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Bioterrorism Agent Fact Sheet

Q Fever/*Coxiella burnetti*

Disease

Q Fever (“query” fever) is a zoonotic disease caused by the rickettsial gram-negative bacterium *Coxiella burnetti*. Animal disease usually involves asymptomatic carriage in farm animals (goats, sheep, cows), but can infect dogs, cats, rodents and some birds. Organism levels are highest in placental tissues.

Naturally occurring human disease is rare. Most human cases develop in veterinarians, sheep or meat workers, and farmers, but can also be encountered in individuals with no animal contact in endemic areas that have an animal reservoir.

Q Fever is transmitted by inhalation of aerosolized particles from the tissues, fluids or excreta of infected animals or from direct contact with contaminated materials; handling of fetal tissue or products of conception puts workers at high risk for infection.

Intentional release by a terrorist would probably involve aerosolization of the organism and case presentation would be similar to naturally occurring disease.

Diagnosis

Presumptive diagnosis:

- Diagnosis may be difficult as Q Fever generally presents as a nonspecific disease with fever of unknown origin and pneumonia in about half of the patients

Confirmatory diagnosis:

- IFA, CF or ELISA (available through reference labs)
- Rise in antibodies (generally does not occur until 2-3 weeks into illness)
- PCR can be used to identify organisms in tissue or environmental samples
- Positive blood culture (however, blood cultures are not recommended due to the risk of transmission in the lab)
- Immunoblotting can identify chronic disease

Treatment

Most cases of acute Q Fever resolve without treatment, although treatment can shorten the duration of illness and decrease complications. The mortality rate in untreated patients is =1%; death is rare in treated patients.

In cases of chronic disease, especially patients with endocarditis, the mortality rate can be as high as 30-60%. For chronic infection, combination therapy is recommended. Tetracycline should be provided in conjunction with one of the following: rifampin, TMP-SMX, or a fluoroquinolone.

Until sensitivities are known, treat as follows for 15-21 days (7 days for mild illness) or until patient is afebrile:

- **Adults**
Tetracycline 500 mg PO qid or
Doxycycline 100 mg PO bid

Q Fever

Clinical Features of Q Fever

Incubation period varies from 9-39 days, but is generally 2-3 weeks. Q Fever is very infectious; as little as one microbe can cause disease.

Disease begins with the sudden onset of fever, chills, headache, weakness, lethargy, anorexia and profuse sweating.

Pneumonia occurs in approximately half of the cases and may be present without accompanying respiratory symptoms such as cough, expectoration or chest pain. Abnormal liver functions tests are common and acute or chronic granulomatous hepatitis may develop. Rarely, neuropathies are present.

Pregnant women who acquire acute Q Fever are at higher risk for fetal infection and abortion.

In patients with chronic disease, endocarditis and hepatitis are the hallmark symptoms, although it may also be identified through an early high antibody titer.

Infection Control

Person to person transmission is not known to occur; only standard precautions are needed.

Contaminated clothing is believed to be a possible source of infection; lab employee clothing should be appropriately handled and laundered so as to prevent aerosolization and potential transmission. BSL-3 precautions are necessary for laboratory handling of specimens.

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- **Pregnant women**
Co-trimoxazole 1 DS tablet PO q 12hrs (unless pt is at term)
Ciprofloxacin 500 mg PO q 12 hrs (if pt is at term)
- **Children = 8 yrs old**
Doxycycline 100 mg IV or PO bid (if = 45 kg)
Doxycycline 2.2 mg/kg IV or PO q 12 hrs (if < 45 kg)
- **Children < 8 yrs old**
Co-trimoxazole 4 mg/kg IV or PO q 12 hrs or
Chloramphenicol 25 mg/kg q 12hrs

Other effective therapies: chloramphenicol, quinolones and TMP-SMX.

Post-Exposure Prophylaxis

Antibiotic prophylaxis should be administered 8-12 days after the exposure; prophylaxis provided immediately post-exposure delays onset of symptoms, but does not prevent infection.

Prophylax patients with same regimen as listed under treatment section, substituting oral for IV medications; all prophylaxis should be provided for 5 days.

Vaccination

There is no vaccine available for the general public. An investigational inactivated whole-cell vaccine is available and recommended for lab, abattoir or research employees working with sheep or *Coxiella burnetii*. A skin sensitivity test should be provided before vaccine administration; vaccine should not be given to those with a positive skin test or those with a history of Q Fever disease.

Decontamination

Q Fever is highly stable and is resistant to heat and many disinfectants. Exposed individuals should wash their skin with soap and water and their clothing should be handled carefully as to avoid aerosolization and possible transmission during removal and laundry (this does not apply if the exposure is discovered retrospectively). Exposed individuals are those that were exposed to the initial release; person to person transmission does not occur.

Reporting

Report suspected cases or suspected intentional release of Q Fever to your local health department. The local health department is responsible for notifying the state health department, FBI, and local law enforcement. The state health department will notify the CDC.

Disclaimer

Information contained in this fact sheet was current as of August 2001, and was designed for educational purposes only. Medication information should always be researched and verified before initiation of patient treatment.

Additional information and references available at www.bioterrorism.slu.edu