and Medical Practices: E.O.D., E.D., D.K., Concept: E.O.D., E.D., D.K., Design: E.O.D., E.D., D.K., Data Collection or Processing: E.O.D., E.D., D.K., Analysis or Interpretation: E.O.D., E.D., D.K., Literature Search: E.O.D., E.D., D.K., Writing: E.O.D., E.D., D.K.

Conflict of Interest: The authors declared that they have no conflict of interest.

Financial Disclosure: The authors declared that this study received no financial support.

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