

CASE REPORT

Erythema multiforme-like eruption associated with plant-induced allergic contact dermatitis in a pediatric patient: A case report

Leila Cattelan MD¹  | Hanieh Zargham MD¹ | Denis Sasseville MD¹ |
Chelsea Maedler Kron MD² | Fatemeh Jafarian MD¹ 

¹Division of Dermatology, McGill University Health Centre, Montreal, QC, Canada

²Division of Pathology, McGill University Health Centre, Montreal, QC, Canada

Correspondence

Fatemeh Jafarian, MD, Division of Dermatology, McGill University Health Centre, 1001 Decarie Boulevard, Montreal H4A 3J1, QC, Canada.
Email: Fatemeh.jafarian@mcgill.ca

Abstract

An 11-year-old boy presented to the emergency department 5 days after playing in the forest. His initial eruption, consistent with allergic contact dermatitis to poison ivy, progressed into target lesions involving his extremities, palms, upper trunk, and face, consistent with an erythema multiforme-like eruption. This report details the case and reviews the literature concerning this atypical and potentially underreported complication of plant-induced allergic contact dermatitis.

KEYWORDS

allergic contact dermatitis, contact dermatitis, erythema multiforme, phytodermatitis, plant-induced dermatitis

1 | INTRODUCTION

Allergic contact dermatitis (ACD) most commonly presents as an eczematous reaction; however, a variety of non-eczematous eruptions have also been reported, including erythema multiforme (EM)-like lesions.¹⁻³ The pathogenesis of true EM is known to be type III hypersensitivity immune complex-mediated, affecting small vessels in the skin and mucosa.⁴ The pathogenesis of EM-like lesions which appear secondary to ACD, however, remains elusive but is hypothesized to be a result of a type IV reaction mediated by T cells, as is the case in eczematous contact dermatitis.^{2,5} We herein present a case of ACD in a pediatric patient who subsequently developed an EM-like reaction and discuss this potentially underreported complication to plant-induced contact dermatitis.

2 | CASE REPORT

An 11-year-old, previously healthy boy, with no significant past medical history, no known allergies, and no history of herpes simplex virus infection, presented to the emergency department with a progressive skin eruption. His vaccines were up to date, and he was not taking any

medications. Five days prior, he had developed pruritic erythematous plaques with some bullous lesions, following a linear pattern, on the bilateral extensors of his arms and legs after exposure to plants while playing in the forest by his house. This pattern was highly suggestive of *Toxicodendron radicans* (poison ivy) allergic contact dermatitis. The patient consulted a physician through telemedicine and was prescribed diphenhydramine as well as 1% hydrocortisone. Over the following days, he experienced no relief, and the eruption continued to progress, becoming increasingly generalized. By the time he presented to the emergency department, the eruption had progressed into edematous erythematous papules and plaques involving his extremities, palms, trunk, chest, and face (Figures 1-3). Over the course of the next 24 hours, the eruption further evolved into targetoid and target lesions in the same distribution. No mucosal or systemic involvement was noted. The patient was afebrile at presentation and was experiencing marked pruritus of the entire body as well as facial edema.

His white blood cell count was elevated at 16 000/ μ L, while his electrolytes, renal, and hepatic function tests were within normal limits, and his urine and blood cultures remained negative. A punch biopsy of a right thigh lesion demonstrated subtle interface vacuolar dermatitis with intraepidermal neutrophils, rare scattered necrotic keratinocytes, and no evidence of vasculitis (Figure 4). Taken together,



FIGURE 1 Generalized erythema multiforme-like reaction occurring 5 d after plant-induced allergic contact dermatitis in a pediatric patient. The image shows target lesions involving the palms of the patient's hands



FIGURE 2 Generalized erythema multiforme-like reaction occurring 5 d after plant-induced allergic contact dermatitis in a pediatric patient. The image shows widespread edematous erythematous papules and plaques evolving into target lesions, involving the patient's chest, arms, and abdomen

the clinical and histopathologic findings were found to be consistent with an EM-like reaction secondary to a plant-induced ACD. The patient received prednisone 1 mg/kg/d with a 3-week taper, along with hydrocortisone 1% and triamcinolone 0.1% ointments for the face and body, respectively. Soon after receiving the treatment, his cutaneous manifestations improved and slowly resolved.

3 | DISCUSSION

EM and EM-like reactions associated with ACD have been rarely reported in the literature.⁶ Previously identified allergens that have



FIGURE 3 Generalized erythema multiforme-like reaction occurring 5 d after plant-induced allergic contact dermatitis in a pediatric patient. The image shows involvement of the patient's flank

