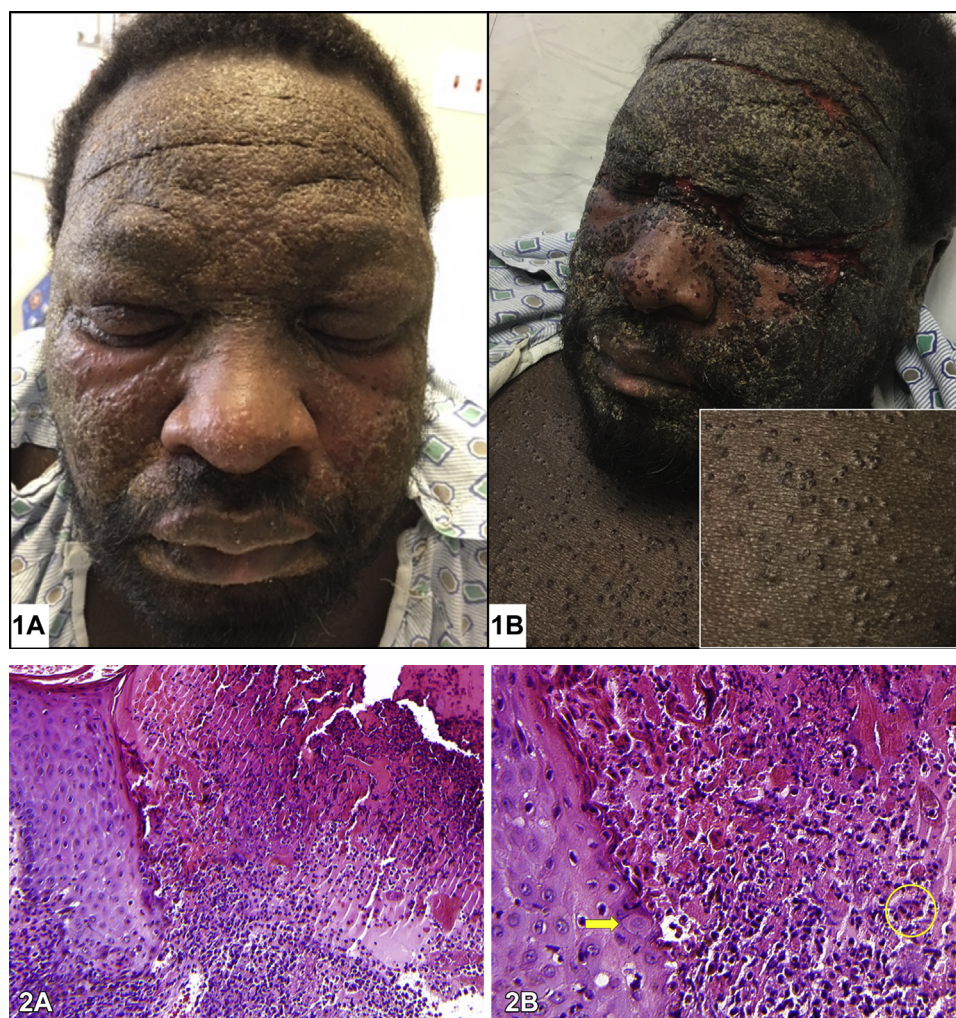


Umbilicated papules in an immunocompetent patient



Lauren Langenderfer, BS,^a Rachel Giese, DO,^b Robert Rothbaum, MD,^b and Gregory R. Delost, DO^b
Cleveland, Ohio

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CASE PRESENTATION

A 39-year-old man presented with a pruritic eruption characterized by diffuse fissured lichenified patches, erythematous and edematous eyelids, conjunctival erythema, and fevers (Fig 1, A). The patient received prednisone in the emergency department and started receiving empiric intravenous vancomycin and piperacillin/tazobactam. On hospital day 5, the patient developed an acute eruption of umbilicated papules with crust involving the face, chest, and extremities (Fig 1, B), and a punch biopsy was performed (Fig 2).

Question 1: What is the most likely diagnosis?

- A. Contact dermatitis
- B. *Staphylococcus aureus* cutaneous infection
- C. Chronic actinic dermatitis (CAD)
- D. Eczema herpeticum (EH)
- E. Eczema molluscatum

Answers:

A. Contact dermatitis — Incorrect. Although it is possible for the patient to have an underlying contact allergy, contact dermatitis is not usually associated with fever and should improve temporarily with prednisone.¹

B. *Staphylococcus aureus* cutaneous infection — Incorrect. Although patients with atopic dermatitis (AD) have a predisposition for secondary *Staphylococcus aureus* infections and could have fever as a result of a disseminated infection, the unsuccessful treatment with empiric antibiotics makes this choice unlikely.^{2,3} The primary morphology of the lesions present is also more strongly suggestive of a herpesvirus infection.

