Smallpox Revaccination Shows Retained Immunity

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ST. LOUIS — Patients previously vaccinated for smallpox will, with revaccination, experience a smaller erythematous response, a quicker time to pustulation, and a fourfold increase in antibody titers, compared with vaccine-naive patients.

"This provides important clinical evidence of retained immunity to smallpox, even in individuals vaccinated more than 30 years ago," Eric Simpson, M.D., said at the annual meeting of the Society of Investigational Dermatology.

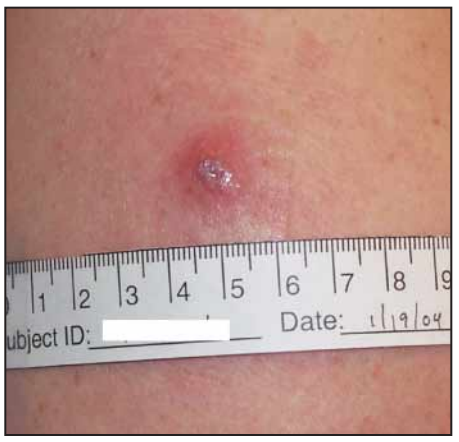
Also, said Dr. Simpson of Oregon Health and Science University, Portland, povidone ointment is effective for controlling viral shedding at the vaccination site. Within 2 hours, it decreases shedding to 0, and it has no effect on antibody titers.

Two recent studies have challenged the long-held theory that smallpox immunity lasts less than 10 years after vaccination, he said. A 2002 study showed that previously vaccinated individuals retained humoral immunity up to 75 years after vaccination. A 2003 study showed that previously vaccinated individuals could be successfully revaccinated with diluted vaccine, because of their more robust immune response.

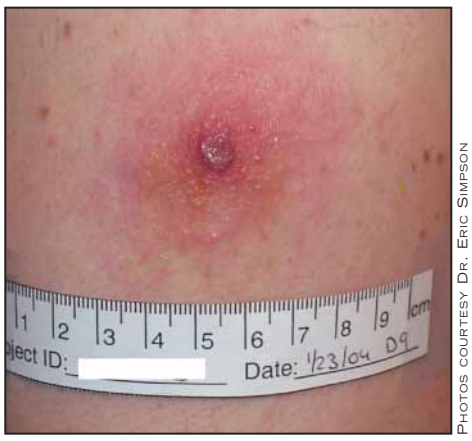
In Dr. Simpson's study, 26 healthy adult volunteers were vaccinated; 17 of them had been vaccinated an average of 33 years earlier (range 2-50 years). The rest were vaccine naive. He used a standard vaccination protocol, with the previously vaccinated subjects receiving 15 pokes with a bifurcated needle, while the vaccine-naive group received 3 pokes.

Measurements included maximum erythema at the vaccine site and maximum time to pustulation. Dr. Simpson also studied the effect of povidone ointment on viral shedding, when applied starting day 7.

The previously vaccinated subjects had a significantly smaller maximum diameter of erythema around the vaccination site, compared with the naive group (1.9 cm vs. 3.9 cm). The previously vaccinated group developed an erythematous reaction more quickly, beginning at day 3, compared with day 6 for the naive group. Erythema for both groups peaked around day 10.



Smallpox vaccination site reaction is shown in a previously vaccinated patient.



Vaccination site reaction is shown in a smallpox vaccine-naive patient.

PHOTOS COURTESY DR. ERIC SIMPSON

It's important that physicians be familiar with the differences in vaccination site reactions, he said.

Maximum time to pustulation was significantly shorter in the previously vaccinated group than in the naive group (about 7 days vs. 9.6 days).

The previously vaccinated group developed four times the antibody titers of the naive group, he said. "This explains the earlier finding that you can successfully vaccinate these patients with diluted vaccine."

