

Q-fever

Etiology: *Coxiella burnetii*, Q-fever is a zoonotic disease.

Cattle, sheep, and goats are the primary reservoirs.
The organisms are resistant to heat, drying, and many common disinfectants.

Route of transmission: Inhalation of Organisms from air that contains airborne barnyard dust contaminated by dried placental material, birth fluids, and excreta of infected herd animals.

Sign and Symptoms:

Acute: high fevers (up to 104-105° F), severe headache, general malaise, malign, confusion, sore throat, chills, sweats, non-productive cough, nausea, vomiting, diarrhea, abdominal pain, hepatitis and chest pain. 1-2% mortality in humans.

Chronic: Endocarditis, generally involving the aortic heart valves, less commonly the mitral valve. Patients who recover can develop lifelong immunity.

Incubation period: 2-3 weeks.

Diagnosis: Indirect immunofluorescence assay (IFA) is the most dependable and widely used method.

Immunohistochemical staining and PCR, CF and ELISA.

Coxiella burnetii exists in two antigenic phases called phase I and phase II.

In acute cases of Q fever, the antibody level to **phase II** is usually higher than that to **phase I**, often by several orders of magnitude, and generally is first detected during the second week of illness.

In chronic Q fever, the reverse situation is true. Antibodies to phase I antigens of *C. burnetii* generally require longer to appear and indicate continued exposure to the bacteria.

High levels of antibody to **phase I** in later specimens in combination with constant or falling levels of phase II antibodies and other signs of inflammatory disease suggest chronic Q fever. Antibodies to **phase I** and **II** antigens have been known to persist for months or years after initial infection.

Recent studies have shown that greater accuracy in the diagnosis of Q fever can be achieved by looking at specific levels of classes of antibodies

other than IgG, namely IgA and IgM. Combined detection of IgM and IgA in addition to IgG improves the specificity of the assays and provides better accuracy in diagnosis. IgM levels are helpful in the determination of a recent infection. In acute Q fever, patients will have IgG antibodies to phase II and IgM antibodies to phases I and II. Increased IgG and IgA antibodies to phase I are often indicative of Q fever endocarditis.

Treatment: Doxycycline is the treatment of choice for acute Q fever. Antibiotic treatment is most effective when initiated within the first 3 days of illness. A dose of 100 mg of doxycycline taken orally twice daily for 15-21 days is a frequently prescribed therapy. Quinolone antibiotics have demonstrated good in vitro activity against *C. burnetii* and may be considered by the physician. Therapy should be started again if the disease relapses.

Prevention: Q fever outbreaks have resulted mainly from occupational exposure involving veterinarians, meat processing plant workers, sheep and dairy workers, livestock farmers, and researchers at facilities housing sheep. Prevention and control efforts should be directed primarily toward these groups and environments.

References

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