A 27-Year-Old Woman With Vulvar Ulcers, Papules, Pustules, Edema, and Erythema

(See pages 420–421 for the Photo Quiz.)

Figure 1. Annual ulcerated plaques with a white border (arrows), a white papule (arrowhead), and pustules (dotted arrows), all surrounded by edema and erythema, are present on the inferior aspect of the vulva.

Diagnosis: vaccinia infection of the vulva.

A viral culture obtained from the annular plaques (Figure 1) demonstrated a fast-growing virus that was initially identified by the laboratory as enterovirus. The possibility of a vaccinia infection, however, was subsequently raised, which prompted the laboratory to perform a polymerase chain reaction (PCR) on the cultured virus that demonstrated a nonvariola orthopoxvirus. A vaccinia-specific PCR, performed by the Centers for Disease Control and Prevention (CDC) on material obtained from the original swab sample of the vulvar lesions, subsequently confirmed vaccinia infection. An investigation of the case by the County of San Diego determined that the man with whom the patient had had sex 5 days before symptom onset had received a smallpox vaccination in the deltoid area.
from a military health care facility 11 days prior to having sex with the patient. The patient also recalled that the man was wearing a bandage on the upper arm while they were having sex.

Smallpox vaccination requires inoculation of live vaccinia virus. Expected temporary reactions after vaccination administration include fatigue, headache, myalgia, regional lymphadenopathy, lymphangitis, pruritus, and edema at the vaccination site, as well as satellite lesions that are benign, secondary vaccinial lesions proximal to the central vaccination lesions [1]. Since the US military resumed its program of smallpox vaccination for service members in December 2002, rare cases of nonsexual transmission of vaccinia virus from recently vaccinated military service members to their contacts have been reported [2–4]. In addition, 5 cases of conjugal transfer from male service members to female sex partners have been reported in which the female partners developed genital vaccinia infections, including 3 vulvar infections [5–7], 1 vaginal infection [8], and 1 infection of the thighs [5]. All 5 women recovered.

This patient presented with lesions 5 days after sexual contact with the vaccinee, which is a time course that is consistent with contact transfer of vaccinia. The clinical course of contact vaccinia infection is similar to that of vaccinia infection acquired by vaccination. Typically, a papule forms at the site of inoculation or infection 3–5 days after infection. The papule vesiculates at days 5–8 after infection and reaches its maximum size 8–10 days after infection. A scab then forms that separates 14–21 days after vaccination, usually leaving a residual scar [1]. Persons with vaccinia infection, including smallpox vaccines, are infectious until the eschar separates from the skin without manual manipulation [4].

In addition to the ulcers, papules, edema, and tender bilateral lymphadenopathy that this patient experienced, vulvar vaccinia infections can also present with intact vesicles, vaginal discharge, and pruritus [6]. Vaccinia infections generally do not require treatment. However, severe infections, including those characterized by extensive lesions, eczema vaccinatum, generalized vaccinia, or progressive vaccinia, can be treated with vaccinia immune globulin, which is the first-line treatment, or cidofovir, which is the second-line treatment [1].

As in this case, vaccinia can be cultured in routine cell cultures and more definitively identified by a laboratory that is part of the Laboratory Response Network [9] or by the CDC laboratory. Other methods for laboratory diagnosis include special stains of smears of lesions, histopathologic examination of biopsy specimens, direct and indirect immunofluorescent methods, and electron microscopy [1].

If vaccinia infection resulting from sexual contact is suspected in a patient, clinicians should take a detailed sexual history, including exposures of sex partners. Civilian and military public health agencies can assist with investigating the patient’s possible exposures. To prevent transmission, vaccinees should be educated regarding the risk of passing vaccinia to contacts, including during sex, until they are no longer infectious.

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