Brucellosis

Issue Description

The causative agent of brucellosis in dogs is Brucella canis. It is transmitted to other dogs through breeding and contact with aborted fetuses. Brucellosis can occur in humans that come in contact with infected aborted tissue or semen. The bacteria in dogs normally infect the genitals and lymphatic system, but can also spread to the eye, kidney, and intervertebral disc (causing discospondylitis). Symptoms of brucellosis in dogs include abortion in female dogs and scrotal inflammation and orchitis (inflammation of the testicles) in males. Fever is uncommon. Infection of the eye can cause uveitis, and infection of the intervertebral disc can cause pain or weakness. Blood testing of the dogs prior to breeding can prevent the spread of this disease. It is treated with antibiotics as with humans, but it is difficult to cure.

Other Names

Malta Fever, Undulant Fever

Symptoms

Brucellosis in humans is usually associated with the consumption of unpasteurized milk and soft cheeses made from the milk of infected animals, primarily goats, infected with Brucella melitensis and with occupational exposure of laboratory workers, veterinarians and slaughterhouse workers. Some vaccines used in livestock, most notably B. abortus strain 19, also cause disease in humans if accidentally injected. Brucellosis induces inconstant fevers, sweating, weakness, anaemia, headaches, depression and muscular and bodily pain.

The symptoms are like those associated with many other febrile diseases, but with emphasis on muscular pain and sweating. The duration of the disease can vary from a few weeks to many months or even years. In first stage of the disease, septicaemia occurs and leads to the classic triad of undulant fevers, sweating (often with characteristic smell, likened to wet hay) and migratory arthralgia and myalgia. In blood tests, is characteristic the leukopenia and anaemia, some elevation of AST and ALT and positivity of classic Bengal Rose and Huddleson reactions. This complex is, at least in Portugal, known as the Malta fever. During episodes of Malta fever, melitococcemia (presence of brucellae in blood) can usually be demonstrated by means of blood culture in tryptose medium or Albini medium. If untreated, the disease can give origin to focalizations or become chronic. The focalizations of brucellosis occur usually in bones and joints and spondylodisciitis of lumbar spine accompanied by sacroiliitis is very characteristic of this disease. Orchitis is also frequent in men.

Diagnosis of brucellosis relies on:

1. Demonstration of the agent: blood cultures in tryptose broth, bone marrow cultures. The growth of brucellae is extremely slow (they can take until 2 months to grow) and the culture poses a risk to laboratory personnel due to high infectivity of brucellae.
2. Demonstration of antibodies against the agent either with the classic Huddleson, Wright and/or Bengal Rose reactions, either with ELISA or the 2-mercaptoethanol assay for IgM antibodies associated with chronic disease.
3. Histologic evidence of granulomatous hepatitis (hepatic biopsy)
4. Radiologic alterations in infected vertebrae : the Pedro Pons sign (preferential erosion of antero-superior corner of lumbar vertebrae) and marked osteophytosis are suspicious of brucellic spondylitis.

The disease's sequelae are highly variable and may include granulomatous hepatitis, arthritis, spondylitis, anaemia, leukopenia, thrombocytopenia, meningitis, uveitis, optic neuritis and endocarditis.

Treatment And Prevention

Antibiotics like tetracyclins, rifampicin and the aminoglycosides streptomycin and gentamicin are effective against

Brucella bacteria. However, the use of more than one antibiotic is needed for several weeks, because the bacteria incubates within cells.

The gold standard treatment for adults is daily intramuscular injections of streptomycin 1 g for 14 days and oral doxycycline 100 mg twice daily for 45 days (concurrently). Gentamicin 5 mg/kg by intramuscular injection once daily for 7 days is an acceptable substitute when streptomycin is not available or difficult to obtain. Another widely used regimen is doxycycline plus rifampin twice daily for at least 6 weeks. This regimen has the advantage of oral administration. A triple therapy of doxycycline, together with rifampin and cotrimoxazole has been used successfully to treat neurobrucellosis. Doxycycline is able to cross the blood-brain barrier, but requires the addition of two other drugs to prevent relapse. Ciprofloxacin and co-trimoxazole therapy is associated with an unacceptably high rate of relapse. In brucellic endocarditis surgery is required for an optimal outcome. Even with optimal antibrucellic therapy relapses still occur in 5-10 percent of patients with Malta fever. The main way of preventing brucellosis is by using fastidious hygiene in producing raw milk products, or by pasteurization of all milk that is to be ingested by human beings, either in its pure form or as a derivate, such as cheese.