This is an official
CDC HEALTH ADVISORY

Distributed via Health Alert Network
Saturday, June 07, 2003, 23:32 EDT (11:32 PM EDT)
CDCHAN-00145-03-06-07-ADV-N

Suspected Monkeypox-like Infections in Persons Having Contact with Prairie Dogs

An extensive multidisciplinary investigation in Wisconsin, Illinois, and Indiana has identified cases of febrile rash illness in persons who had direct or close contact with recently purchased ill prairie dogs. Scientists at the Marshfield Clinic in Marshfield, Wisconsin, recovered viral isolates from a patient and a prairie dog and demonstrated a virus morphologically consistent with a poxvirus by electron microscopy (see http://research.marshfieldclinic.org/crc/prairiedog.asp for electron microscopy images).

Preliminary results of serologic testing and polymerase chain reaction testing of patients' specimens performed at the Centers for Disease Control and Prevention (CDC) on June 6-7 suggest that the causative agent is most closely related to monkeypox virus, a member of the orthopoxvirus family of viruses. Results of additional evaluation at CDC by electron microscopy and immunohistochemical studies are consistent with the finding of an orthopoxvirus. These findings represent the first evidence of community-acquired monkeypox-like infection in the United States. Further characterization of the virus is in progress.

Human monkeypox is a rare zoonotic viral disease that occurs primarily in the rain forest countries of central and west Africa. In humans, the illness produces a vesicular and pustular rash similar to that of smallpox. Limited person-to-person spread of infection has been reported in disease-endemic areas in Africa; the incubation period is about 12 days. Case-fatality ratios in Africa have ranged from 1% to 10% (for additional information about monkeypox, see http://www.cdc.gov/ncidod/eid/vol7no3/hutinG1.htm).

In the current U.S. outbreak, cases have been reported among residents of Wisconsin (17), northern Illinois (1), and northwestern Indiana (1). Onset of illness among patients began in early May. Patients typically experienced a prodrome consisting of fever, headaches, myalgias, chills, and drenching sweats. Roughly one-third of patients had nonproductive cough. This prodromal phase was followed 1-10 days later by the development of a papular rash that typically progressed through stages of vesiculation, pustulation, umbilication, and crusting. In some patients, early lesions have become ulcerated. Rash distribution and lesions have occurred on head, trunk, and extremities; many of the patients had initial and satellite lesions on palms and soles and extremities. Rashes were generalized in some patients. After onset of the rash, patients have generally manifested rash lesions in different stages.

All patients reported direct or close contact with prairie dogs, most of which were sick. Illness in prairie dogs was frequently reported as beginning with a blepharo-conjunctivitis, progressing to presence of nodular lesions in some cases. Some prairie dogs have died from the illness, while others reportedly recovered.

In May, the prairie dogs were sold by a Milwaukee animal distributor to two pet shops in the Milwaukee area and during a pet "swap meet" (pets for sale or exchange) in northern Wisconsin. The Milwaukee animal distributor had obtained prairie dogs and a Gambian giant rat that was ill at the time from a northern Illinois animal distributor. It is unclear whether other retail outlets are involved. Investigations are under way to traceback the source of the prairie dogs and the Gambian giant rat and

determine if distributors in other states might be involved. Animal species susceptible to monkeypox virus may include non-human primates, lagomorphs (rabbits), and some rodents.

On the basis of preliminary findings from this investigation, it appears that the primary route of transmission may be from infected prairie dogs to humans as a result of close contact. However, the possibility of human-to-human transmission cannot be excluded at this time. As a precaution until additional information is available, the measures below should be followed.

General Prevention

- Recommend that people avoid contact with any prairie dogs or Gambian giant rats that appear to be ill (e.g., are missing patches of fur, have a visible rash on the skin, or have a discharge from eyes or nose).
- Encourage careful handwashing after any contact with prairie dogs, Gambian giant rats, or any ill animal.

Diagnosis

- Physicians should consider monkeypox in persons with fever, cough, headache, myalgias, rash, or lymph node enlargement within 3 weeks after contact with prairie dogs or Gambian giant rats. Inform the treating physician or other clinician of the animal exposure.
- Veterinarians examining sick exotic animal species, especially prairie dogs and Gambian giant rats, should consider monkeypox. Veterinarians should also be alert to the development of illness in other animal species that may have been housed with ill prairie dogs or Gambian giant rats.

