DRAFT

Bioterrorism Agent Fact Sheet

Brucellosis/*Brucellae*

Disease

Brucellosis is a zoonotic disease caused by one of six species of *Brucellae*, a family of gram-negative cocco-bacilli; four of the species are pathogenic in humans. Humans develop the disease through ingestion or inhalation of aerosols; cases generally develop in lab, veterinarian or slaughterhouse employees or those that consume unpasteurized dairy products. Human cases in the US are rare (<100 cases/yr), but the disease is prevalent worldwide and endemic in Asia and the Middle East.

Brucellosis is considered one of the agents less likely to be utilized in a bioterrorism attack, in part because it results in a high morbidity, but low mortality. However, it remains a threat because the disease process is long and incapacitating.

Diagnosis

Patients present with non-specific flu-like symptoms or may have subclinical infection; a high index of suspicion is imperative in order to establish the diagnosis.

Presumptive diagnosis:

- ELISA (follow with Western blot)

Confirmatory diagnosis:

- Serum agglutination test (SAT) is the most widely used and best-standardized test. SAT can detect lgM and lgG antibodies: ≥ 1:160 or a ≥ 4 fold increase in titer is considered positive
- Positive blood (may require 30-40 days to grow Brucella) or bone marrow aspirate culture
- Western blot

Treatment

Brucellosis is more incapacitating than deadly. Mortality rate: ≤ 2% of untreated cases and generally occurs as a result of endocarditis. Development of endocarditis may necessitate valve replacement. Single drug therapy is associated with a high relapse rate in adults; combination therapy is recommended.

Until sensitivities are known, treat as follows:

- **Adults (for pregnant women, substitute TMP/SMX for Doxycycline)**
  Doxcycline 200mg PO per day X 6 wks **and one of the following:**
  Streptomycin 1g IM per day X 2 wks or
  Rifampin 600mg PO per day X 6 wks

- **Children (treat for 4-6 weeks)**
  Doxycycline 2-4mg/kg/day PO or
  Tetracycline 30-40mg/kg/day (if child > 8 yrs old) or
  TMP/SMX: trimethoprim 10mg/kg/day PO &
  sulfamethoxazole 50mg/kg/day PO

Other effective therapies: Doxycycline and Gentamicin, TMP/SMX and Gentamicin, or Ofloxacin and Rifampin. For patients with meningoencephalitis or endocarditis: long-term therapy using Rifampin, Tetracycline and an aminoglycoside.

Brucellosis

Clinical Features of Brucellosis

Incubation period: 5-60 days. Many patients are asymptomatic and those that have symptoms tend to present with non-specific flu-like symptoms including fever, headache, body aches, chills, profuse sweating, depression, weight loss, generalized weakness and lethargy.

GI symptoms are the most common complaint; . 70% of patients report anorexia, nausea, vomiting, abdominal pain and diarrhea or constipation.

Osteoarticular complications are also very common with sacroiliitis, joint pain and vertebral osteomyelitis being the most frequently seen.

Pleuritic chest pain and nonproductive cough are frequently reported, but development of pneumonia is rare. In general, the CXR remains within normal limits, but lung abscesses, nodules, and pleural effusions have been reported.

A few patients develop CNS disorders including meningitis, encephalitis, and neuropathies. In addition, an unknown neurotoxic process appears to cause severe behavioral changes in some patients.

Infection Control

Person-to-person transmission has been reported following blood exposures, primarily from exposure to infected tissue or sexual contact, but not through routine care of patients. Only standard precautions are necessary for hospitalized patients.

Biosafety level 3 precautions should be utilized in the laboratory when processing specimens of suspected Brucellosis patients.

Post-Exposure Prophylaxis

Prophylaxis should be provided following high risk exposures, including a release as a biological weapon. Therapy for 3-6 wks is recommended, using a regimen listed in the treatment section.

Vaccination

There is currently no vaccine for humans available to the general public. An animal vaccine is used throughout the United States and is responsible for the lack of Brucellosis cases in the US.

Decontamination

Brucella may survive for 6 weeks in dust and up to 10 weeks in soil or water, but are easily killed by common disinfectants and heat. Standard hospital-approved disinfectants are adequate for cleaning patient rooms.

Reporting

Report suspected cases or suspected intentional release of Brucellosis 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.

August 2001

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

CENTER FOR THE STUDY OF CSB&EI BIOTERRORISM & EMERGING INFECTIONS
A Division of Saint Louis University School of Public Health

APIC

BJC HealthCare℠