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## Two Cases of Tularemia – Interior Alaska, June 2009

### Case Reports

#### Patient A

On June 6, Patient A, a 59-year-old female, wrestled with her dog to take a dead hare from its mouth. Patient A had a pre-existing splinter in her right index finger and 4 days later, a lesion developed on that same finger. On June 11, Patient A experienced fevers to 104°F and presented to the Fairbanks Memorial Hospital (FMH) Emergency Department (ED) where she was diagnosed with a bacterial infection. The following day, she re-presented to the ED with a worsening lesion that was debrided. An intravenous (IV) catheter was placed to deliver daily clindamycin therapy. On June 15, after 4 days of IV antibiotics, Patient A showed no improvement and was admitted to FMH with increased swelling of the right hand, painful axillary lymphadenopathy, hepatitis, and dehydration. A culture of the lesion was collected on June 14. FMH Laboratory microbiologists noted bacterial culture isolate characteristics suspicious of *Francisella tularensis* and referred the sample to the Alaska State Public Health Laboratory (ASPHL); *F. tularensis* was confirmed by ASPHL on June 19. The patient received additional antibiotics including piperacillin/tazobactam and gentamicin once tularemia was suspected. She was discharged on June 19 on IV antibiotics; however, fevers persisted and she was re-admitted on June 24. Antibiotic regimen was switched to streptomycin and Patient A was discharged on June 27.

#### Patient B

On June 16, Patient B, a 43-year-old female, noticed a lesion on her left arm within a week after her dog carried home a hare. In the next 6 days, the lesion expanded to become nickel-sized. Patient B subsequently developed severe headaches and chills and sought outpatient medical attention on June 16. The lesion was presumed to be methicillin-resistant *Staphylococcus aureus* and the other symptoms, a sinus infection; trimethoprim sulfamethoxazole was prescribed. Patient B continued to experience fevers to 102°F, sweats, anorexia, unproductive cough, and painful left-sided axillary lymphadenopathy. Her symptoms did not resolve and amoxicillin/clavulanate was prescribed on June 25 for ongoing sinusitis. Within several days, fevers, chills and anorexia subsided but night sweats continued with new onset of significant pain in the left thorax. A chest CT scan revealed multiple enlarged lymph nodes. The patient was referred to see an oncologist, and a biopsy procedure was scheduled. Shortly before a biopsy was taken, a physician asked Patient B about her exposure to pets and hares and suggested that tularemia fit the constellation and progression of symptoms. The patient was subsequently started on doxycycline on July 17. Serum drawn on July 23 was sent to ASPHL for *F. tularensis* serology. Testing revealed a titer of 1:512 for *F. tularensis* antibodies. A second serum sample drawn on August 12 revealed a titer of 1:128, a four-fold drop in titer that confirmed the diagnosis for tularemia. Patient B responded well to antibiotic treatment.

### Discussion

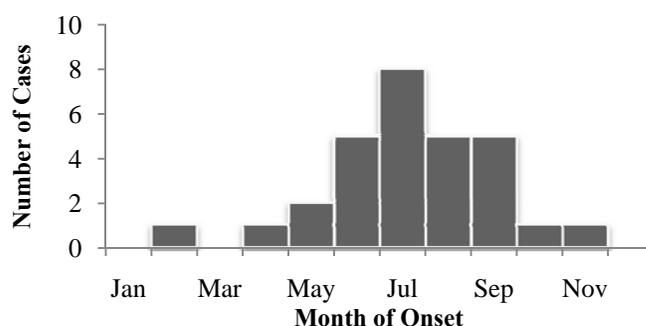
Tularemia results from the introduction of the bacterium *F. tularensis* into the body through the bite of an arthropod or an open wound while handling contaminated water or carcasses, inhalation of dust from contaminated hay or soil, or consumption of inadequately cooked meat of infected animals. Person-to-person transmission has not been described. After a 3- to 5-day incubation period (range 1-10 days), any of five different presentations of tularemia may develop depending upon the portal(s) of entry: ulceroglandular, glandular, oropharyngeal, oculoglandular, or typhoidal.<sup>1</sup>

Both patients reported in 2009 had a history of contact with a dead hare, either directly or indirectly through a dog. A lesion formed several days later and bacteria from the lesion were transported to regional lymph nodes causing them to enlarge. This ulceroglandular form of tularemia is most often diagnosed by

culture; however, a four-fold rise in titer on paired sera or a single high titer ( $\geq 1:128$ ) can also provide laboratory-confirmation of infection once the lesion has resolved.

Cases of tularemia are reportable to the Section of Epidemiology (SOE). Since 2001, there have been five Alaska cases including those mentioned here. Four of the five patients resided and were exposed in the Interior; the fifth patient was exposed outside of Alaska. The majority of Alaska cases have occurred in the summer months (Figure). This is consistent with national trends, and likely is related to time spent outdoors and exposure to vectors.<sup>2,3,4</sup>

**Figure. Reported Cases (N=29) of Tularemia by Month of Onset — Alaska, 1946–2009**



### Recommendations

- Tularemia infection in humans should be reported to SOE by both laboratories and health care providers. Reports can be made by calling: 907-269-8000 Monday-Friday 8 AM to 5 PM or 800-478-0084 after hours.
- Health care providers should consider the diagnosis of tularemia in patients with persistent fever and localized lymphadenopathy, especially if a patient reports a history of contact with wild mammals or outdoor pets.
- Appropriate antibiotic therapy should be initiated immediately. Treatment regimens will depend upon individual patient characteristics. Antibiotics active against tularemia include streptomycin, gentamicin, doxycycline, and ciprofloxacin. Treatment usually lasts 10 to 21 days depending on the stage of illness and the medication used. Tetracyclines have been associated with a higher rate of relapse than aminoglycosides.<sup>1</sup>
- Alaska clinical laboratories that perform routine microbiology diagnostics should refer specimens to ASPHL for confirmatory testing. ASPHL can perform *F. tularensis* polymerase chain reaction, culture confirmation or serum antibody testing. Please contact ASPHL prior to submitting specimens. Submission details are available at: [http://www.hss.state.ak.us/dph/labs/publications/image/Lab\\_Svcs\\_Manual.pdf](http://www.hss.state.ak.us/dph/labs/publications/image/Lab_Svcs_Manual.pdf)
- Cases of suspected tularemia in wildlife can be reported to a local Alaska Department of Fish & Game office <http://www.wildlife.alaska.gov/index.cfm?adfg=info.contact>. Veterinarians should report cases in domestic animals within one working day to the Office of the State Veterinarian at 907-375-8200.

### References

- Heymann DL, ed. 2008. Control of Communicable Diseases Manual, 19th ed. American Public Health Association.
- Centers for Disease Control and Prevention. Tularemia – United States, 1990-2000. *MMWR Morb Mort Wkly Rpt* 2002;51(9):182-4.
- Centers for Disease Control and Prevention. Tularemia – Missouri, 2000-2007. *MMWR Morb Mort Wkly Rpt* 2009;58(27):744-8.
- Alaska Division of Fish and Game Tularemia webpage. Available at: <http://www.wildlife.alaska.gov/index.cfm?adfg=disease.internal3>