A 17-Year-Old Girl with a Black Eschar

(See pages 91–2 for the Photo Quiz)

Figure 1. Eschar in the area of the right supraclavicular joint with regional painful lymphangitis.

Figure 2. Hard black eschar with erythema and edema in the area of the sternoclavicular joint.

Diagnosis: cowpox virus infection.

Electron microscopy of the subepidermal tissue sample obtained from the eschar (figures 1 and 2) demonstrated Orthopoxvirus particles (figure 3). Quantitative real-time PCR had results that were positive for cowpox virus. Sequence analysis of the hemagglutinin open reading frame revealed a very close relationship to Austrian cowpox virus strains that had been isolated from domestic cats. Anti-Orthopoxvirus antibody titers were highly positive, as determined by immunofluorescence staining (IgG and IgM titers were >1:2560).

Together with variola virus, monkeypox virus, and vaccinia virus, cowpox virus is a member of the genus Orthopoxvirus that is capable of infecting humans [1]. Although bovine cowpox infection has always been rare, small wild mammals are thought to be the main reservoir. Domestic cats have increasingly been reported to be the main source of infection in humans [1, 2]. However, serological tests performed on samples from our patient’s 3 cats had negative results.

Our case demonstrated the typical course of infection. An inflamed macule typically develops on the site of broken skin (which is often not recognized) and passes through papular and vesicular stages over a 7–12-day period. In this stage, systemic symptoms, such as elevated temperature, malaise, vomiting, and sore throat, are frequently reported. The vesicles become hemorrhagic and form sterile pustules. After 2–3 weeks, a hard black eschar with edema, erythema, and induration evolves. Painful lymphadenopathy is sometimes described. Healing takes 3–12 weeks. However, permanent scarring is common [1, 2].

In most cases, the disease remains localized [1, 2], although viremia has been detected in patients with single lesions [3]. The main sites of infection are the hands and the face. Occasionally, several lesions (multiple primary lesions or multiple lesions as a result of accidental transfer) are seen. In rare cases, ocular lesions with periorbital edema, conjunctivitis, and corneal involvement have been reported [2]. Recently, the first case of inoculation via the respiratory mucosa was described [4].

Generalized disease can occur in immunocompromised patients [1, 2], but it has also been reported in otherwise healthy people [5]. Atopic disposition, eczema, and steroid treatment seem to be risk factors for more-severe infection [1, 2].

Although symptomatic treatment is sufficient in localized cases, cidofovir might be administered in complicated cases [1, 5]. The observed increase in the number of diagnosed infections due to cowpox virus [1, 2] might be associated with the cessation of smallpox vaccination, which provided a cross im-
Figure 3. Electron micrograph with negative staining demonstrating a brick-shaped Orthopoxvirus particle (area, 200 × 250 nm) with the typical surface envelope, composed of irregularly arranged surface tubules (original magnification, ×86,400).

community to cowpox virus, and with increased awareness of the disease.

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References


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