MMWR
Weekly
May 4, 2007 / 56(17);417-419

Vulvar Vaccinia Infection After Sexual Contact with a Military Smallpox Vaccinee --- Alaska, 2006

On October 10, 2006, an otherwise healthy woman visited a public health clinic in Alaska after vaginal tears that she had first experienced 10 days before became increasingly painful. The patient reported having a new male sex partner during September 22--October 1, 2006. A viral swab specimen from a labial lesion of the woman was submitted to the Alaska State Virology Laboratory (ASVL) for viral culture. The viral isolate could not be identified initially and subsequently was sent to CDC on January 9, 2007, where the isolate was identified as a vaccine-strain vaccinia virus. After vaccinia was identified, investigators interviewed the woman more closely and learned that her new sex partner was a male U.S. military service member stationed at a local military base. Further investigation determined that the service member had been vaccinated for smallpox 3 days before beginning his relationship with the woman. This report describes the clinical evaluation of the woman and laboratory testing performed to identify the isolate. Health-care providers should be aware of the possibility of vaccinia infection in persons with clinically compatible genital lesions who have had recent contact with smallpox vaccinees.

Clinical Description

At the public health clinic on October 10, the woman told health-care providers that her partner consistently wore condoms during sex; however, a condom broke during vaginal intercourse on October 1. The two had no further contact after October 1. The patient told health-care providers she did not recall seeing penile ulcers or other unusual skin lesions on her partner. She had no history of genital ulcers or sexually transmitted infections and said that her vaginal tears did not result from sexual violence or abuse. She reported testing negative for human immunodeficiency virus approximately 3 months earlier. She had no fever, itching, or dysuria.

Clinical examination revealed two shallow ulcerations, one measuring 5 mm on the upper left labia minora and the other measuring 3 mm on the lower right labia minora, mild bilateral labial erythema and induration, and vaginal discharge. No inguinal lymphadenopathy was noted, and examination findings were normal for the cervix, uterus, adnexa, and anus. Tests for gonorrhea and *Chlamydia trachomatis* infection were negative; serologic tests for syphilis and hepatitis B virus were not performed. A viral swab specimen from the left labial lesion was submitted to ASVL for culture for possible herpes virus infection. A primary diagnosis of sexually transmitted infection was made but was not further characterized, and no specific treatment was administered pending viral culture results. A secondary diagnosis of vulvovaginal candidiasis was made, and the patient was treated with an over-the-counter medication.

After 2 days of increased redness, swelling, and burning of the labia minora, the woman returned to the clinic on October 12. The evaluating health-care provider diagnosed cellulitis, discontinued the over-the-counter preparation, and prescribed a 7-day course of oral cephalexin (500 mg by mouth, twice a day). No specimens were collected during the second clinic visit. The patient's labial redness, induration, and pain resolved, and the ulcers healed completely by October 19.

Laboratory Findings

At ASVL, viral cytopathic effect was observed in viral culture cells from the specimen collected from the woman on October 10; however, immunofluorescent antibody staining was negative for herpes simplex virus (HSV). During late October to November, the viral isolate was successfully passaged into two additional viral culture cell lines, but subsequent staining of the viral isolate also was negative for HSV and cytomegalovirus. The viral isolate was submitted on November 22 to a second reference laboratory, where it remained unidentified 1 month later.

On January 9, 2007, ASVL sent the unidentified viral isolate to CDC, where the isolate was evaluated using two pathogen-discovery strategies: a pan-herpes virus polymerase chain reaction (PCR) test and a deoxyribonuclease sequence-independent, single-primer amplification (DNase-SISPA) sequencing method,* in which a specimen is treated with DNase, followed by nucleic acid extraction, random amplification, restriction enzyme digestion, and SISPA of the restriction fragments. Although the pan-herpes virus PCR assay was negative, the DNase-SISPA method produced unique and prominent DNA fragments in the unknown isolate but not in the control cells. The PCR product containing these fragments was cloned and sequenced. Eight of nine sequenced clones of the bands matched vaccinia virus sequences. Additional PCR testing by the CDC Poxvirus Laboratory identified the isolate as being consistent with a vaccine-strain vaccinia virus. On January 30, 2007, CDC notified ASVL of the results, which were immediately relayed to the Alaska Section of Epidemiology.

Epidemiologic Investigation

After receiving notification of the laboratory result, Alaska state health officials interviewed the patient and learned that she lived alone and had never been vaccinated against smallpox. However, the patient told investigators that her recent sex partner was a U.S. service member stationed at a local military base and that he had been her only sex partner during the period from 1 month before her infection until the time her ulcers were completely healed (September 1--October 19). The patient also told investigators that her sexual contact with her recent partner had included manual stimulation in addition to vaginal intercourse. The patient did not remember seeing bandages on her partner and did not know whether he had received any recent vaccinations.

The service member was deployed overseas in late October and was not available for interview. According to the preventive medicine officer at the military base where the service member was stationed, the service member had reported no underlying skin disorders or other contraindications to vaccination. He had received smallpox vaccination on September 19, 2006, after first receiving instruction on care of the vaccination site and proper hand hygiene. Investigators identified no additional transmission of the virus from the vaccinee and no transmission from the woman to other persons, including health-care providers who had examined her.