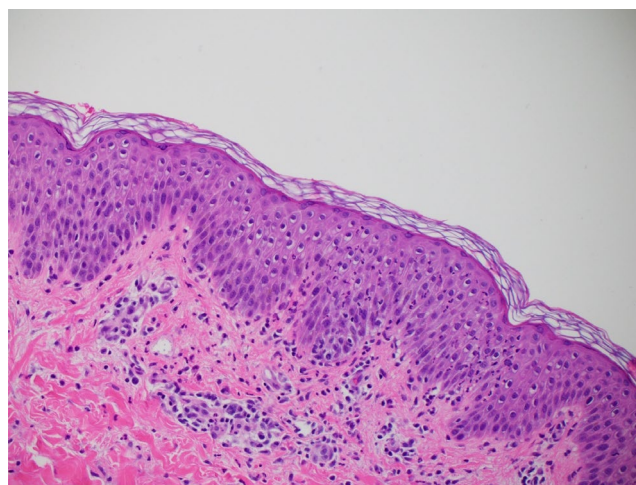


FIGURE 4 Histologic photomicrograph of lesion on the patient's right thigh, demonstrating subtle interface vacuolar dermatitis with intraepidermal neutrophils, rare scattered necrotic keratinocytes, and no evidence of vasculitis. (H&E, 20x)

triggered this reaction have included nickel, epoxy resin, balsam of Peru, Brazilian rosewood, hair dye, econazole, neomycin, and sulfonamide.^{2,5,6} Eight cases of poison ivy-induced ACD leading to the development of EM or EM-like lesions have also been reported^{5,7,8} in patients ranging between ages 13 and 61. In 1998, Cohen et al reported three cases of EM-like eruptions occurring within 7 days of ACD triggered by poison ivy. In all three patients, the eruption involved the extremities and palms, and developed within the first

7 days, over the course of the prednisone taper.⁵ More recently, in 2014, Werchniak et al reported on four similar patients who developed generalized EM-like lesions within 7–14 days following likely poison ivy exposure. These patients, similar to our case, displayed three common features, namely extensive and severe ACD warranting systemic steroid treatment, no mucosal involvement, and no history of HSV infection.⁸ Information concerning biopsy results was not made available in the above studies for further comparison.

EM-like reactions typically appear between 1 and 14 days after the episode of ACD and can spread from the primary contact site, to become generalized.¹ The eruptions often persist even after the primary eczematous eruption has resolved.^{1,2} The lesions are pruritic and can be targetoid, vesicular, or urticarial in morphology.^{1,2} While true EM patients often present with fever and mucosal involvement, EM-like reactions secondary to ACD tend to spare the mucosal surfaces and patients tend to be afebrile, similarly to our patient. In addition, the majority of EM cases are associated with a history of HSV infection, which is not the case in EM-like ACD.² Histopathology is generally non-specific, with signs of epidermal spongiosis, dermal edema, and perivascular lymphohistiocytic infiltrate.² Basal cell vacuolar degeneration can rarely be observed.¹ In contrast with true EM, rare presence of epidermal necrosis or basal cell vacuolar degeneration is found.^{2,4}

In summary, we have presented a case of plant-induced ACD in a pediatric patient, associated with the development of an EM-like reaction 5 days after exposure. This case contributes to the literature concerning this atypical and potentially underreported complication of plant-induced contact dermatitis. As ACD has a high prevalence in individuals of all age groups worldwide, with a 1-year prevalence of 15%,³ it is important for clinicians to be aware of this rare complication in order to rapidly initiate treatment and avoid unnecessary investigation.

ORCID

Leila Cattelan  <https://orcid.org/0000-0002-7703-1476>

Fatemeh Jafarian  <https://orcid.org/0000-0002-9267-3557>

REFERENCES

1. Goon AGC. Non-eczematous contact reactions. In: Johansen JD, Frosch P, Lepoittevin J, eds. *Contact Dermatitis*, 5th ed. Berlin, Heidelberg: Springer, Berlin Heidelberg; 2011:415–427.
2. Bonamonte D, Foti C, Vestita M, Angelini G. Noneczematous contact dermatitis. *ISRN Allergy*. 2013;2013:361746.
3. Kranke B, Schuster C. Contact dermatitis: relevant differential diagnoses, simulators, and variants. *J Dtsch Dermatol Ges*. 2015;13(11):1073–1088. quiz 1089.
4. Samim F, Auluck A, Zed C, Williams PM. Erythema multiforme: a review of epidemiology, pathogenesis, clinical features, and treatment. *Dent Clin North Am*. 2013;57(4):583–596.
5. Cohen LM, Cohen JL. Erythema multiforme associated with contact dermatitis to poison ivy: three cases and a review of the literature. *Cutis*. 1998;62(3):139–142.
6. Sasseville D. Clinical patterns of phytodermatitis. *Dermatol Clin*. 2009;27(3):299–308.
7. Schwartz RS, Downham TF 2nd. Erythema multiforme associated with Rhus contact dermatitis. *Cutis*. 1981;27(1):85–86.
8. Werchniak AE, Schwarzenberger K. Poison ivy: an underreported cause of erythema multiforme. *J Am Acad Dermatol*. 2004;51(5 Suppl):S159–S160.

How to cite this article: Cattelan L, Zargham H, Sasseville D, Maedler Kron C, Jafarian F. Erythema multiforme-like eruption associated with plant-induced allergic contact dermatitis in a pediatric patient: A case report. *Pediatr Dermatol*. 2020;00:1–3. <https://doi.org/10.1111/pde.14450>