1962

Anaplasma Marginale Infection in the Bovine

G. Petkus

Iowa State University

Follow this and additional works at: https://lib.dr.iastate.edu/iowastate_veterinarian

Part of the Large or Food Animal and Equine Medicine Commons, and the Veterinary Infectious Diseases Commons

Recommended Citation

Petkus, G. (1962) "Anaplasma Marginale Infection in the Bovine," Iowa State University Veterinarian: Vol. 24 : Iss. 1 , Article 11. Available at: https://lib.dr.iastate.edu/iowastate_veterinarian/vol24/iss1/11

This Article is brought to you for free and open access by the Journals at Iowa State University Digital Repository. It has been accepted for inclusion in Iowa State University Veterinarian by an authorized editor of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
long as the exercise was limited, the incoordination and trembling were not evident.

The patient was released on October 14, 1961, with the recommendation that the owner restrict the dog's activity and give aspirin as needed for pain. If the condition became much worse, the owner was instructed to return the dog to his veterinarian for cortisone treatment.

James K. Burt '62

2 Fulminating Streptococcus Infection in Swine. On August 2, 1961, a call was received from a client who reported that his 140 lb. market hogs were sick. Upon arrival at the client's farm, two dead pigs were found. Several of the rest of the herd of 94 animals were noticeably depressed. Eighty per cent of the herd, including the two dead pigs, showed signs of cervical abscesses. Upon post mortem examination encapsulated abscesses, containing yellowish creamy exudate, were found within the soft tissues of the ventral cervical region. Other post mortem lesions included a hyperemic intestinal tract and greatly enlarged kidneys (3 times normal size) which seemed to be infiltrated with multiple abscesses. Tissues, exudate, and citrated blood were obtained for laboratory studies by a commercial laboratory.

Laboratory results showed that the hemogram of the citrated blood was 76,200 total white blood cells; 7,200,000 total erythrocytes; 9.8 grams hemoglobin per 100 ml., and a packed cell volume of 33 per cent. The differential count showed 82 neutrophils and 18 lymphocytes. A Streptococcus sp. was recovered from the exudate.

Histologic preparations for microscopic study included sections of kidney, renal lymph node, liver and spleen. The kidneys showed a fulminating supplicative reaction centered mainly around the pelvis and extending into the interstitial spaces of the parenchyma. The renal lymph node showed diffuse edema within the sinusooids. No other significant microscopic lesions were detected.

Treatment consisted of two 210,000 unit intramuscular injections of Penicillin at 48 hour intervals. Organic iodide was administered orally by way of the drinking water. Surgical drainage of the most prominent abscesses was periodically accomplished. A total of eight hogs died from this herd of ninety-four for a mortality rate of 8.5 per cent. The morbidity rate, determined by the number showing abscesses, was eighty per cent.

Septicemia of swine due to Streptococcus sp. is not an uncommon occurrence in baby pigs and has been reported in older swine. There are no reports, however, of cervical abscesses ever accompanying or being a part of this septicemic condition. The condition of swine jowl abscesses, which is thought to be the result of Lancefield Group E Streptococcus invasion, is thought to be a localized infection with virtually no associated mortality.

In this particular case, the symptoms and lesions were associated with swine jowl abscesses. This proved to confuse the diagnosis of this condition. It is this writer's opinion that Lancefield Group E Streptococcus had no part in the etiology of the above condition and that this septicemic condition with accompanying jowl abscesses was the result of one of the other Streptococcus sp.

This case occurred in the practice area of Drs. Jensen, Brown, and Dieter at Wayne, Nebraska.

Alvin Pokorny, '62


3 Anaplasma marginale Infection in the Bovine. On approximately July 1st, 1961, twenty-seven Wyoming cows with calves were shipped into North Central Iowa. Upon arrival, the cows and calves were turned out to pasture. Approximately a month and a half later, one of the cows appeared rather weak, depressed and mildly icteric. She died twelve hours after onset of the symptoms. Within the next few days, several other cows began to show similar symptoms of anemia,
weakness and icterus, with one of the animals becoming belligerent. None of the calves were affected.

On September 9, 1961, one of these seven year old Hereford cows was brought into the Stange Memorial Clinic. She manifested symptoms typical of those affected in the herd. She was depressed, emaciated, weak, dehydrated and had a dry, rough hair coat. Upon closer inspection, anemia was evident by the lack of color in the mucous membranes of the muzzle and vaginal wall. The normal pink color had been replaced by a grayish-yellow color. A blood sample was taken on September 11 and the results indicated a very severe anemia.

Hemoglobin: 2.14 gm. per 100 cc.
Hematocrit: 7.25%
R.B.C.: 1,800,000 per mm³

A blood sample was submitted to the Agricultural Research Service in Beltsville, Maryland, for an anaplasmosis complement-fixation test.

Immediate treatment consisted of 2 gms. of Polyotic (Cyanamid) I.M. While this antibiotic does not lessen the severity of the anemia, it has reduced the mortality in experimental cases. Other treatment was aimed at building up the blood values. Two ounces of Co-Fer-Mel (Pitman Moore) was given daily for three days. However, the condition seemed to be getting worse, with depression, anorexia and dehydration becoming more evident. The feces at this time were hard and dry.

On September 13, it was decided to administer 1500 cc. of whole blood and 1000 cc. of electrolytes intravenously. In addition, three Lax-Mag (Nelson) boluses and six gallons of warm water were administered via stomach tube.

