Smallpox Bibliography
April 2004

1: Bull World Health Organ. 2003;81(12):917-8. Epub 2004 Mar 01.

Conference warns of danger of re-emergence of smallpox as weapon of bioterror.

Fleck F.

Publication Types:
Congresses
News

PMID: 14997249 [PubMed - indexed for MEDLINE]

2: Clin Infect Dis. 2004 Apr 1;38(7):958-65. Epub 2004 Mar 15.

Urticaria, exanthems, and other benign dermatologic reactions to smallpox vaccination in adults.

Greenberg RN, Schosser RH, Plummer EA, Roberts SE, Caldwell MA, Hargis DL, Rudy DW, Evans ME, Hopkins RJ.

Department of Medicine, Department of Veterans Affairs Medical Center, Lexington, Kentucky 40536-0084, USA. RNGREE01@uky.edu

A phase 1 smallpox vaccine trial involving 350 adult volunteers was conducted. Of these subjects, 250 were naive to vaccinia virus vaccine (i.e., "vaccinia naive"). Volunteers received a new cell-cultured smallpox vaccine or a live vaccinia virus vaccine. Nine self-limiting rashes (3.6%) were observed in the vaccinia-naive group. None of the vaccinia-experienced patients had a rash. Rashes appeared 6-19 days after vaccination and had 5 different clinical presentations. Five volunteers had urticarial rashes that resolved within 4-15 days, 1 had an exanthem that lasted 20 days, and 1 each presented with folliculitis, contact dermatitis, and erythematous papules found only on the hands and fingers. Volunteers reported pruritus, tingling, and occasional headaches. Relief was obtained with antihistamine and acetaminophen therapy. No volunteer experienced fever or significant discomfort.

Publication Types:
Case Reports

PMID: 15034827 [PubMed - indexed for MEDLINE]

3: Clin Infect Dis. 2004 Mar 15;38(6):882-9. Epub 2004 Mar 01.

Looking back at smallpox.

Bray M, Buller M.

Biodefense Clinical Research Branch, Office of Clinical Research, Office of the Director, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Maryland 20892, USA. mbray@niaid.nih.gov

Smallpox apparently arose through transfer of variola virus to humans from another animal species. By causing a brief infection that required close contact for transmission and engendered solid immunity, the agent was always vulnerable to simple isolation measures. The high replicative fidelity of the viral DNA polymerase limited variola's ability to adapt to humans and preserved orthopoxviral antigenic cross-reactivity, so that vaccinia vaccination protected against smallpox. Host-derived genes encoding immunomodulatory proteins helped shelter viral replication from innate immune responses. Examination of clinical variants suggests that severity of illness was usually determined by host responses during the incubation period. Control of viral replication was aided by early postexposure vaccination and might be strengthened by additional immunological interventions. Massive inflammatory responses were responsible for major features of illness. Some patients with high levels of circulating virus developed hemorrhagic disease resembling septic shock. Continued study of virus-host interactions is needed to defend against genetically modified agents.

PMID: 14999635 [PubMed - indexed for MEDLINE]

4: Clin J Oncol Nurs. 2004 Feb;8(1):51-5.

Oncology nursing implications related to smallpox bioterrorism preparations.

Mack K.

Kelly.Mack@usoncology.com

Although smallpox was globally eradicated in 1977, the current threat of smallpox as a bioterrorism agent is unknown. Based on intelligence reports, the U.S. government and public health sectors have recommended smallpox vaccination for very select individuals. Patients with cancer are at particular risk for complications from the smallpox vaccine because of potential immunosuppression. Vaccinated nurses caring for these patients also need to take special precautions because of the possibility of secondary transmission of this live vaccine to patients. This article reviews background information on bioterrorism, the presentation and clinical features of smallpox, contraindications to the smallpox vaccine, and implications for oncology nurses.

Publication Types:
- Review
- Review, Tutorial

PMID: 14983764 [PubMed - indexed for MEDLINE]

5: J Clin Microbiol. 2004 Feb;42(2):601-9.

Smallpox and pan-orthopox virus detection by real-time 3'-minor groove binder TaqMan assays on the roche LightCycler and the Cepheid smart Cycler platforms.

Kulesh DA, Baker RO, Loveless BM, Norwood D, Zwiers SH, Mucker E, Hartmann C, Herrera R, Miller D, Christensen D, Wasieloski LP Jr, Huggins J, Jahrling PB.

Diagnostic Systems Division, US Army Medical Research Institute of Infectious Diseases, Fort Detrick, Maryland 21702-5011, USA.David.Kulesh@amedd.army.mil

