



Tularemia: Biological Weapon BACKGROUND

January 2001

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Biological Weapon

Both the United States and the USSR biowarfare programs developed tularemia as an aerosol weapon. The U.S. offensive biowarfare program and weapons stockpile were eliminated by executive decree in 1970.

The tularemia bacterium occurs widely in nature, and could be isolated and grown in quantity in a laboratory using relatively simple microbiological equipment. Manufacturing an effective aerosol weapon would require considerably greater sophistication.

Although tularemia can infect persons by multiple routes, the most dangerous intentional use of tularemia would probably be the release of an aerosol to create inhalation exposures. Persons inhaling an infectious aerosol droplet would be expected to develop severe respiratory illness, including life-threatening pneumonia and systemic infection.

Tularemia could be easily disseminated and cause a high mortality.

Tularemia is not transmitted from person to person.

The Disease

Tularemia is an infectious disease of animals (especially rodents, rabbits and hares) caused by a hardy bacterium, *Francisella tularensis*. Persons can become infected by handling infected animal carcasses, by eating or drinking contaminated food or water, or by inhaling contaminated dusts or sprays.

Depending on the type of exposure, tularemia infections occur in several clinical forms. Handling contaminated materials or being bitten by infective flies or ticks typically results in painful enlargement of regional lymph nodes, with or without an ulcer of the skin at point of inoculation (ulceroglandular or glandular form). Ingestion usually causes inflammation of the throat (pharyngitis) and painful enlargement of the lymph nodes of the neck. Inhalation of the bacterium in contaminated dusts or sprays can cause a potentially fatal pneumonia and/or a severe systemic infection. The systemic infection, with or without x-ray evidence of pneumonia is sometimes called "typhoidal" tularemia.

The incubation period is typically 3 to 5 days, but may occasionally be up to 14 days or more. Symptoms include: abrupt onset of fever, chills, headaches, aches and pains of the muscles and joints, a dry cough, and progressive weakness. Persons with pneumonia can develop chest pain, difficulty in breathing, bloody sputum, and respiratory failure.

Tularemia can be fatal. The pulmonary and systemic forms of the disease can have a mortality rate of 40% or more if not treated with antibiotics. If treated, the mortality rate is reduced to 10% or less.

The Risk

Tularemia is a disease of the Northern Hemisphere. There are approximately 200 cases of human tularemia reported each year in the United States. Most cases appear in south-central and western states and have disease onsets in the summer months. Most cases in the United States are associated with the bites of infective ticks and certain biting flies in the summer, and the handling of infected rabbits or hares in the winter.

Occasional cases result from inhaling infectious dusts or sprays and from laboratory accidents.

The Treatment

Patients diagnosed with tularemia should be promptly treated with antibiotics. The recommended antibiotics are streptomycin, gentamicin, or one of the tetracyclines, such as doxycycline.

Post-exposure prophylaxis with tetracyclines for 14 days is recommended for persons who are thought to have had a recent infective exposure but are still in the incubation period of the disease.

Persons at lower risk of having an infective exposure are sometimes placed on a fever watch for 10 days, and told to report first signs or symptoms of illness to their health care provider.

Currently there is no vaccine available for general use.

Additional information about biological agents is available online at <http://www.bt.cdc.gov/bioagents.asp>