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Tularemia - A Diagnostic Challenge of An Unusual Alaskan Disease

Case Report

An 18-year-old Alaska Native male began fire fighter training in Fairbanks on May 23, 2001. Training involved carrying and handling downed logs and brush in heavily wooded areas inhabited by wildlife and insects. Early in June, he noticed a small red lesion around his left temple, presuming it to be a bug bite.

On June 16, he sought medical attention after five days of fever, chills, left-sided facial pain, throat pain, and generalized weakness. Physical examination revealed a temperature of 98.8° F, an enlarged left cervical lymph node, and a left temple lesion that appeared infected. He received an injection of Rocephin, a 5-day course of Keflex and was instructed to apply warm compresses to the lesion. When he sought follow-up care on June 27, multiple lymph nodes of the left cervical chain were enlarged, left-sided facial cellulitis had developed, and the area around the initial lesion was indurated. Intravenous Ancef and oral Keflex were prescribed for 10 days. There was no growth on a wound culture taken June 28. Because neither the lymphadenopathy nor the lesion responded to treatment, a CT of the neck region was performed on July 6; no obvious abscesses or tumors were noted. On July 10, during needle aspiration of a lymph node at Fairbanks Memorial Hospital, a large abscess in the parotid area was detected requiring surgical incision and drainage. A culture of abscess material submitted to the State of Washington Public Health Laboratory grew *Francisella tularensis*, biovariety tularensis, which prompted health-care providers to initiate treatment with gentamicin. Over the next 2 weeks, the patient's symptoms began to resolve.

Discussion

Tularemia results from the introduction of the bacterium, *F. tularensis*, into the skin through the bite of an arthropod, the handling of contaminated water or carcasses, inhalation of dust from contaminated hay or soil, or consumption of inadequately cooked meat of infected animals. Person-to-person transmission has not been described.¹

After a 3- to 5-day incubation period (range 1-10 days), five presentations of tularemia may develop depending upon the portal of entry and virulence of the infecting strain of the bacteria.¹

1. *Ulceroglandular* - characterized by a painful skin lesion or ulceration with subsequent acutely enlarged and tender regional lymph nodes; the most common form
2. *Glandular* - acutely enlarged and tender lymph nodes without skin lesions
3. *Oropharyngeal* - severe exudative pharyngitis, sometimes accompanied by vomiting, abdominal pain, or diarrhea resulting from ingestion of the bacteria
4. *Typhoidal* - fever, pneumonia, septicemia, and hepatosplenomegaly; the most severe form
5. *Oculoglandular* - severe conjunctivitis with regional lymph node involvement; the most rare form

In this case, the patient sustained either an arthropod bite or wound that served as the portal of entry for the bacteria. Bacteria from the lesion were transported to regional lymph nodes causing them to enlarge, a classic example of the ulceroglandular form of tularemia.

From 1972 through July 2001, the Section of Epidemiology recorded 24 cases of tularemia; males accounted for 75% (n=18). Eighty percent (16/20) of patients of known race were white, and 20% (4/20) were Alaska Native. The median age was 36 years (range 18-54 years). The majority of patients resided in the greater Fairbanks area (n=13), eight resided in the Anchorage/Mat-Susitna Valley area, two in northwestern and one in southeastern Alaska.

Detailed exposure histories were available for 10 cases; eight involved direct contact with an animal, such as skinning an arctic hare or muskrat. One case resulted from a cat bite.

Recommendations

1. Tularemia is a reportable disease for both laboratories and health-care providers. Reports can be made to Epidemiology staff by calling: 907-269-8000 Monday-Friday 8 AM to 5 PM or 800-478-0084 after hours; by faxing 907-561-4239; or by leaving a message on the Epidemiology tape recorder at 561-4232 in Anchorage or 800-478-1700 from outside the Anchorage area.
2. Healthcare providers should consider tularemia as a possible etiology for patients with persistent fever and localized lymphadenopathy with or without a history of an initial skin lesion, especially if the patient reports a history of skinning wild mammals or a cat bite.
3. Treatment regimens will depend upon individual patient characteristics; drugs of choice for treatment of tularemia are streptomycin or gentamicin.^{1,2}

References

1. Chin J, ed. 2000. Control of Communicable Diseases Manual, 17th ed. American Public Health Association.
2. Cross JT, Penn RL. 2000. *Francisella tularensis*. In: Mandell, Douglas, and Bennett's Principles and Practices of