Reported by: *J McLaughlin, MD, Alaska Section of Epidemiology; T Schmidt, MS, M Westcott, Alaska State Virology Laboratory. J Baumbach, MD, New Mexico Dept of Health. JP Lofgren, MD, Alabama Dept of Public Health. S Gerber, MD, Chicago Dept of Public Health. R Panares, MD, Hammond City Health Dept; W Staggs, MS, Indiana State Dept of Health. L Collins, MD, Walter Reed National Vaccine Healthcare Center, Silver Spring, Maryland. S Tong, PhD, Y Li, MS, W Tan, PhD, E Mar, PhD, S Ruone, MS, A LaMonte-Fowlkes, MPH, L Anderson, MD, Div of Viral Diseases, National Center for Immunization and Respiratory Diseases; M Reynolds, PhD, Y Li, PhD, G Trindade, PhD, V Olson, PhD, I Damon, MD, PhD, Div of Viral and Rickettsial Diseases, National Center for Zoonotic, Vector-Borne*

and Enteric Diseases; R Fagan, MD, E Lederman, MD, EIS officers, CDC.

Editorial Note:

This case of vulvar vaccinia was transmitted by a sex partner who had recently received smallpox vaccination. Unintentional transfer of vaccinia virus can occur from a vaccination site to a second site on the vaccinee (inadvertent autoinoculation) or to a close contact (contact transmission) (*1*). The most frequently reported sites of vaccinia infections caused by unintentional transfer are the face, nose, mouth, lips, genitalia, anus, and eye (*1*). To prevent transfers, health-care providers should educate vaccinees regarding proper hand washing after bandage changes or other contact with the vaccination site (*2*). This general recommendation remains the most effective way to prevent genital vaccinia infections. Persons with any new genital lesion, including lesions suspected to have been caused by vaccinia infection, should avoid sexual contact and consult a health-care provider.

Vulvar vaccinia infections often are characterized by painful labial ulcers and/or vesicles, vulvar edema and pruritus, vaginal discharge, and occasionally by vaginitis and tender bilateral inguinal lymphadenopathy (*3--9*). Most reports of vulvar vaccinia were published before cessation of widespread smallpox vaccination programs (*7*); however, in addition to the case described in this report, laboratory-confirmed cases of vulvar vaccinia after sexual contact with vaccinated military personnel have been reported in New York and Texas since the U.S. military resumed smallpox vaccination in 2002 (*8,9*). Similar to the case described in this report, herpes virus infection was initially suspected in the New York case, and information regarding contact with a recent smallpox vaccinee was not disclosed until after laboratory evidence of vaccinia virus had been detected.

Laboratory confirmation of orthopoxvirus infections, including vaccinia, requires test methods that are not commercially available. However, tests for orthopoxvirus infections are available at many state and local health departments via the Laboratory Response Network, and confirmatory (i.e., species-specific) testing is available at CDC. In the case described in this report, initial testing of clinical specimens for presumed herpes virus infection at ASVL was inconclusive. In the absence of critical information (i.e., patient contact with a recent smallpox vaccinee) to guide testing of the isolate, ASVL forwarded the specimen to CDC. Identification of vaccinia as the etiologic agent illustrates the power of using multiple new tools for identifying pathogens in patients with a disease of unknown etiology.

Since March 8, 2007, CDC and the U.S. Department of Defense have received reports of four instances of nongenital contact vaccinia associated with recently vaccinated service members, including two cases from Indiana and one case each from Alabama and New Mexico. Health-care providers and public health professionals should ask about any contact with recent smallpox vaccinees when evaluating patients with vesicular lesions compatible with vaccinia. Early identification of such contact can guide diagnostic tests, allow for timely contact tracing and clinical intervention, and facilitate prompt patient counseling to prevent further transmission of the virus.

Acknowledgments

The findings in this report are based, in part, on contributions by the examining health-care provider and the preventive medicine officer at the military base.

References

1. CDC. Surveillance guidelines for smallpox vaccine (vaccinia) adverse reactions. MMWR 2006;55(No. RR-1).
2. CDC. Smallpox vaccination and adverse reactions: guidance for clinicians. MMWR 2003;52(No. RR-4).
3. Humphrey DC. Localized accidental vaccinia of the vulva. Report of 3 cases and a review of the world literature. Am J Obstet Gynecol 1963;86:460--9.
4. Andreev VC, Lachapelle JM, Rook AJ. An outbreak of accidental vaccinia in a family. Dermatol

Int 1969;8:5--9.
5. Kanra G, Sezer VM, Gurses N, Secmeer G, Oran O. Accidental vaccinia vulva vaginitis. Cutis 1980;26:267--8.
6. Haim S. Accidental vaccinia of the vulva. Cutis 1976;17:308--9.
7. Sepkowitz KA. How contagious is vaccinia? N Engl J Med 2003; 348:439--46.
8. Egan C, Kelly CD, Rush-Wilson K, et al. Laboratory-confirmed transmission of vaccinia virus infection through sexual contact with a military vaccinee. J Clin Microbiol 2004;42:5409--11.
9. Lorich MF, Smith SB, Bessinger GT, Olivere JW. Conjugal transfer vaccinia. J Am Acad Dermatol 2004;51:460--2.

* Reyes GR, Kim JP. Sequence-independent, single-primer amplification (SISPA) of complex DNA populations. Mol Cell Probes 1991;5:473--81.

SAFER·HEALTHIER·PEOPLE™
Morbidity and Mortality Weekly Report
Centers for Disease Control and Prevention
1600 Clifton Rd, MailStop E-90, Atlanta, GA 30333, U.S.A

USA.gov Government Made Easy
Department of Health and Human Services