
NOTES

Bovine Abortion Associated with *Anaplasma marginale*

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ABSTRACT

During the period from June 1974 to June 1975, five bovine fetuses between seven to nine months old were received for necropsy from four different counties of the S. Paulo State, Brazil. All of them were from brucellosis-free herds.

Necropsy revealed slight liver enlargement generally accompanied by capsular petechial hemorrhages. Enlargement and congestion of the spleen, epicardial and endocardial petechiae were present in three fetuses and one of them had lungs with some hemorrhagic lobules.

Cardiac blood films of all the fetuses stained by the Pappenheim's panoptic method showed *Anaplasma marginale* in two to 20% of red corpuscles. When stained with acridine orange and immunofluorescent methods blood films of the first fetus specifically showed *A. marginale*.

RÉSUMÉ

De juin 1974 à juin 1975, les auteurs reçurent cinq avortons bovins âgés de sept à neuf mois. Ces avortons provenaient tous de troupeaux exempts de brucellose et situés dans quatre comtés de l'état Sao Paulo, au Brésil.

La nécropsie révéla une légère hépatomégalie et des pétéchies sur la capsule de Glisson. Trois des avortons présentaient aussi de l'hypertrophie et de la congestion spléniques, ainsi que des pétéchies sur l'épicarde et l'endocarde; certains lobules pulmonaires de l'un de ces trois avortons étaient hémorragiques.

La coloration de frottis du sang cardiaque de tous les avortons, selon la méthode panoptique de Pappenheim, permit de déceler *Anaplasma marginale* dans 2 à 20% des hématies. La coloration à l'acridine orange des frottis sanguins du premier avorton et leur examen à l'immunofluorescence permit de démontrer de façon spécifique *A. marginale*.

Bovine anaplasmosis is an infectious disease caused mainly by *Anaplasma marginale*, considered today as a rickettsia from biological and ultrastructural studies (3). Transmission of the agent can be accomplished by various ticks, depending on the region, but it can be transmitted by hematophagous insects such as the stable fly and tabanids, as pointed out by Bruner and Gillespie (2), Ristic (3) and Blood and Henderson (1). Uterine transmission were both related by Bruner and Gillespie (2) and Ristic (3). The present report records five cases of bovine abortion associated with fetal infection by *A. marginale*.

During the years of 1974 and 1975 we received five bovine fetuses between seven and nine months of gestation from different farms in the State of S. Paulo, Brazil. The fetuses were necropsied and cardiac

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blood films were taken and liver and spleen smears were made and stained by Pappenheim's panoptic method. Some unstained cardiac blood films were sent to Dr. Ristic in the U.S.A. to be stained by acridine orange and examined by specific immunofluorescence against *A. marginale*. Cardiac blood films of the other four cases were stained by Pappenheim's method.

The cows from the farms were negative for brucellosis as stated by their veterinarians but bacteriological cultures of all fetuses were made on blood agar and Levine media and incubated routinely by 48 hours.

All bacteriological cultures were negative for pathogenic bacteria.

The main epidemiological data, necropsies and laboratory observations were as follows:

I. June 12, 1974. Avaré County, SP — Holstein fetus, eight and one-half months. In the last 20 days, four fetuses between eight and nine months were aborted from 100 milking cows. At necropsy, the liver was slightly enlarged with some blood suffusions and capsular petechiae distributed throughout the organ but mainly on the left and caudal lobes. The spleen was also enlarged. *A. marginale* was found in approximately 5% of red corpuscles on liver, spleen and cardiac blood impression smears stained by the Pappenheim's method. This finding was confirmed by staining with acridine orange and immunofluorescence.

II. September 20, 1974. Agudos County, SP — Zebuine x Holstein fetus, seven months. Two abortions had occurred in the previous two months among 40 milking cows. At necropsy the lungs revealed some hemorrhagic lobules. The spleen was slightly enlarged, the liver was congested and both had capsular petechial hemorrhage. *A. marginale* was found in approximately 5% of cardiac blood red corpuscles.

III. October 14, 1974. Botucatu County, SP — Zebuine fetus, eight months. This fetus came from a cow which was one of 200 meat producing animals in a herd without previous abortion. A light hemopericardium and congested and slightly enlarged liver was observed at necropsy. *A. marginale* was present in 3% of the red corpuscles.

IV. May 14, 1975. Cerqueira Cesar County, SP — Zebuine fetus, eight months. The veterinarian reported that abortions were occurring sporadically on this farm which consisted of a herd of 300 meat producing

cows. At necropsy the liver had capsular petechial hemorrhages and the spleen had congested capsular veins. A few petechiae were noted on the epicardium and endocardium. *A. marginale* was found in approximately 2% of the red corpuscles.

V. June 17, 1975. Avaré County, SP — Holstein stillborn heifer. Three months before the veterinarian of the farm made two cardiac blood films of each of two aborted fetuses and his diagnosis was of abortion by *A. marginale*. He sent two cardiac blood films to us informing also that at necropsy he found a slightly enlarged liver with capsular petechiae. Blood smears stained at our laboratory showed 10 to 20% of the red corpuscles with *A. marginale*. In this case bacteriology was not made because we received blood films only.

Farmers and veterinarians do not generally bring aborted fetuses for necropsy and thus we do not know what the incidence of anaplasmosis in fetuses is in bovine abortions.

All the *A. marginale* abortions occurred during the drought season, when pastures are in very poor condition. This suggests that stress lowered resistance predisposes to abortion. Because we have found *A. marginale* and fetal organic lesions consistent with the disease, we believe that the abortions were caused by fetal anaplasmosis plus the poor quality nutrition and the advanced gestational state of the *A. marginale* carrier-cows.

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REFERENCES

1. BLOOD, D. C. and J. A. HENDERSON. Medicina Veterinária, 2a. Edicao. México: Interamericana. 1963.
2. BRUNER, D. W. and J. H. GILLESPIE. Hagan's Infectious Diseases of Domestic Animals, 5th Edition. Ithaca, New York: Comstock. 1966.
3. RISTIC, M. Bovine Medicine and Surgery, 1st. Edition. W. J. Gibbons, E. J. Catcott and J. F. Smithcoors, Editors. Wheaton, Illinois: American Veterinary Publications. 1970.