We designed, optimized, and extensively tested several sensitive and specific real-time PCR assays for rapid detection of both smallpox and pan-orthopox virus DNAs. The assays are based on TaqMan 3'-minor groove binder chemistry and were performed on both the rapid-cycling Roche LightCycler and the Cepheid Smart Cycler platforms. The hemagglutinin (HA) J7R, B9R, and B10R genes were used as targets for the variola virus-specific assays, and the HA and DNA polymerase-E9L genes were used as targets for the pan-orthopox virus assays. The five orthopox virus assays were tested against a panel of orthopox virus DNAs (both genomic and cloned) at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). The results indicated that each assay was capable of detecting both the appropriate cloned gene and genomic DNA. The assays showed no cross-reactivity to the 78 DNAs in the USAMRIID bacterial cross-reactivity panel. The limit of detection (LOD) of each assay was determined to be between 12 and 25 copies of target DNA. The assays were also run against a blind panel of DNAs at the Centers for Disease Control and Prevention (CDC) on both the LightCycler and the Smart Cycler. The panel consisted of eight different variola virus isolates, five non-variola virus orthopox virus isolates, two varicella-zoster virus isolates, and one herpes simplex virus isolate. Each sample was tested in triplicate at 2.5 ng, 25 pg, 250 fg, and 2.5 fg, which represent 1.24 x 10(7), 1.24 x 10(5), 1.24 x 10(3), and 1.24 x 10(1) genome equivalents, respectively. The results indicated that each of the five assays was 100% specific (no false positives) when tested against both the USAMRIID panels and the CDC blind panel. With the CDC blind panel, the LightCycler was capable of detecting 96.2% of the orthopox virus DNAs and 93.8% of the variola virus DNAs. The Smart Cycler was capable of detecting 92.3% of the orthopox virus DNAs and between 75 and 93.8% of the variola virus DNAs. However, all five assays had nearly 100% sensitivity on both machines with samples above the LOD (>12 gene copies). These real-time PCR assays represent a battery of tests to screen for and confirm the presence of variola virus DNA. The early detection of a smallpox outbreak is crucial whether the incident is an act of bioterrorism or an accidental occurrence.

PMID: 14766823 [PubMed - indexed for MEDLINE]

6: J Infect Dis. 2004 Feb 1;189(3):493-7. Epub 2004 Jan 23.

Dose-dependent neutralizing-antibody responses to vaccinia.

Belshe RB, Newman FK, Frey SE, Couch RB, Treanor JJ, Tacket CO, Yan L.

Center for Vaccine Development, Saint Louis University School of Medicine, St. Louis, Missouri 63110, USA. belsherb@slu.edu

To evaluate the humoral immune responses to smallpox-vaccine stocks currently available in the United States (Dryvax; Wyeth) and to generate data for comparison of responses to newly produced lots of smallpox vaccine, we evaluated dose-response effects, using undiluted and diluted smallpox vaccine. At 28 and 56 days after vaccination, serum samples were obtained from vaccinated subjects (N=674) who had participated in a randomized, single-blinded trial of an undiluted or a 1 : 5 or 1 : 10 dilution of smallpox vaccine and who subsequently were tested for plaque-reduction neutralizing-antibody titer. All subjects who developed a vesicle after vaccination also developed neutralizing antibodies by day 28. Subjects given either a 1 : 5 or 1 : 10 dilution of vaccinia had significantly higher neutralizing-antibody titers than did subjects given undiluted vaccine. Larger lesion size and fever after vaccination were associated with significantly higher neutralizing-antibody titers after vaccination.

Publication Types:
- Clinical Trial
- Multicenter Study
- Randomized Controlled Trial

PMID: 14745707 [PubMed - indexed for MEDLINE]

7: J Law Med Ethics. 2003 Winter;31(4):580-9.

"The king of terrors" revisited: the smallpox vaccination campaign and its lessons for future biopreparedness.

Schneider CP, McDonald MD.

Georgetown University, USA.

Publication Types:
- Historical Article
- Review
- Review, Tutorial

PMID: 14968660 [PubMed - indexed for MEDLINE]

8: Nature. 2004 Mar 11;428(6979):182-5.

Immunogenicity of a highly attenuated MVA smallpox vaccine and protection against monkeypox.

Earl PL, Americo JL, Wyatt LS, Eller LA, Whitbeck JC, Cohen GH, Eisenberg RJ, Hartmann CJ, Jackson DL, Kulesh DA, Martinez MJ, Miller DM, Mucker EM, Shamblin JD, Zwiers SH, Huggins JW, Jahrling PB, Moss B.

National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Maryland 20892-0445, USA.

The potential use of smallpox as a biological weapon has led to the production and stockpiling of smallpox vaccine and the immunization of some healthcare workers. Another public health goal is the licensing of a safer vaccine that could benefit the millions of people advised not to take the current one because they or their contacts have increased susceptibility to severe vaccine side effects. As vaccines can no longer be tested for their ability to prevent smallpox, licensing will necessarily include comparative immunogenicity and protection studies in non-human primates. Here we compare the highly attenuated
modified vaccinia virus Ankara (MVA) with the licensed Dryvax vaccine in a monkey model. After two doses of MVA or one dose of MVA followed by Dryvax, antibody binding and neutralizing titres and T-cell responses were equivalent or higher than those induced by Dryvax alone. After challenge with monkeypox virus, unimmunized animals developed more than 500 pustular skin lesions and became gravely ill or died, whereas vaccinated animals were healthy and asymptomatic, except for a small number of transient skin lesions in animals immunized only with MVA.

PMID: 15014500 [PubMed - indexed for MEDLINE]

9: Qual Saf Health Care. 2004 Feb;13(1):82-3.

"Cotton Mather, you dog, dam you! I'l inoculate you with this; with a pox to you": smallpox inoculation, Boston, 1721.

Best M, Neuhauser D, Slavin L.

Department of Epidemiology and Biostatistics, Case School of Medicine, Case Western Reserve University, Cleveland, Ohio 44106-4945, USA.

Publication Types:
- Biography
- Historical Article

Personal Name as Subject:
- Mather C

PMID: 14757807 [PubMed - indexed for MEDLINE]

10: Soz Praventivmed. 2003;48(5):285-9.

Comments regarding "On prognosis" by William Farr (1838), with reconstruction of his longitudinal analysis of smallpox recovery and death rates.

Gerstman BB.

Dep. of Health Science, San Jose State University, San Jose, California, USA. gerstman@email.sjsu.edu

Publication Types:
- Biography

Historical Article

Personal Name as Subject:
Farr W

PMID: 14626619 [PubMed - indexed for MEDLINE]