Eczema herpeticum

Etiology

Eczema herpeticum, also known as Kaposi's varicelliform eruption, refers to a herpetic superinfection of a pre-existing skin disease. This infection may be from auto-inoculation or from an infected contact. Either herpes simplex virus type 1 (HSV-1) or herpes simplex virus type 2 (HSV-2) may be involved.
Disruption of the stratum corneum secondary to skin disease is the most common predisposing factor. There have been reports of eczema herpeticum occurring in atopic dermatitis, pemphigus foliaceous, Darier's disease, pemphigus vulgaris, pityriasis rubra pilaris, Hailey-Hailey disease, irritant contact dermatitis, cutaneous T-cell lymphoma, seborrheic dermatitis, Wiskott-Aldrich syndrome, congenital icthyosiform erythroderma, and Sezary syndrome. Eczema herpeticum may also occur when there has been recent injury to the skin such as second-degree burns, autografted skin, and post dermabrasion. A commonality among all these diseases is disruption of the integrity of the epidermis.

Immunosuppression, most commonly secondary to medication, also serves as a risk factor for increased spread of HSV on the skin. In many of the diseases listed above, immunosuppressive treatment of the patient's primary disease results in impairment of the patient's immunity. Diseases themselves can also impair immunity. For example, Fukuzawa, Oguchi, and Saida (2000) presented a patient with multiple myeloma who developed eczema herpeticum superimposed on his tinea corporis. Diagnosis of eczema herpeticum should alert the practitioner to examine the patient's immune status.

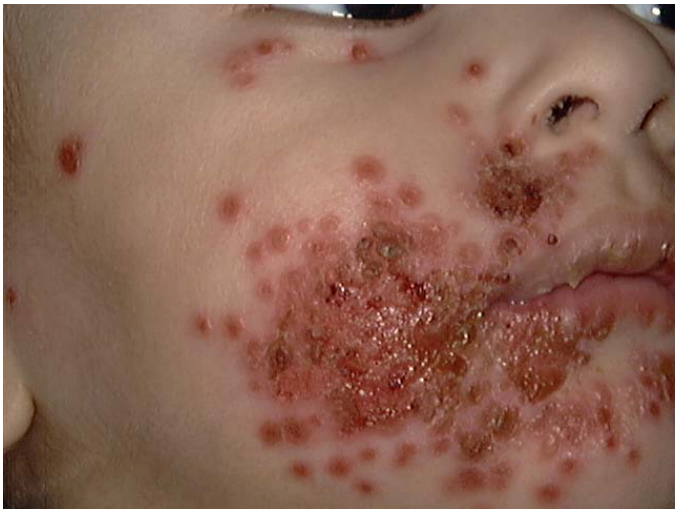
Finally, factors that precipitate herpes simplex should be considered. It is commonly known that sunburn precipitates herpes outbreaks. Wolf, Tamir, Winber, Mitrani-Rosenbaum, and Brenner (1992) presented a patient whose diffuse sunburn was complicated by eczema herpeticum.

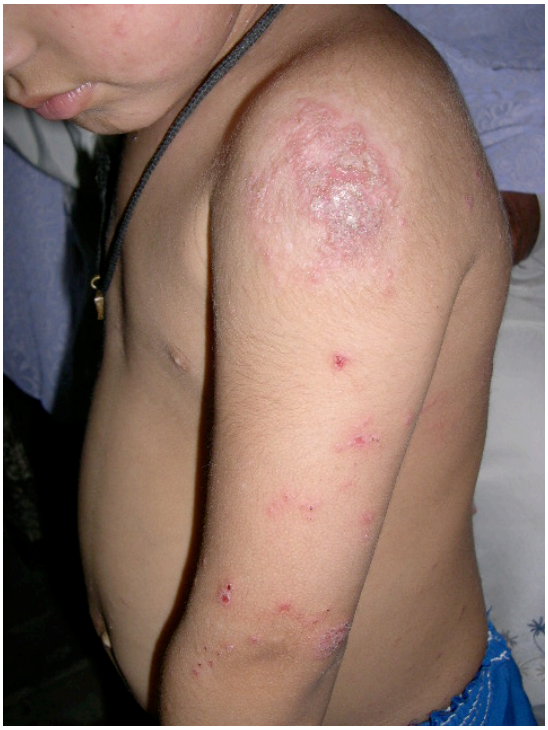
Clinical Characteristics & Diagnosis

Clinical Characteristics

The onset of eczema herpeticum is marked by multiple clusters of vesicles in the areas of pre-existing skin disease involvement. These vesicles spread, becoming hemorrhagic and crusted. Soon, painful punched-out erosions are evident. These will often coalesce to form large bleeding erosions. The majority of patients will have fever and malaise.

