ANSWER TO PHOTO QUIZ

Philip A. Mackowiak, Section Editor

A Young Man from Nantucket
(See pages 1139–40 for Photo Quiz)

Figure 1. Lesions on the hand and wrist due to ulceroglandular tularemia with nodular lymphangitis

Diagnosis: Ulceroglandular tularemia.

Initial serological test results were positive for Francisella tularensis antibodies, at a titer of 1:640, 4 weeks after the onset of symptoms. This titer increased to 1:16,384 at 8 weeks, a value greater than that of the positive control used by the Massachusetts State Laboratory. He declined admission to the hospital for receipt of intravenous streptomycin therapy, but his symptoms and lesions (figures 1 and 2) resolved during a 4-week course of oral ciprofloxacin.

F. tularensis is a fastidious gram-negative coccobacillus that grows best on supplemented media, such as cysteine-glucose blood agar. It does not grow on routine sheep blood agar but may be recovered on chocolate agar, which may lead to a misidentification as Haemophilus species, as in this case. F. tularensis is a highly virulent pathogen, a laboratory hazard, and a fearsome potential agent of bioterrorism. When tularemia is suspected, the clinician should promptly contact the microbiology laboratory to ensure that specimens are handled with appropriate precautions [1]. Luckily, no laboratory transmission of tularemia occurred in this case. Most cases of tularemia are diagnosed by serological testing, which does not expose laboratory personnel to infection [2].

Tularemia typically presents with a cutaneous ulcer and local lymphadenopathy (ulceroglandular tularemia). As seen here, ulceroglandular tularemia may develop a “sporotrichoid” appearance with nodular lymphangitis in as many as 27% of cases [3], although nodular lymphangitis has not been observed in some large series [8]. Tularemia may also present with glandular (lymphadenopathy without skin lesions), pneumatic, typhoidal (fever without focal complaints), oculoglandular, and pharyngeal syndromes. Pneumonic and typhoidal forms are associated with the highest mortality rates, but overall mortality...
rates are low if appropriate antibiotic therapy is administered [8, 9].

The differential diagnosis of nodular lymphangitis includes infection with *Mycobacterium marinum*, sporotrichosis, and, less commonly, nocardiosis and cutaneous leishmaniasis. In this case, regional lymphadenopathy, a systemic febrile illness, and travel to Nantucket Island strongly suggested the diagnosis of tularemia. *M. marinum* and sporotrichosis are rarely associated with fever and lymphadenopathy [10]. Tularemia has been endemic in Massachusetts on Martha’s Vineyard and Nantucket Island since the introduction of cottontail rabbits from Arkansas and Missouri by hunting enthusiasts in the 1930s [6].

The traditional drug of choice for treating tularemia is streptomycin [11]. There are increasing data to support the use of fluoroquinolones, which are bactericidal for *Francisella* species and achieve high concentrations in the intracellular space, where *F. tularensis* is usually found [12, 13]. During an epidemic of tularemia in Spain, ciprofloxacin therapy was associated with higher success rates than either streptomycin or doxycycline therapy [9]. Relapse rates associated with ceftriaxone and tetracycline therapy are unacceptably high [8, 11, 14].

![Figure 2](https://example.com/figure2.png)

**Figure 2.** Lesions on the forearm and upper arm due to ulceroglandular tularemia with nodular lymphangitis

John J. Ross

Division of Infectious Diseases, Caritas Saint Elizabeth’s Medical Center, Boston, Massachusetts

References


Reprints or correspondence: Dr. J. J. Ross, Division of Infectious Diseases, Caritas St. Elizabeth’s Medical Center, 736 Cambridge St., Boston, MA 02135 (jrossmd@cchcs.org).

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