Occupational Health - Zoonotic Disease Fact Sheet

RAT BITE FEVER

KEY FACTS:

- Rat Bite Fever is a rare infectious disease caused by two separate, distinct bacteria, *Streptobacillus moniliformis*, and *Spirillum minus.*
- *Streptobacillus moniliformis* is prevalent in North America and is named after a 1926 outbreak in Haverhill, Mass. attributed to contaminated milk, while *Spirillum minus* causes disease mostly in Asia.
- Historically, disease has been attributed to wild rat bites and subsequent illness (usually small children) related to poor sanitation and overcrowding.

SPECIES: Rats, mice, and gerbils.

CAUSATIVE AGENT: Gram negative, pleomorphic bacillus. Two different agents can cause disease: Streptobacillus moniliformis (Haverhill Fever and Spirillum minus (Sodoku).

TRANSMISSION: The bacteria is present in the oral and respiratory passages of a large number of asymptomatic rodents, including rats and mice. Transmission has been linked to bites or scratches from infected rodents, handling rodents with the disease, and consuming food or drink contaminated with the bacteria.

DISEASE IN ANIMALS: Rats are carriers of both bacteria but rarely show signs of illness. Acute, systemic, fatal disease has been seen in immunologically inexperienced mice. Surviving mice (or if endemic disease), exhibit suppurative polyarthritis, swelling and loss of digits or limbs. The disease has been reported in birds, guinea pigs, and nonhuman primates, and the bacteria that causes rat bite fever have also been found in a variety of other animals that eat rodents such as cats, dogs, ferrets, and weasels.

DISEASE IN HUMAN: Streptobacillary Rat Bite Fever Symptoms: fever, vomiting, headache, muscle pain, join pain, and a rash. Symptoms usually occur 3-10 days after exposure to an infected rodent, but can take as long as three weeks to appear. Spirillary Rat Bite Fever: Symptoms: fever, ulcer at site of bite, swelling near the wound, swollen lymph nodes, and a rash. Symptoms usually appear 7-21 days post exposure. Severe symptoms from both bacteria can result in endocarditis, myocarditis, pericarditis, meningitis, and pneumonia. Rat Bite fever has a case-fatality rate of 7%--10% among untreated patients.

DIAGNOSIS: Definitive diagnosis requires direct detection of the organism in blood or other body fluid. Rat Bite Fever can be diagnosed through culturing, PCR diagnosis, or microscopic detection by Giemsa stain of blood or body fluid. *Please review current literature before prescribing diagnostic testing as recommendations may have changed.*

TREATMENT: If exposed to the bacterium, seek medical attention immediately. Antibiotics used to treat Rat Bite Fever include penicillin or tetracycline. *Please consult your physician for treatment options as recommendations may have changed.*

PREVENTION/CONTROL: Individuals can reduce risk of infection through avoiding contact with rodents, wearing protective gloves if handling animals, practicing good hygiene including washing of hands and avoiding touching mouth or face, and avoiding drinking milk or water that may have come into contact with infected rodents. To prevent and control unintended infections, use uninfected animals for research, and isolate any animals used in clinical trials. Additionally, only conduct projects in laboratories with proper engineering controls and train staff members in the proper use of required personal protective equipment when they are in spaces containing live agent.

More information on Rat Bite Fever can be found on the Centers for Disease Control and Prevention website at: https://www.cdc.gov/rat-bite-fever/index.html