C. CAD — Incorrect. Pruritic eczematous lesions and lichenified plaques on sun-exposed areas such as the face and hands are concerning for CAD; however, CAD classically spares the eyelids, occurs in men over the age of 50 years, does not present with fever, and would improve with steroid use.⁴

D. EH — Correct. EH, a disseminated cutaneous infection of herpes simplex virus (HSV), presents as clusters of dome-shaped vesicular lesions that rupture to form tiny punched-out ulcers overlying an erythematous base. Systemic symptoms of fever, malaise, and lymphadenopathy may also be present. Because EH occurs as a result of a disrupted epidermis allowing viral entry, preexisting skin conditions such as AD are critical to the pathogenesis.²

E. Eczema molluscatum — Incorrect. Although molluscum superinfection can also present with umbilicated papules on a background of AD,

pathologic analysis would show more characteristic intracytoplasmic inclusion bodies (Henderson-Patterson bodies).² Patients with this condition are also less systemically ill.

Question 2: Which of the following is the best test to diagnose this condition?

- A. Patch testing
- B. Immunoglobulin (Ig) M/IgG serologic assay
- C. Viral culture
- D. Biopsy with histopathology
- E. Polymerase chain reaction (PCR)

Answers:

A. Patch testing — Incorrect. Patch testing is the diagnostic criterion standard for allergic contact dermatitis, not EH.¹ PCR would be better for identifying the viral DNA in EH.⁵

B. IgM/IgG serologic assay — Incorrect. Serologic assays for IgG and IgM antibodies to HSV identify only exposure to HSV infection and are not useful diagnostically. Serologic assay is the test of choice when no lesions are active and HSV infection status needs to be determined. PCR is the diagnostic test of choice during an active infection.^{2,3,5}

C. Viral culture — Incorrect. Although viral culture is highly available, is highly specific, can identify active HSV infection, and can indicate type of HSV, it takes several days to receive test results, and the test has high false negative rates.^{2,3,5} Because EH is potentially life threatening,³ a more rapid diagnostic test would be the better choice.

D. Biopsy with histopathology — Incorrect. Multinucleate giant cells on histopathology are characteristic of EH (Fig 2), but this is not required. This is not the best diagnostic test for EH because it is time consuming and nonspecific.³

E. PCR — Correct. PCR for HSV viral DNA is the best answer choice for confirming the diagnosis of EH in terms of sensitivity (>95%, vs 50%-75% with

From the Ohio University Heritage College of Osteopathic Medicine^a and Department of Dermatology, University Hospitals Cleveland Medical Center, Cleveland.^b

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Correspondence to: Rachel Giesey, DO, Department of Dermatology, UH Cleveland Medical Center, 11100 Euclid Ave, Lakeside 3500, Cleveland, OH 44106. E-mail: Rachel.Giesey2@UHHospitals.org.

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viral culture), efficiency, and cost effectiveness.^{2,5} PCR allows for diagnostic results within a few hours,⁵ permitting the necessary immediate management of EH.² HSV-1 PCR result was positive from a swab of this patient's lesions.

Question 3: Which of the following is the next best step in the management of this patient?

- A. Start intravenous acyclovir
- B. Switch vancomycin to linezolid
- C. Start pulse-dose methylprednisolone
- D. Start topical valacyclovir to affected areas
- E. Supportive care only

Answers:

A. Start intravenous acyclovir — Correct. Systemic intravenous (IV) nucleoside analogues such as acyclovir are the treatment of choice for EH. IV administration allows greater bioavailability to reduce disease duration and prevent complications. The potential renal toxicity of IV acyclovir is preventable with adequate hydration, and it has few other adverse effects. The mortality rate of EH was 75% before the use of acyclovir, emphasizing treatment importance.²

B. Switch vancomycin to linezolid — Incorrect. Although antibiotics are the choice for the treatment and prevention of bacterial superinfection in EH,³ antiviral treatment is a priority.

C. Start pulse-dose methylprednisolone — Incorrect. Systemic glucocorticoid use should be avoided in EH because it may blunt the immune response and worsen the infection.²

D. Start topical acyclovir — Incorrect. Because of the risk of contact sensitization and lack of efficacy, topical antivirals are not recommended for cutaneous EH. Although topical antiviral therapy may be used in EH to treat and prevent ocular complications, systemic therapy is the best treatment choice for cutaneous disease.²

E. Supportive care only — Incorrect. EH is potentially life threatening, and antiviral treatment should be initiated as soon as possible. HSV infection has the potential to spread to the eye, causing keratoconjunctivitis, and hematogenously to multiple organs, causing meningitis, encephalitis, hepatitis, and disseminated intravascular coagulation, emphasizing the need for rapid treatment and consultation of other specialists when indicated.^{2,3}

Abbreviations used:

AD: atopic dermatitis
CAD: chronic actinic dermatitis
EH: eczema herpeticum
HSV: herpes simplex virus
Ig: immunoglobulin
PCR: polymerase chain reaction

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