

A 1-Year-Old With an Atopic Dermatitis Flare

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A 17-month-old male infant with a history of atopic dermatitis presented for a 1-day history of a moderate to severe rash over his arms, legs, and chest. The rash was bleeding, flaking, itchy, and painful.

History

The patient's mother reported that her son began to feel warm the previous day, and he also had a decreased appetite. The patient received no antipyretics that day. According to his mother, the child had not been exposed to anyone who was ill or had cold sores, and he was not in daycare. The patient's eczema was being treated with topical hydrocortisone 2.5%. He was up to date on all childhood vaccinations.

Physical examination

At presentation, the patient appeared pleasant, well-developed, well-nourished, alert, and oriented. On physical examination, the boy's temperature was 36.9 °C. An papulosquamous eruption with vesicles and erosions was observed over the arms, legs, and trunk (**Figure**). The rash



Figure. Papulosquamous eruption with vesicles and erosions distributed over the patient's legs.

was more pronounced in areas of eczema. There were no lesions on the hands or feet. Examination of the ears, nose, and throat showed pharyngeal erythema but

no other abnormalities. The remainder of the physical examination was unremarkable.

Based on the patient's presentation, what is the most likely cause of the acute worsening of this infant's atopic dermatitis?

- A. Eczema herpeticum
- B. Eczema coxsackium
- C. Varicella zoster
- D. Impetiginized eczema

Answer: B. Eczema coxsackium

Upon presentation, the differential diagnosis included eczema coxsackium, eczema herpeticum, varicella zoster, and impetiginized eczema. To assess for eczema herpeticum, a clear blister was opened and swabbed for herpes simplex virus (HSV) testing by polymerase chain reaction (PCR). The PCR results were negative for HSV-1 and HSV-2. The family was notified, and acyclovir was not initiated. Two days later, the patient's mother notified the physician that her other son had begun to exhibit similar symptoms and signs, including an itchy and painful vesicular papular rash, increased temperature, and decreased appetite.

Given the patient's physical examination findings, personal history of eczema, and negative HSV PCR, a diagnosis of eczema coxsackium was made. The mother was counseled about the self-limited nature of the virus. Eczema coxsackium is most contagious during the first week of infection; therefore, the patient's mother was counseled to keep all of her children at home to minimize spread until child's fever resolved and sores were healed.

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CITATION:

Yassine R, Gallagher ML. A 1-year-old with an atopic dermatitis flare. *Consultant*. Published online July 14, 2022. doi:10.25270/con.2022.07.000011

Received November 7, 2021; accepted November 17, 2021.

DISCLOSURES:

The authors report no relevant financial relationships.

DISCLAIMER:

The authors report that informed patient consent was obtained for publication of the images used herein.

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Aggressive skin moisturization with wet gauze wraps over the affected areas was recommended for symptomatic relief.¹

Discussion

Eczema coxsackium, also known as atypical hand-foot-and-mouth disease (HFMD), is generally caused by coxsackievirus 6 (CV-A6). This strain was first identified in 2008, and due to its increasing incidence in the United States, clinicians should familiarize themselves with the presentation of atypical HFMD.² This is unlike classic HFMD, which is most often associated with coxsackievirus A16 or enterovirus 71.³ Unlike classic HFMD, atypical HFMD has a widespread cutaneous manifestation and is not limited to oral mucosa, hands, feet, or groin areas. Additionally, there is a predilection of CV-A6 lesions for areas of atopic dermatitis, and it closely resembles eczema herpeticum in distribution and appearance.³ CV-A6 lesions may also present on previously irritated areas due to sunburn, fungal infection, or diaper dermatitis.²

The diagnosis of eczema herpeticum was considered given the painful vesicular exanthem and presence of pre-existing eczema. Similar to eczema coxsackium, eczema herpeticum is more commonly seen in children with a history of atopic dermatitis. Of note, patients with eczema herpeticum typically have more severe constitutional symptoms, including fever, chills, and rhinorrhea.³ Eczema herpeticum exanthem is characterized by disseminated, nongrouped vesicular eruptions, typically affecting the head, neck, chest and arms.⁴ The constitutional symptoms of fever, headache, malaise, and lymphadenopathy often accompany the rash.⁴ An HSV PCR was performed to rule out eczema herpeticum. If the HSV result had been positive, acyclovir therapy would have been initiated. It was essential to rule out HSV infection because if left untreated, eczema herpeticum can progress to severe complications, including disseminated infection that may lead to death. Additionally, early diagnosis is important to

prevent inappropriate use of antibiotics.⁵

The diagnosis of varicella zoster virus (VZV) was also considered. Similar to atypical HFMD, VZV causes a vesicular widely disseminated rash that involves the trunk and face.⁶ The rash is initially macular and then rapidly progresses to papules and vesicles, ultimately resulting in crusty lesions. These crusts typically slough off after 1 to 2 weeks. Patients with VZV infection may also present with upper respiratory symptoms, headache, fever, and loss of appetite.⁶ Because this patient's symptoms were moderate and upper respiratory symptoms were absent, VZV infection was considered to be less likely.

The diagnosis of impetiginized eczema was also considered. Due to the skin breakdown caused by atopic dermatitis, patients with a history of atopic dermatitis are predisposed to bacterial infection. The most common bacterial cause of impetiginized eczema is *Staphylococcus aureus*.⁷ Virulence factors and enterotoxins of *S aureus* enable erosion of the skin barrier and downregulate mediators of cellular immunity against bacterial infections.⁸ Impetiginized eczema exhibits larger erosions than those seen on this patient. Additionally, there was no yellow crust surrounding the patient's lesions, and yellow crust is a hallmark presentation of impetiginized eczema.

Conclusion

This case further demonstrates the importance of clinician familiarity with CV-A6 infection, the presentation of atypical HFMD, and its association with atopic dermatitis. Since 2008, there has been an increase in atypical HFMD in the United States. Although classic HFMD, caused by coxsackievirus A16 or enterovirus 71, is currently more commonly seen, that does not negate the possibility of infection with CV-A6. To improve the health outcomes of atopic dermatitis patients, physicians must familiarize themselves with the presentation of eczema coxsackium and remember to take it into consideration in children with acute worsening of atopic dermatitis.

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