On the following day, the cow was extremely depressed and the feces remained very hard and dry. A mixture of 40 cc. of Liquamycin (Pfizer) and 500 cc. of 50% dextrose plus 500 cc. of saline was given I.V. An enema was given to facilitate bowel movement.

On September 17, considerable improvement was noted. The cow was alert and eating well. The first normal bowel movement occurred on this day. Improvement continued until she was dismissed on September 21st. At this time, another blood sample was taken which revealed the following:

Hemoglobin: 2.65 gm. per 100 cc.
Hematocrit: 12.50%

Many immature red blood cells were found in the circulating blood indicating that active regeneration of the erythrocytes was taking place. The results of the blood sample sent to Beltsville were reported positive for Anaplasma marginale.

On further communication with the referring practitioner it was learned that the cow was making a slow recovery.

Of the 27 cows in the herd, four had died and several more had shown symptoms. Treatment was made on a herd basis using parenteral administration of tetracyclines and a laxative diet. Whole blood was administered to the cows showing severe symptoms. All the calves in the herd remained healthy.

One unusual aspect in this herd was that approximately 20% of the cows did show symptoms within a period of a week. This may be attributed to improper bleeding of the animals for interstate shipment which resulted in the simultaneous spread of the organism.

In differentiating this condition from leptospirosis, it is important to remember that anaplasmosis rarely affects calves under a year of age and causes the most severe symptoms in cattle over three years of age. On the other hand, leptospirosis is most severe in younger animals, although it does affect older cattle.

In treating this particular clinical case, reliance was placed on tetracyclines, whole blood, and symptomatic and supportive therapy. It has been found that tetracyclines at therapeutic levels can prolong the incubation period and inhibit, to some extent, the invasion of the erythrocyte by the anaplasmosis organism. It was felt by the clinician in charge that the antimalarial drugs were of little value in altering the course of the disease. Whole blood is of value in combating the severe anemia, which frequently accompanies anaplasmosis. Symptomatic and supportive treatment would include keeping the
animal quiet, providing a laxative and adequate diet, and combating dehydration. It was felt in this case, that the warm water and laxatives administered via the stomach tube and the enema were very helpful in speeding recovery.

G. Petkus, '52

A Clinical discussion of diagnostic tests for Paratuberculosis. It is the purpose of this paper to present a single diagnostic procedure which can be utilized by practitioners in confirming a diagnosis of Johne's disease. Field tests for this disease have been neglected to such an extent that incidence data is unavailable. A report issued by the Secretary of Agriculture in 1952 stated paratuberculosis had been recognized in all states except Arizona, Maine, New Hampshire, Rhode Island, Utah, and Wyoming. Unofficial estimates in a neighboring state have placed the herd incidence at fifteen percent. Because a significant number of affected animals remain asymptomatic, prompt diagnosis of the clinical cases is imperative if the disease is to be controlled in the herd. Bacterial culture of the feces, intradermal Johnin skin sensitivity, complement and micro-complement fixation, and acid-fast stains of the rectal mucosa are diagnostic tools which can be used in susceptible species. However, these tests are reliable only when applied during a certain stage of the disease. Early in the course of Johne's disease the skin sensitivity test is reliable; later the other tests are more dependable. The exact mechanism(s) involved in false negative skin sensitivity tests is unknown but the following explanations have been suggested. (1) In advanced stages of all diseases, including tuberculosis, the allergic skin tests may fail to react. This condition is called anergy and has been considered a consequence of an exhaustion on part of the tissue cells. (2) If the skin sensitivity tests are carried out in treated animals, the suppressive agents (irradiation, cortisone) might well interfere with the inflammatory response nonspecifically, aside from whether or not the subject has responded immunologically. (3) Lack of reaction indicates absence of infection with the following qualifications: the animal may be in the pre-allergic state during early infection (a period not exceeding one month), or may have lost allergy due to overwhelming infection or to unrelated infections. (4) In the fulminating infections when large numbers of organisms are spilling over into the blood stream, the intradermal reaction may fail due to the overwhelming toxic condition of the animal.

Domestic animals reacting to a test recognized by the Secretary of Agriculture for paratuberculosis must be branded with a "T" on the left jaw and some type of state reactor tag attached to the left ear. Interstate shipment of grade animals can be made only for immediate slaughter. Purebred animals which have been moved interstate for breeding purposes and which react subsequent to such movement, may be moved interstate to their point of origin after provisions have been made with appropriate local authorities for their quarantine or segregation until death by slaughter or from natural causes. Branded animals may remain within the herd of origin under intrastate regulations and the complete herd and premises shall be under quarantine. Complete regulations are found in subchapters B and C of chapter 1, Title 9, Code of Federal Regulations.

CASE HISTORY

A two year old shorthorn bull was admitted to the clinic on September 20, 1961, with a history of recurrent diarrhea which was refractory to treatment. Physical examination was essentially negative except for marked dehydration, slight enlargement of both hocks, and fluid feces. History obtained from the owner indicated the animal had suffered attacks of diarrhea in the fall of 1960, May of 1961, and again in the fall of 1961.

CLINICAL FINDINGS

The bull was afebrile (101.2° — 102.5° F.) while observed at the clinic. The diarrhea remained profuse, with consistency and color resembling pea soup, but was without offensive odor. Appetite was fair until the terminal stages of the disease;