BRUCELLOSIS

Office of Fish and Wildlife Health and Forensics

Introduction

Sometimes called contagious abortion or Bang's disease, Brucellosis is a condition caused by bacteria from the genus *Brucella*. There are nine known species of *Brucella* that cause disease. In wildlife, the two most common species are *Brucella abortus* and *Brucella suis* (Type IV). These *Brucella sp.* typically infect elk, bison, and caribou. It is possible, but rare, for infections to occur in other cervids such as deer and moose.

Species Affected

Species affected by *Brucella abortus* are Rocky Mountain elk (*Cervus elaphus canadensis*), bison (*Bison bison*), cattle (*Bos taurus*) and moose (*Alces alces*).

Species affected by *Brucella suis* are caribou or reindeer (*Rangifer tarandus*) and swine (*Sus scrofa*).

Clinical Signs

The typical sign of Brucellosis is abortion during the second half of gestation. In some cases, calves are born alive, but weak. Chronic infections can result in weakness in the joints of the legs due to inflammation of the bursa. Chronically infected animals also may have reduced lactation and fertility. Some infections can also cause swelling and enlargement of the scrotum. Although generally non-lethal, when moose are infected with *Brucella*, it can result in death of the animal without clinical signs.

Transmission

Transmission within wild populations occurs through fetuses, placentas, and vaginal discharges that contain the live bacteria. Contaminated feed or water can also pass infection from one host to another. Male deer, elk, and moose can transmit the bacteria during breeding. Additionally, the disease can be transferred to nursing calves from cows through milk. Prior to enforcement of mandatory pasteurization, most cases of human brucellosis came from the consumption of cow milk. Although that route has been largely eliminated, humans can contract Brucellosis through direct contact with diseased animals, their infected carcasses, or the routes mentioned for transmission between wild populations.

Diagnosis

Diagnosing brucellosis is commonly performed through the culture of bacterial isolates from aborted fetuses, vaginal discharges, lymph nodes, or testicles. In live animals, diagnosis can be performed through blood serology in veterinary diagnostics laboratories.

Epidemiology

Brucellosis was first detected in wildlife in 1917 in bison located within Yellowstone National Park. Following that, it was found in the 1930's that 22% of elk surveyed within the range shared with infected bison were positive. During the 1960's and 70's *Brucella sp.* infections were found in African ungulates. In 1976, it was identified in feral swine in the United States. *Brucella* infection has also been documented in black bears, bottle-nose dolphins, and white-tailed deer. Less than 100 human cases of Brucellosis occur annually in the United States.

Surveillance/Management

Brucellosis is managed largely by the United States Department of Agriculture – Animal Plant Health Inspection Services (USDA-APHIS). The National Brucellosis Eradication Program seeks to eliminate the disease through eradicating the causative bacteria. On the global scale, there have been no countries successful in eradicating Brucellosis that also possess a wild source of the disease. It is critical to control Brucellosis in the wild to prevent transmission to cattle through shared feed spaces, specifically in western states where these interactions occur. Brucellosis has not yet been observed in wild populations in the eastern US.

Additional Information

Penn Vet Fact Sheet - Brucellosis

Experimental Studies On Brucella Abortus In Moose (Alces Alces) - Lorry Forbes