Position on reproductive donors and smallpox vaccine: a committee opinion

Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology

American Society for Reproductive Medicine and Society for Assisted Reproductive Technology, Birmingham, Alabama

Although there is presently no definitive evidence linking vaccinia virus transmission through reproductive cells, the Society for Assisted Reproductive Technology (SART) and the American Society for Reproductive Medicine (ASRM) accordingly recommend that assisted reproductive technology (ART) practitioners consider deferring individuals who are planning on donating gametes for reproductive use (reproductive donors) who have recently received smallpox vaccine or contracted symptomatic vaccinia virus infection through close contact with a vaccine recipient (until after the vaccine or infectious scab has spontaneously separated). Good donor practice further suggests that reproductive donors who are not in good health, including those with recent complications from smallpox vaccine, should be similarly deferred. This document replaces the previous document of the same name last published in 2012 (Fertil Steril 2012;98:e1–e2). (Fertil Steril® 2016;■:■–■. ©2016 by American Society for Reproductive Medicine.)

Discuss: You can discuss this article with its authors and with other ASRM members at http://fertstertforum.com/asrmpraccom-reproductive-donors-smallpox-vaccine/

Use your smartphone to scan this QR code and connect to the discussion forum for this article now.*

* Download a free QR code scanner by searching for "QR scanner" in your smartphone's app store or app marketplace.

Vaccinia virus is a double-stranded DNA virus related to cowpox virus that has been used to vaccinate against smallpox for more than 100 years. Vaccinia virus is closely related to smallpox (variola) virus, and the immune response to vaccinia is therefore protective against smallpox. All modern smallpox vaccines are live virus vaccines and use the New York City Board of Health (NYCBOH) strain of vaccinia virus. The last case of smallpox in the United States occurred in 1949. Routine vaccination against smallpox in the United States stopped in 1971. The last naturally occurring case of smallpox in the world occurred in Somalia in 1977. In 1980, the World Health Organization determined that the global vaccination effort against smallpox had been successful in eliminating naturally occurring disease. Routine vaccination against smallpox has since been discontinued worldwide. However, the US government recently has become concerned that smallpox virus might be used as a bioterrorism weapon (1, 2). As a result, new smallpox vaccination strategies have been reinitiated in the United States for both military personnel and civilians.

Vaccinia vaccine is administered percutaneously. After a primary (first) vaccination, a papule forms in 3 to 5 days. The formation of a papule is considered evidence of a "take" or successful immunization. The papule subsequently becomes a vesicle that becomes pustular and reaches its maximum size 8 to 10 days after vaccination, surrounded by erythema and induration, which gradually subside. A scab forms and usually separates from the skin 14 to 21 days after the vaccination, but can persist for up to 6 weeks in some cases (3).

Vaccinia virus may be spread from the vaccination site to other parts of the body and to other people until the scab falls off. At the height of the reaction, there is usually regional lymphadenopathy, and sometimes fever and malaise. More serious side effects of vaccinia vaccination occur rarely and include central nervous system (CNS) involvement (encephalitis, encephalomyelitis, encephalopathy), progressive skin infections (vaccinia necrosum), and eczema vaccinatum, which occurs in people with eczema and other related skin disorders. Approximately one death per million primary vaccinations has been reported (4).

In early studies, viremia had been detected 3 to 10 days after vaccination, although these studies did not involve the less virulent NYCBOH strain of vaccinia virus contained in current vaccines (3). Studies to determine the presence or absence of viremia in patients receiving currently available

Received January 13, 2016; accepted January 13, 2016.
Reprint requests: Practice Committee, American Society for Reproductive Medicine, 1209 Montgomery Hwy, Birmingham, Alabama 35216 (E-mail: ASRM@asrm.org).