Frequently, the patient will deny any prior history of herpetic infection. However, subclinical infection, where the patient is not aware of prior HSV infection, is quite common. Although 90% of adults have antibodies to HSV-1 and 20% of adults have antibodies to HSV-2 (Braun-Falco et al., 2000), far fewer adults manifest the disease.





Differential Diagnosis

Any patient with multiple coalescing vesicles and fever should suggest HSV infection. However, consideration must be given to other viruses capable of creating a similar clinical picture -- most commonly animal pox viruses. A history of zookeeping or laboratory work should raise suspicion of such viruses. In addition, exacerbation of the primary skin disease must be considered. Blistering disorders, such as pemphigus vulgaris or bullous pemphigoid, may present with a similar appearance, but should not be accompanied by fever.

Diagnosis

Punched-out erosions and vesicles accompanied by fever and extreme pain should alert the health care provider to consider eczema herpeticum. The quickest method

of diagnosis is the time-honored Tzanck preparation. A surgical blade should be used to open the top of a vesicle, scraping the underside of the vesicle as well as the base. The blade is then wiped across a glass slide, heat-fixed, and stained with toluidine blue. A positive prep reveals multinucleated giant cells with molded, jigsaw-puzzle nuclei in addition to acantholytic balloon cells (Mooney et al., 1994) (see Figure 4) A positive prep will confirm viral infection, but is not virus-specific.

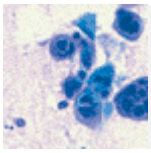


Figure 4. (click image to zoom) A positive Tzanck preparation with multinucleated giant cells.

Direct fluorescent antibody testing enables rapid identification of the virus. A slide is prepared as above but is not stained. It is sent to the laboratory for immunofluorescent examination with antibodies against HSV-1 and HSV-2 (Braun-Falco et al., 2000). Results are available within several hours.

Viral culture from a fresh vesicle is another way of typing the virus. Culture takes at least 48 hours for final results and may be negative if a swab is taken from a crusted site, often seen in older lesions. Due to the risk of co-existent bacterial infection, it is wise to perform bacterial cultures at the time of viral culture.

Routine histology is able to confirm viral infection, but will not aid in typing the virus. Characteristic changes include ballooning degeneration with eosinophilic cytoplasm in cells, multinucleated cells, and reticular degeneration of epidermal cells (Weedon, 1998). These characteristic changes may be helpful in the diagnosis of atypical HSV or VZV skin manifestations when culture, DFA, or Tzanck was not performed due to low index of suspicion. However, due to the expense, nonspecific "viral" findings, and delay in results, biopsy is not recommended for diagnosis. Likewise, serology for IgM and IgG antibodies to herpes simplex are of little diagnostic value (Bork & Brauninger, 1988).

Treatment

Therapy should be instituted without delay, with high suspicion or positive Tzanck preparation. Acyclovir is the usual treatment, and for severe disease in immunocompromised patients, is dosed at 15 mg/kg/day intravenously for a minimum of 5 days. For less-severe disease in adults, oral treatment with acyclovir 400 mg 5 times daily for 5 to 10 days is satisfactory. Pediatric patients may be treated with acyclovir 25 mg/kg/day, divided into 5 equal doses for 5 to 10 days. Acyclovir is activated by viral thymidine kinase and then acts to inhibit a viral DNA polymerase. It has relatively few side effects. A major risk of toxicity occurs when intravenously administered acyclovir precipitates as crystals in the kidneys. This results in renal impairment but is prevented with adequate hydration.

Pain must be addressed, especially in cases with diffuse involvement. Oral pain medications are helpful in the outpatient setting but inpatients with more extensive erosions should be offered intravenous medication.

Bacterial superinfection should be addressed with oral antibiotics. Most commonly, Staphylococcus coverage is required (Brook, Frazier, & Yeager, 1998). If there is no

evidence of bacterial superinfection, the use of a topical antibiotic cream such as silver sulfadiazine is recommended to prevent infection.

Patients with a history of recurrent HSV-1 or HSV-2 infection and a chronic skin disease which predisposes them to eczema herpeticum should be offered prophylactic antiviral therapy. Alternatives include acyclovir 400 mg orally twice a day or valacyclovir 500 mg to 1 gm orally once daily.

Complications

If left untreated, eczema herpeticum can become life threatening. Eczema herpeticum has resulted in herpes hepatitis, as well as disseminated intravascular coagulation. Indeed, prior to the introduction of antiviral therapies, fatalities were common. Laboratory examination in a systemically ill patient should include complete blood count with platelets and liver function tests. Additionally, if the face has multiple erosions, an ophthalmology consult should be obtained to rule out herpes keratitis.

Conclusion

Although potentially life threatening, if eczema herpeticum is recognized early it is easily and effectively treated. Any patient with pre-existing skin disease and acute "blistering" should be examined for eczema herpeticum.