

AMMA JOURNAL VOL 11 ISSUE 1

APRIL 2002

Abstract from the Literature

by
Andy Robertson

Drazen JM. Smallpox and bioterrorism. *N Engl J Med.* 2002 Apr 25;346(17):1262-3.

Bicknell WJ. The case for voluntary smallpox vaccination. *N Engl J Med* 2002 Apr 25;346(17):1323-5.

Fauci AS. Smallpox vaccination policy-the need for dialogue. *N Engl J Med.* 2002 Apr 25;346(17):1319-20.

COMMENT

The April 25 edition of the New England Journal of Medicine contains a series of articles on smallpox. As Drazen comments in his perspective, there is more information on smallpox in this journal than he hopes you ever need. Bicknell and Fauci argue the pros and cons of mass vaccination versus 'ring vaccination' and the way ahead for smallpox vaccination. These articles provide an excellent starting point for developing an understanding of the smallpox policy issues that are perplexing many countries post-September 11.

Frey SE, Couch RB, Tacket CO, Treanor JJ, Wolff M, Newman FK, Atmar RL, Edelman R, Nolan CM, Belshe RB. Clinical responses to undiluted and diluted smallpox vaccine. *N Engl J Med* 2002 Apr 25;346(17):1265-74.

BACKGROUND

To evaluate the potential to increase the supply of smallpox vaccine (vaccinia virus), we compared the response to vaccination with 10(8.1), 10(7.2), and 10(7.0) plaque-forming units (pfu) of vaccinia virus per milliliter.

METHODS

In this randomized, single-blind, prospective study, 680 adults who had not been previously immunized were inoculated intradermally with the undiluted vaccine (mean titer, 10(8.1) pfu per milliliter), a 1:5 dilution, or a 1:10 dilution of vaccinia virus with use of a bifurcated needle, and the site was covered with a semipermeable dressing. Subjects were monitored for vesicle formation (an indicator of the success of vaccination) and adverse events for 56 days after immunization.

RESULTS

Success rates did not differ significantly among the groups and ranged from 97.1 to 99.1 percent after the first vaccination. Both the undiluted and diluted vaccines were reactogenic. In addition to the formation of pustules, common adverse events included the formation of satellite lesions, regional lymphadenopathy, fever, headache, nausea, muscle aches, fatigue, and chills consistent with the presence of an acute viral illness. Generalized and localized rashes, including two cases of erythema multiforme, were also observed.

CONCLUSIONS

When given by a bifurcated needle, vaccinia virus vaccine can be diluted to a titer as low as 10(7.0) pfu per milliliter (approximately 10,000 pfu per dose) and induce local viral replication and vesicle formation in more than 97 percent of persons.

COMMENT

This is useful research, which will extend the current US and world stockpiles of vaccine should there be another smallpox outbreak.