To study the effect of povidone ointment on viral shedding, Dr. Simpson applied the ointment to the vaccination site every 2-3 days, beginning at day 7. Viral shedding was measured 1 hour after the ointment was applied. "The shedding dropped to 0 within 1-2 hours and stayed that way throughout the entire vaccine response," he said. "In the untreated group, viral shedding continued to occur until approximately day 20, which is around the time the eschar was shed." ■

CLINICAL CAPSULES

World Health Regulations

The World Health Organization should be notified about all major health events of international concern, international health officials concluded at the 58th World Health Assembly.

The conclusion was prompted mainly by the SARS and avian influenza outbreaks. Reportable disease outbreaks under the newly adopted international health regulations include those involving flu or suspected bioterrorism. The new regulations, which should become effective in 2007, also require that the WHO assist member nations in responding to disease outbreaks and provide a basis for improved international cooperation in responding to such outbreaks.

The regulations, which were first adopted in 1969 and revised in 1973 and 1981, were revised again in May by the World Health Assembly, which includes health ministers and senior health officials from 192 countries.

Long-Term WNV Outcomes

Initial disability was high in 22 West Nile virus patients who had acute central nervous system infection, and mortality was confined to the most severely affected patients—usually those with respiratory failure—an 18-month follow-up has shown.

Seven patients (32%) died. The mean time to death was 77 days after hospital admission. Respiratory failure was strongly associated with mortality (odds ratio 24.0), reported Lara E. Jeha, M.D., and associates at the Cleveland Clinic Foundation.

All patients were independent in activities of daily living prior to their illness, as measured by a Barthel index score of 100 on a 0-100 scale. At hospital or rehabilitation discharge, nearly half of the 15 surviving patients had Barthel index scores below 50. The low scores persisted at 18 months in only 13% of the patients (Infect. Dis. Clin. Pract. 2005;13:101-3).

Ongoing neuropsychiatric symptoms were common among the survivors. About 48% reported ongoing fatigue, memory problems, or difficulty concentrating. These complaints were most common in those who had encephalitis. Sensorimotor deficits, also reported by about 48% of patients, were most common in those who had weakness at presentation.

Asthma and Pneumococcal Disease

Asthma is an independent risk factor for invasive pneumococcal disease, a nested case-control study suggests. Patients with asthma had a 2.4-fold higher risk, compared with controls.

Asthma was present in about 18% of 635 individuals with invasive pneumococcal disease, compared with 8% of 6,350 controls in the study, Thomas R. Talbot, M.D., of Vanderbilt University in Nashville and his colleagues reported.

Risk was greatest for those with high-risk asthma, defined as having had an emergency department visit, hospital admission, use of rescue therapy, use of long-term oral corticosteroids, or receipt of three or more prescriptions for β-agonists in the previous year. They had an annual incidence of 4.2 episodes of invasive pneumococcal disease per 10,000 persons, compared with 2.3 episodes per 10,000 persons with low-risk asthma (those diagnosed with or treated for asthma, but not qualifying as high risk), and 1.2 episodes per 10,000 controls (N. Engl. J. Med. 2005;352:2082-90).

The findings suggest asthma should be included in the list of conditions that increase risk of invasive pneumococcal disease, and pneumococcal vaccination for asthma patients should be studied.

Gonorrhea Screening

Clinicians should perform routine screening of all sexually active women at increased risk for gonorrhea, because of the high risk for pelvic inflammatory disease, ectopic pregnancy, and chronic pelvic pain associated with asymptomatic gonorrhea infection, according to the U.S. Preventive Services Task Force.

Those at risk include sexually active women under age 25, those with previous gonorrhea or other sexually transmitted infections, those with new or multiple sex partners, those who don't consistently use condoms, sex workers, and drug users. Pregnant women with these risk factors should be screened at the first prenatal visit, and those with ongoing or new risk factors should also be screened during the third trimester because gonorrhea increases the risk of preterm rupture of membranes, chorioamnionitis, and preterm labor (Ann. Fam. Med. 2005;3:263-7).

The task force recommended against routine screening in women and men at low risk for gonorrhea, and found insufficient evidence for or against routine screening in men at high risk.

—Sharon Worcester