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Observations From Anthrax Outbreak in Sheridan County Herd

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Anthrax killed 23 head of cows and calves on a Sheridan county Nebraska ranch in June 1994. Bacillus anthracis was confirmed on culture by the Panhandle Veterinary Diagnostic Laboratory, Scottsbluff, Nebraska and the National Veterinary Services Laboratory, Ames, Iowa. The following observations from this case are offered to veterinary practitioners encountering herds where anthrax is a part of the differential diagnosis. Please consult textbooks for specifics regarding this disease.

Postmortem Diagnosis

If anthrax is suspected in any fresh dead animal, collection of blood in a lavender (EDTA) or yellow (Heparin) vacutainer tube from any peripheral blood vessel is suggested. A blood smear should be prepared with Gram or Giemsa stain, and if anthrax is the cause of death large numbers of typical Gram-positive bacilli will likely be present. In this case the local hospital laboratory prepared slides and provided a tentative diagnosis within hours of collecting the sample.

Blood samples should be forwarded to a UNL Veterinary Diagnostic System Laboratory for confirmation by culture. Tissues may be cultured for confirmation if a necropsy has been done. However, opening the carcass, if anthrax is a likely diagnosis, is not advisable. Precautions against personal exposure must be taken.

Clinical Diagnosis

The predominant clinical sign in affected cattle was a progression from normal appearing to dead in a matter of hours. A number of cattle were found dead. Intermandibular swelling extending into the jugular furrow was noted on most of the animals. Severe dyspnea, with head held low and outstretched, was common. Tremors and rapid progression to sternal or lateral recumbency was noted. One animal walked the fenceline constantly with head outstretched, dyspnea and anxious expression.

Blood samples were obtained from slightly affected, severely affected, and freshly dead animals. All contained large numbers of the bacteria on stained blood smears.

Treatment with Anthrax as Tentative Diagnosis

Animals appearing to be affected or having high temperatures were given high dosages of antibiotics (50 ml of long-acting Penicillin - 300,000 IU/ml). Response to antibiotic therapy was very good if given early, appearing to stop the septicemia in clinically ill cattle. All exposed cattle should be given prophylactic long-acting antibiotics as soon as possible. The State Veterinarian's office must be contacted to report the disease and request approval to order and use anthrax vaccine. Thraxol (Miles Laboratories) and Anthrax Spore Vaccine (Colorado Serum) are both available.

Cattle were moved to a different pasture immediately and vaccine was given as soon as possible. The vaccine provides protective immunity starting about day 3-5 following vaccination. A booster vaccination was given according to label directions. Close observation and antibiotic therapy appears to stop death loss until the vaccine can provide immunity. No adverse side effects to the vaccine were noted.

Disposal of Dead Animals

Animals which may have died of anthrax should not be picked up by the rendering truck. The State Veterinarian's office should be notified and will supervise disposal of carcasses. A burial pit should be dug and dead animals should be buried as soon after death as possible under direction of state regulatory personnel. Remember that this organism sporulates if the carcass is opened or allowed to decompose above ground.

Human exposure

A physician should be contacted for the best preventative measures for all exposed or potentially exposed persons. Remember, this is a potential human pathogen that can be fatal, so appropriate measures must be taken to protect all personnel.

Laboratory diagnosis

Bacillus anthracis can be presumptively identified by Gram stain or Giemsa stain of blood smears in affected cattle. In blood smears the organism appears as single to short-chained, Gram-positive, square-ended bacilli. Spore formation also will be present. However, culture is required for a definitive diagnosis. Blood cultures from three of three affected animals were positive in this outbreak. Blood was collected in lavender (EDTA) tubes for transport to the Laboratory. Positive cultures from necropsy tissue specimens were also obtained.

Summary

The case discussed was the first confirmed anthrax outbreak in Nebraska since 1979, according to most reports. Spores are known to survive for extremely long periods of time so veterinarians should include anthrax in differential diagnoses whenever appropriate. Please consult textbooks and other literature for other information about anthrax.

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