Infection Control: General Precautions

If a patient with suspect monkeypox infection is seen as an outpatient or admitted to the hospital, infection control personnel should be notified immediately. A combination of Standard, Contact, and Airborne Precautions (http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm) should be applied in all health care settings. These include:

- Hand hygiene after all contact with an infected patient and/or the environment of care.
- Use of gown and gloves for any contact with the patient and/or the environment of care.
- Eye protection (e.g., goggles or face shield) if splash or spray of body fluids is likely.
- Respiratory protection including a NIOSH-certified N95 filtering disposable respirator for entering the room or patient care area.[1][1] If N-95 respirators are not available for health-care personnel, then surgical masks should be worn.
- Airborne isolation room with negative pressure relative to the surrounding area. If a negative pressure room is not available, place the patient in a private room.
- Contain and dispose of contaminated waste (e.g., dressings) in accordance with facility-specific guidelines for infectious waste or local regulations pertaining to household waste.
- Use care when handling soiled laundry (e.g., bedding, towels, personal clothing) to avoid contact with lesion exudates. Soiled laundry should not be shaken or otherwise handled in a manner that may aerosolize infectious particles. Bag,

transport, and reprocess soiled laundry in accordance with current facility procedures for handling contaminated linen and laundry.

- Handle used patient-care equipment in a manner that prevents contamination of skin and clothing. Ensure that used equipment has been cleaned and reprocessed appropriately.

- Ensure that procedures are in place for cleaning and disinfecting environmental surfaces in the patient care environment. Any EPA-registered hospital detergent-disinfectant currently used by healthcare facilities for environmental sanitation may be used. Manufacturer's recommendations for use-dilution (i.e., concentration), contact time, and care in handling should be followed.

Infection Control: Outpatient Management

Segregate the patient from others in the reception area as soon as possible, preferably in a private room with negative pressure relative to the surrounding area. Place a surgical mask over the patient's nose and mouth. Care should be taken to cover exposed skin lesions (sheet and/or gown on patient) to prevent contact with infectious material.

Infection Control: Veterinarians

Veterinarians should use personal protective equipment, including gloves and gowns. When examining sick rodents, lagomorphs, and exotic pets, especially prairie dogs and Gambian giant rats, a NIOSH-certified N95 filtering disposable respirator should be used, if available; otherwise, a surgical mask should be worn. When a suspect case is identified, veterinarians should limit staff that come in contact with the animal, and if the animal is admitted, it should be housed in a manner that would isolate it from all other animals. Housing in a negative air-flow room is highly recommended, if available.

Treatment

No specific treatment recommendations are being made at this time. Smallpox vaccine has been reported to reduce the risk of monkeypox among previously vaccinated persons in Africa. CDC is assessing the potential role of postexposure use of smallpox vaccine as well as therapeutic use of cidofovir.

Reporting

Health care providers, veterinarians, and public health personnel should report cases of these illnesses in humans and animals to their state or local health departments as soon as they are suspected.

Submission of Specimens from Patients with Suspected Monkeypox

Procedures recommended for collection of samples for diagnosis of potential monkeypox disease are essentially the same as those for diagnosis of the related orthopoxvirus diseases, vaccinia and smallpox. For information regarding collection of serum specimens and lesions, please refer to the smallpox laboratory testing guidelines at http://www.bt.cdc.gov/agent/smallpox/lab-testing/index.asp. Consultation with the state epidemiologist (http://www.cste.org/members/state_and_territorial_epi.asp) and state health laboratory (http://www.aphl.org/public_health_labs/index.cfm) is necessary for submission instructions before sending specimens to CDC.

Additional Information

For more information contact your state or local health department or the CDC Emergency Operations Center 770-488-7100. Additional information and recommendations will be released as they become available. Updated information will be available at http://www.cdc.gov.

Acknowledgments

Local, state, and federal agencies and private institutions that have participated in this investigation to date have included the Marshfield Clinic and Marshfield Laboratories, Froedtert Hospital and Medical College of Wisconsin, the City of Milwaukee Health Department, and at least 10 additional local health departments in Wisconsin and Illinois; the Wisconsin Division of Public Health, Wisconsin Department of Agriculture Trade and Consumer Protection, and Wisconsin State Laboratory of Hygiene; the Illinois Department of Public Health and the Illinois State Department of Agriculture; the Indiana Department of Health, and the US Department of Agriculture.

Respirators should be used in the context of a complete respiratory protection program in accordance with OSHA regulations. This includes training and fit testing to ensure a proper seal between the respirator's sealing surface and the wearer's face. Detailed information on respirator programs, including fit test procedures, can be accessed at www.osha.gov/SLTC/etools/respiratory. Where possible, a qualitative fit test should be conducted for N-95 respirators; detailed information on fit testing can be accessed at http://www.osha.gov/SLTC/etools/respiratory/oshafiles/fittesting1.html