Fertility and Sterility® Vol. ■, No. ■, ■ 2016 0015-0282/$36.00

http://dx.doi.org/10.1016/j.fertnstert.2016.01.027

vaccines are presently underway. However, due to the potential risk, the US Food and Drug Administration has issued guidance to the blood industry, recommending that recent recipients of smallpox vaccine and their symptomatic contacts be deferred as donors (5). The following summarizes current recommendations:

- Donors who have received smallpox vaccination (vaccinia virus) should be deferred for 21 days after vaccination or until the scab separates spontaneously and physical assessment confirms that there is no scab at the vaccination site (whichever is later).
- Donors should be deferred for 2 months if the scab was removed before spontaneous separation.
- Donors who experienced complications from the vaccine (eczema vaccinatum, postvaccinial encephalitis, vaccinial keratitis, progressive or generalized vaccinia) should be deferred until 14 days after complete resolution of the complications.
- If the infection was due to close contact with someone recently vaccinated with vaccinia, the donor should be eligible after the scab spontaneously separates, 14 days after all the vaccinia complications have resolved, or 3 months after the scab was otherwise removed.

Although there is presently no definitive evidence linking vaccinia virus transmission through reproductive cells, the Society for Assisted Reproductive Technology and the American Society for Reproductive Medicine accordingly recommend that ART practitioners consider deferring reproductive donors who have recently received smallpox vaccine or contracted symptomatic vaccinia virus infection through close contact with a vaccine recipient (until after the vaccine or infectious scab has spontaneously separated). Good donor practice further suggests that reproductive donors who are not in good health, including those with recent complications from smallpox vaccine, should similarly be deferred. Additional information regarding the presence or absence of viremia in patients who received currently available smallpox vaccines will help to better define the associated risks.

Acknowledgments: This committee opinion was developed under the direction of the Practice Committee of the American Society for Reproductive Medicine (ASRM) in collaboration with the Society for Assisted Reproductive Technology (SART) as a service to its members and other practicing clinicians. Although this document reflects appropriate management of a problem encountered in the practice of reproductive medicine, it is not intended to be the only approved standard of practice or to dictate an exclusive course of treatment. Other plans of management may be appropriate, taking into account the needs of the individual patient, available resources, and institutional or clinical practice limitations. The Practice Committees and the Board of Directors of ASRM and SART have approved this report.

The following members of the ASRM Practice Committee participated in the review of this document. All Committee members disclosed commercial and financial relationships with manufacturers or distributors of goods or services used to treat patients. Members of the Committee who were found to have conflicts of interest based on the relationships disclosed did not participate in the discussion or development of this document.

Samantha Pfeifer, M.D.; Samantha Butts, M.D., M.S.C.E.; Daniel Dumesic, M.D.; Gregory Fossum, M.D.; Linda Giudice, M.D., Ph.D.; Clarisa Gracia, M.D., M.S.C.E.; Andrew La Barbera, Ph.D.; Randall Odem, M.D.; Margareta Pisarska, M.D.; Robert Rebar, M.D.; Richard Reindollar, M.D.; Mitchell Rosen, M.D.; Jay Sandlow, M.D.; Michael Vernon, Ph.D.; Eric Widra, M.D.

REFERENCES

1. Henderson DA, Inglesby TV, Bartlett JG, Ascher MS, Eitzen E, Jahrling PB, et al, for the Working Group on Civilian Biodefense. Smallpox as a biological weapon: medical and public health management. JAMA 1999;281:2127–37.
2. https://www.vaccines.mil/documents/Smallpox_QA.pdf. Last accessed October 6, 2015.
3. Fenner F, Henderson DA, Arita I, Jezek Z, Ladnyi ID. Smallpox and its eradication. WHO world-wide web publication. Available at: http://whqlibdoc.who.int/smallpox/9241561106.pdf. Last accessed October 6, 2015.
4. Smallpox vaccine. Med Lett Drugs Ther 2003;45:1–4.
5. Federal Drug Administration. Recommendations for deferral of donors and quarantine and retrieval of blood and blood products in recent recipients of smallpox vaccine (vaccinia virus) and certain contacts of smallpox vaccine recipients, FDA final guidance. Available at: http://www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Guidances/Blood/ucm075115.htm; 2002. Last accessed October 6, 2015.