

Unprotected People #65

Rabies

2003 Rabies Death Highlights the Importance of Seeking Immediate Treatment for Bites from Potentially Rabid Animals

On January 23, 2004, Morbidity and Mortality Weekly Report published "Human Death Associated with Bat Rabies—California, 2003." The article presents the case report of a previously healthy man who arrived at a hospital emergency department for assessment of atypical chest pain five weeks after being bitten by a bat. Though treated in the emergency room with rabies vaccine, rabies immune globulin, ribavirin, and interferon-alpha, he died approximately one week later.

As the article's editorial note points out, the only recorded rabies survivors are those who receive postexposure prophylaxis before the onset of illness. The editorial note concludes that public health professionals need to make the public aware that bites from potentially rabid animals require a health care provider's immediate evaluation of the need for postexposure prophylaxis.

The MMWR article is based on data provided by Trinity County Health Department; Shasta County Public Health; Mercy Medical Center, Redding, CA; Viral and Rickettsial Disease Laboratory, Division of Communicable Disease Control, California Department of Health Services; Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention (CDC). The article is reprinted below in its entirety, excluding references.

Human Death Associated with Bat Rabies—California, 2003

Rabies is a rapidly progressive, incurable viral encephalitis that is, with rare exception, transmitted by the bite of an infected mammal. On September 14, 2003, a previously healthy man aged 66 years who resided in Trinity County, California, died from rabies approximately 6 weeks after being bitten by a

bat. This report summarizes the investigation by the Trinity and Shasta County Health Departments and the California Department of Health Services (CDHS). Persons should avoid direct contact with bats; however, if such contact occurs, the exposed person should visit a health-care provider immediately, and the exposure should be reported to local public health officials.

In September 2003, the patient was admitted to a hospital emergency department (ED) for assessment of atypical chest pain. He had a 2-week history of mild, nonspecific complaints (e.g., drowsiness, chronic headache, and malaise), a 5-day history of progressive right arm pain and paresthesias, and a 1-day history of right-hand weakness. The arm pain was severe enough to wake him from sleep and progressively worsened. He also described a sharp pain radiating bilaterally up the right arm to his axilla and left chest. The pain was relieved by administering nitroglycerin in the ED. The patient reported being bitten by a bat on the right index finger while in his bed approximately 5 weeks before admission. He removed the bat from his home, and it flew away. The patient washed the wound but did not seek rabies postexposure prophylaxis (PEP) at that time. Because the patient reported to the ED at an early stage of rabies infection, with predominantly local symptoms near the bite site, rabies vaccine, rabies immune globulin, ribavirin, and interferon-alpha were administered on the day of admission; a second dose of rabies vaccine was administered 3 days later.

On admission, he was afebrile, alert, and oriented but had decreased right upper extremity strength, decreased sensation to light touch, and slight impairment in his ability to concentrate. His white

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blood cell (WBC) count was elevated at 13,900 cells/microliter (normal: 3,700-9,400 cells/microliter). All other laboratory values were within the normal range.

The patient had steady neurologic decline during the following week with confusion and disorientation. He became febrile on the fourth hospital day and was intubated for airway protection. Electromyography of his right and left upper extremities indicated distal demyelinating polyneuropathy. By the fifth hospital day, he had a right lung infiltrate, and his electroencephalogram showed diffuse slowing. Two days later, he died. Four family members and two of 40 health-care workers involved in the patient's treatment received rabies PEP as a precautionary measure. The patient's wife received PEP because she had been asleep in the same bed as the patient when the bat bit him and possibly had been exposed to the same bat.

Antemortem specimens were sent to the Viral and Rickettsial Disease Laboratory (VRDL) at CDHS and to CDC for evaluation. The specimens included multiple saliva and serum samples, nuchal skin biopsy, urine, and spinal fluid. Postmortem corneal impressions also were obtained. A nested, reverse transcription polymerase chain reaction assay performed on saliva samples was positive for evidence of rabies virus nucleic acid. Sequence analysis demonstrated 100% homology with a rabies virus variant associated with the silver-haired bat (*Lasiurus noctivagans*).

Editorial Note

Although human rabies is rare in the United States, clinicians and public health workers should suspect rabies when a history of possible bat contact is known or when unexplained atypical progressive neuropathy or unusual febrile encephalitis is observed. Persons coming in direct contact with bats should seek consultation with their health-care providers immediately to receive PEP, if appropriate.

Rabies is an acute, progressive, and fatal disease. The only documented survivors received rabies prophylaxis before the onset of illness. However,

an aggressive approach to therapy might be attempted in patients who are in an early stage of clinical disease. A combination of therapies is suggested, including rabies vaccine, rabies immune globulin, ribavirin, interferon-alpha, monoclonal antibodies, and ketamine. The patient described in this report visited the ED at an early stage with a predominant symptom of paraesthesia at the bite site. He was treated within approximately 24 hours of admission, albeit unsuccessfully, with the first four of these agents.

This fatality follows two other recent bat-associated cases of human rabies in California (in Glenn County in 2002 and in Amador County in 2000). However, these cases were associated with a Mexican free-tailed bat (*Tadarida brasiliensis*) rabies virus variant, and neither patient identified a definitive bat exposure.

During 1990-1998, of 22 bat-associated rabies infections, 16 (75%) were associated with the virus variant found among silver-haired and eastern pipistrelle bats. Properties of these viruses might allow infection and replication under broader conditions than those of other rabies virus variants. During 1990-2000, a total of 24 (75%) of 32 U.S. human rabies cases were caused by bat-associated rabies virus variants. In 22 (92%) of these cases, no documentation of a bite existed; however, this does not mean that a typical bite exposure did not take place. Instead, such a history was not uncovered during presentation or case investigation.

Human rabies is preventable with the proper and timely administration of rabies PEP. However, if a patient does not recognize the risk associated with an animal bite, PEP probably will not be obtained. When a bat is found in living quarters and a strong possibility exists that an exposure might have occurred, the animal should be submitted to a local public health laboratory for diagnostic testing. However, if the animal is not available for testing, PEP should be administered when there is a strong probability of exposure.

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No laboratory-confirmed cases of human-to-human transmission from patients to health-care workers or family members have been documented. Delivery of health care to a patient with rabies is not an indication for PEP unless a bite has occurred or an exposure of mucous membranes or nonintact skin to potentially infectious body fluids has occurred. Adherence to standard safety precautions for health-care workers will minimize the risk for exposure.

Public health professionals need to reemphasize effective measures to reduce animal exposure and to keep pet and livestock vaccinations current. Persons who are bitten by a potentially rabid animal should immediately 1) disinfect and wash the wound, 2) capture the animal safely, 3) contact the local health department, and 4) see a physician for evaluation about the need for PEP.

To access the web-text (HTML) version of this article from CDC, go to: www.cdc.gov/mmwr/preview/mmwrhtml/mm5302a4.htm