

## A Rarely Seen Infection in Emergency Departments: Tularemia, Which Can Cause Outbreak

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### Abstract

Tularemia is a zoonotic bacterial infectious disease; its causative agent is *Francisella tularensis*. Tularemia can lead to outbreaks. The infection may cause severe complications from cutaneous ulceration and regional lymphadenopathies on the transmitting area of the body to fever, pneumonia, or sepsis. Due to the difficulty of diagnosis, tularemia should be considered in the differential diagnosis; otherwise, it can be missed easily. Tularemia should be kept in mind in the differential diagnosis of patients with sore throat, lymphadenopathy, and neck mass. If not diagnosed timely and treated adequately, it can lead to mortality. (JAEM 2014; 13: 92-4)

**Key words:** Tularemia, neck mass, sore throat, outbreaks

### Introduction

Tularemia is a zoonotic bacterial infectious disease; its causative agent is *Francisella tularensis*. The infection of the human body occurs directly through ingestion of infected foods and water or aerogenic exposure. The clinical picture may be seen as ulceroglandular, oculoglandular, oropharyngeal, typhoid, and pneumonic forms (1). As tularemia may emerge in a sporadic single case, the disease can also be seen in large outbreaks (2). Neck mass is an entity that seen in nearly all age groups of patients. Although there are many diseases, congenital, inflammatory, and neoplastic disease should be considered in the differential diagnosis of the neck mass. Inflammatory causative factors of the neck masses are reactive lymphadenopathies and bacterial, viral, granulomatous, and mycobacterial lymphadenopathies. Tularemia leads to inflammatory neck mass (3).

### Case Presentation

A 31-year-old female was referred to our emergency department with neck mass and severe neck pain. Past history revealed that there was no tick or insect bite or any rodent contact, but about 3 month ago, the patient was referred to another state hospital emergency department with the same complaints and sore throat; amoxicil-

lin-clavulanate 500/125 milligrams (mg) 2x1 oral was prescribed for 4 days. Because of no improvement of her complaints, she was accepted to a university hospital otolaryngology clinic to perform a biopsy of the neck mass, which was diagnosed as granulomatous inflammation. The patient was discharged with empirical ceftriaxone 1000 mg 1x1 parenteral, but she did not recover, so she brought herself to our emergency department.

In the physical examination, there was a mass at the right side of the patient's neck, which was sized 3x4 centimeters, edematous, and fistulous with a surrounded erythematous margin (Figure 1). General appearance and mental status were good, cooperative, and oriented. Blood pressure was 120/70 mm Hg, pulse rate was 75 per minute, and axillary body temperature was 37.0°C. Wound swabbing specimens for culture and blood samples for serological study and other laboratory tests were derived. Laboratory test results: white blood cells (WBC): 12,800, sedimentation rate: 19 millimeters/hour, C-reactive protein (CRP) level: 69 mg/decimeter, and *F. tularensis* tube agglutination test result: 1/640.

Ciprofloxacin 500 mg PO twice a day was empirically administered. The patient consulted the clinical microbiology infectious diseases clinic's physician with laboratory test results and was admitted to the last clinic with tularemia. After 5 days of admission, she was discharged from the hospital as an outpatient and advised



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**Figure 1.** Neck mass, edematous, and fistulized and surrounded by erythematous margin

to use drugs for 14 days. In controls, the neck lesion reduced, and she felt well.

## Discussion

Tularemia is an infectious disease, and the causative agent is *Francisella tularensis*, with lesions characterized by granulomas. The infection may cause severe complications, from cutaneous ulceration and regional lymphadenopathies on the transmitting area of the body to fever, pneumonia, or sepsis. The most common transmission route of the pathogenic agent to human body is direct contact with infected rabbits and rodents, ingestion of contaminated foods and water, and insect and/or tick bites (1,3). While ulceroglandular tularemia is the most commonly seen form in the world, the oropharyngeal form is usually seen in our country. We thought that contaminated food and water consumption caused this contradiction in our homeland, as our case had a neck mass at the same course of disease as outlined above. Because of the highly infective characteristic, the organism has attracted interest as a biological war agent in the globe recently (4, 5). The prevalence of tularemia shows a wide geographic variation. In some endemic regions, outbreaks occur frequently, whereas nearby rural parts of a country may be completely free (1). The disease, which is gaining prominence in Turkey recently, can lead to an epidemic (4). Because there was no epidemic in our region, we thought that our case was sporadic oropharyngeal tularemia.

The chief complaints of tularemia are sore throat and fever. Because of clinical confusion with upper respiratory tract infection (URTI), most patients are usually treated by beta-lactam antibiotics. None of them has clinical improvement, because *F. Tularensis* is resistant to beta-lactam antibiotics. Improper antibiotic prescription may cause delay in diagnosis, progression of disease, and higher mortality rate (4, 6). It is important when establishing the diagnosis of URTI, tularemia should be also considered in the differential diagnosis; otherwise, it can be missed easily.

The mortality rate of untreated typhoid tularemia is 35%. If appropriate treatment is given, the rate is as low as 1%-2.5% (5). The agent is sensitive to antibiotherapy and treated effectively by monotherapy or in combination with streptomycin, doxycycline, gentamicin, ciprofloxacin, and chloramphenicol (1, 3, 4, 6). In children, streptomycin

and gentamicin are the first choice. Doxycycline and ciprofloxacin can be administered in adults by oral route for 14-21 days (4).

Tularemia is a rarely diagnosed illness in emergency service settings (7). In emergency rooms, early diagnosis of tularemia and fast treatment with proper antibiotics are very important to decrease tularemia-related mortality rates. *F. tularensis* is a biological war agent used all over the world lately, so doctors face bacteria-contaminated patients in bioterrorist attacks; it is important that every emergency doctor knows and is skilled about diagnosing and treating tularemia (8).

Because tularemia was not considered previously in the differential diagnosis of this case by others, diagnosis and treatment of the patient were delayed. In our emergency service, after initial examination of the case, it was considered that she may have *F. tularensis* infection. Due to ease of use, ciprofloxacin 500 mg oral was initiated twice a day in the observation unit while laboratory test results were waiting. As time went on, she felt well, so she was prevented from mortality.

When making a definitive diagnosis of tularemia, isolating the bacteria from various samples is essential, but owing to replication of bacteria on selective growth medium, diagnosis is made usually by serology, as we do. (1, 3, 4, 6).

## Conclusion

Although many people refer to emergency departments for sore throat and fever, tularemia is rarely seen as a cause of head and neck region infection in emergency services; if not diagnosed timely and treated adequately, it can lead to mortality. So, in patients who receive antibiotic therapy for upper tract infections and cervical lymphadenopathies and complain of no improvement of his or her clinical picture, tularemia should be kept in mind.

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