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Q Fever

Causative agent: *Coxiella burnetii*

Incidence

Q Fever can be found throughout the world. Cattle, sheep and goats are the main reservoir of the *C. burnetti* bacterium; domestic animals such as cats and dogs can also be affected. Although infected animals tend not to display any symptoms, they excrete large quantities of bacteria in their urine, faeces, and milk, as well as through their amniotic fluids and placenta. These bacteria are resistant to heat, drying and disinfectants. They can also survive for long periods in the environment.

Identification

It is assumed that around half of all cases of Q fever infection are latent, i.e. without symptoms. Symptoms of the acute form include fever, headaches, breast pain, aching limbs, coughing, vomiting and diarrhoea. Almost half of patients with Q fever develop pneumonia. Hepatitis has been diagnosed among some patients who have displayed poor liver function. The chronic form is rare and only occurs several months after the person was first infected; in such cases, there is a serious deterioration in health.

Diagnosis

The symptoms of Q fever are non-specific. Only laboratory analyses can provide a reliable diagnosis. In the main, serological assays, i.e. methods based on antibody detection, are used. The most common method is immunofluorescence analysis (IFA), often supplemented by the polymerase chain reaction (PCR). The bacterium is intracellular and therefore cannot replicate in traditional bacterial culture media. This means that Q Fever cannot be diagnosed my means of cultivation techniques.

Transmission

For the most part, infection with *C. burnetii* in humans and animals is due to contact with secretions from infected animals, or by the inhalation of contaminated dust or aerosols. It is very easy to contract this disease, as few bacteria are needed to cause infection. In theory, one single bacterium is enough. Infections due to the consumption of contaminated milk are infrequent. Human-to-human transmission is also very rare.

Incubation period

The incubation period depends on the quantity of bacteria inhaled. On average it takes between 2 to 14 days, and up to 40 days if infected with a very small dose.

Prophylaxis

With the exception of Australia, there is no authorised vaccine for humans because of the increased risk of side-effects among people who are immune to the disease. Administering a course of tetracycline during the incubation period may delay and/or relieve symptoms, but it cannot completely prevent the development of the disease.

Treatment

Normally Q Fever lasts for between a few days and several weeks and patients can recover without treatment. The antibiotics tetracycline and doxycycline can speed up the recovery process. 1 to 2% of acute cases however lead to death, even with antibiotic treatment.

Coxiella burnetii as a biological warfare agent

In specialist circles, *C. burnetti* is considered a potential biological warfare agent, because, although it is not lethal, it could serve to incapacitate the enemy. The interest of using it as a bioweapon lies in the fact that it is a highly infectious agent which is largely resistant to environmental influences. Furthermore, in aerosol form, only a few bacteria are needed to cause infection.