CLINICAL VIGNETTE

Missed Diagnosis of Eczema Herpeticum in Patient with Irritant Contact Dermatitis

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Case

A 21-year-old woman with atopic dermatitis, urticaria, and oral herpes, presented to dermatology for evaluation of a rash on the scalp and face. Her rash started one week after using a new hair dye. She initially developed erythema and vesicles on her face with sparing of the oral mucosa and conjunctivae. She presented to Urgent Care where she was diagnosed with "severe atopic dermatitis on face secondary to hair dye". She received a dexamethasone injection and was prescribed methylprednisolone and triamcinolone cream. Three days later, she presented to the Emergency Department due to persistent symptoms with red, confluent rash on forehead, face, scalp, and neck. She was diagnosed with an allergic reaction and was discharged with a prednisone taper and hydroxyzine. Two days later, she presented to primary care because the symptoms continued to worsen and was referred to Dermatology for a same day visit. Her physical exam revealed erythema of the scalp and face with grouped monomorphic vesicles on the scalp, forehead, nose, and cheeks. She was diagnosed with eczema herpeticum (EH) with possible bacterial superinfection and was started on valacyclovir and doxycycline. She was also continued on the prednisone taper. Herpes simplex virus (HSV) PCR and bacterial culture were obtained. Results showed a positive HSV PCR and bacterial culture tested positive for *S. aureus* sensitive to doxycycline. The patient returned to dermatology one week later. Her skin had healed with complete resolution of rash, itchiness, and pain. Physical exam was negative for vesicles and scaling of the scalp and face but positive for erythema (Figure 1).

On chart review, four years prior to this episode, she had presented to a different PCP with right facial rash that started as small red dots with associated burning sensation and itchiness that increased in size and number and then progressed to scales and blisters around the ear. Her physical exam then was positive for grouped vesicles on an erythematous background extending from central forehead to right ear with ulceration and crusting. She was started on valacyclovir for one week and she tested positive for HSV-1.

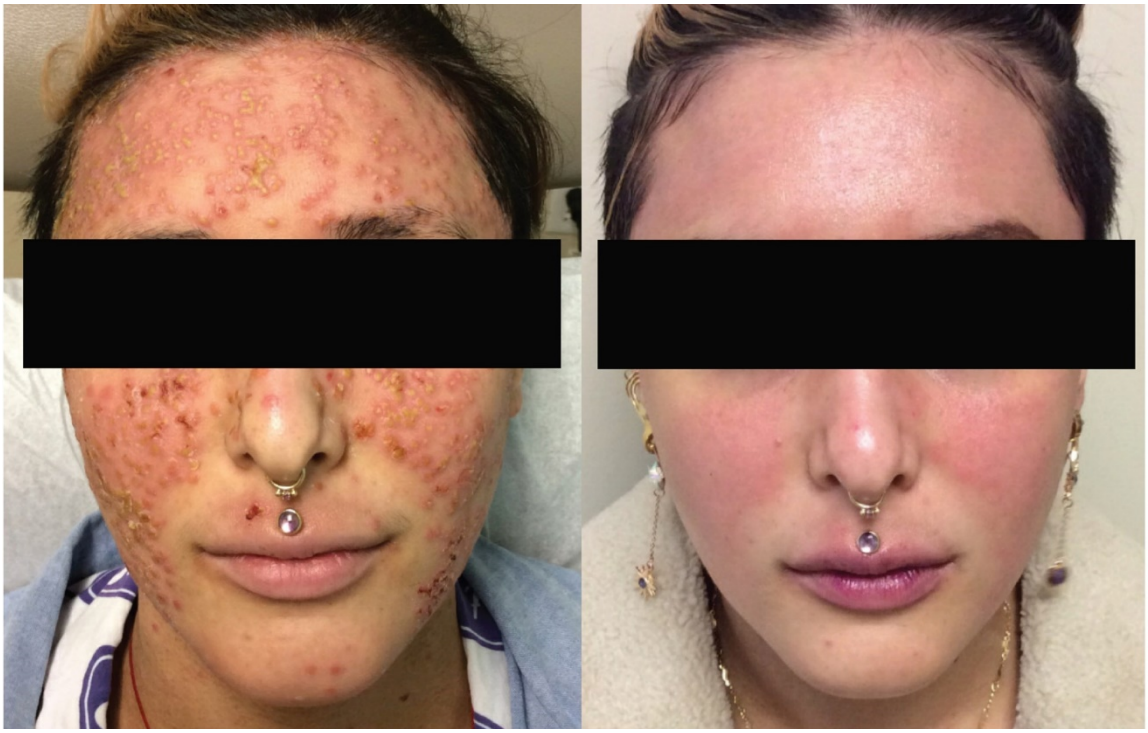

Figure 1

Discussion

EH, also known as Kaposi's varicelliform eruption and pustulosis acuta varioliformis, is a rare but severe cutaneous disease characterized by disseminated superinfection of HSV that has a highly variable severity.[1] It is usually mild in healthy adults but can be life-threatening in the pediatric and immunocompromised populations.[1-4] Constitutional symptoms, such as fever, malaise, and lymphadenopathy may or may not be present.[1-3] Patients tend to develop EH with a reactivation of HSV rather than primary infection. Conditions that compromise epidermal barrier function of the skin are risk factors. These include irritant contact dermatitis, atopic dermatitis, rosacea, psoriasis, immunobullous diseases, burns, trauma, and staph scalded skin syndrome.[1-3] Cellular and molecular biomarkers associated with development of EH include type 2 immune responses: elevated eosinophils, elevated serum IgE, elevated interleukin 4, and decreased interferons.[1-3] EH is also associated with atopic conditions, such as asthma, eczema, and allergies.[1-3]

Clinical presentation of EH includes sudden onset of monomorphic vesicles 2-3 mm in diameter in a grouped configuration overlying an erythematous base, classically overlying an eczematous area.[1-3] The lesions are often very itchy and painful.[1-5] The disease spreads in the first week of eruption with formation of erosions. The lesions may co-occur at different stages. Impetiginization or formation of yellow/honey-colored crusts can also be present with *S. aureus* superinfection.[1,5] EH in patients with severe eczema can be misdiagnosed as an exacerbation rather a superinfection.[1] Impetiginized rashes can be misdiagnosed as impetigo, especially in the pediatric population.[5]

EH is treated with oral acyclovir or valacyclovir for 1-3 weeks in mild to moderate cases.[1-3] Forscarnet or cidofovir for 2- 3 weeks can be used in refractory cases.[2-3] Patients with severe cases of EH require hospitalization and should be given IV acyclovir as well as supportive care with IV fluids, electrolytes, and wound care.[1] Since EH is infectious until crusting has ceased, contact precautions are essential. Patients should avoid close contact and avoid scratching to avoid spread and autoinoculation.

Differential diagnosis of EH includes disseminated herpes zoster, primary varicella infection, impetigo, cellulitis, hand-foot-mouth disease, acute generalized exanthematous pustulosis, and dermatitis herpetiformis.[1-4] Characteristics that raise clinical suspicion for EH are presence of painful lesions, monomorphic morphology and "punched-out" erosions, presence of pre-existing dermatitis, and spread beyond dermatomal boundaries.[1,3] EH more commonly affects the face, neck and trunk but can also affect the hands, legs, and genitals.[3] EH does not have seasonal variation.[3]

The mortality rate of EH prior to antivirals was over 10% and less than 0.1% with the use of antivirals.[1] Bacterial cutaneous superinfections with *S. aureus* and *S. pyogenes* are potential complications of EH.[1-3] Other serious complications from disseminated HSV include meningoencephalitis, keratoconjunctivitis, bone marrow suppression, and disseminated intravascular coagulation.[1,3]

Conclusion

A patient with a prior history of HSV and atopic dermatitis presenting with sudden onset of itchy and painful monomorphic vesicles should raise suspicion for eczema herpeticum and prompt treatment with systemic antivirals such as acyclovir or valacyclovir. Given EH can be severe and life-threatening, misdiagnoses can lead to treatment delay and consequently serious complications. Presence of systemic symptoms or worsening symptoms should prompt hospitalization for administration of intravenous antivirals and antibiotics for possible bacterial superinfection. Contact precautions, avoidance of scratching, and frequent handwashing should be encouraged to prevent infectious spread and autoinoculation. This patient was seen by three physicians before receiving a correct diagnosis and appropriate treatment. This highlights how easily diagnosis of Eczema Herpeticum can be missed.

REFERENCES

1. **Xiao A, Tsuchiya A**. Eczema Herpeticum. 2021 Aug 12. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan–. PMID: 32809616.
2. **Traidl S, Roesner L, Zeitvogel J, Werfel T**. Eczema herpeticum in atopic dermatitis. *Allergy*. 2021 Oct;76(10):3017-3027. doi: 10.1111/all.14853. Epub 2021 May 3. PMID: 33844308.
3. **Damour A, Garcia M, Seneschal J, Lévêque N, Bodet C**. Eczema Herpeticum: Clinical and Pathophysiological Aspects. *Clin Rev Allergy Immunol*. 2020 Aug;59(1):1-18. doi: 10.1007/s12016-019-08768-3. PMID: 31836943.
4. **Micali G, Lacarrubba F**. Eczema Herpeticum. *N Engl J Med*. 2017 Aug 17;377(7):e9. doi: 10.1056/NEJMicm 1701668. PMID: 28813215.
5. **Liaw FY, Huang CF, Hsueh JT, Chiang CP**. Eczema herpeticum: a medical emergency. *Can Fam Physician*. 2012 Dec;58(12):1358-61. PMID: 23242894; PMCID: PMC3520662.