

Bacillary Hemoglobinuria

Synonym: Red Water Disease

Etiology: *Clostridium haemolyticum* and referred to as *C. novyi* type D.

Definition: The name Red Water Disease or Bacillary Hemoglobinuria comes from the classic red color of the urine in affected animals. This is due to the presence of hemoglobin from lysed (ruptured) red blood cells. This infection can easily be confused with several other diseases, including blackleg, anthrax, or leptospirosis.

Epidemiology:

1. The organism present in low lying swampy areas.
2. Spores also found in bones of carcasses up to 2 years
3. Cattle are the usual species involved although occasional cases occur in sheep and rare cases in pigs.
4. As is the case in many clostridial diseases, animals in good condition are more susceptible .The disease occurs in summer and autumn in endemic areas, which are usually irrigated or sub irrigated fields.
5. Ingestion of contaminated carcass and flood consider predisposing factors.

Clinical Signs:

- ⇒ The illness is of short duration and cattle at pasture may be found dead without signs having been observed.
- ⇒ Sudden onset, with complete cessation of rumination, feeding, lactation, and defecation.
- ⇒ Abdominal pain is evidenced by reluctance to move and an arched back posture. Grunting may be evident on walking.
- ⇒ Respiration is shallow and labored and the pulse is weak and rapid. Fever (39.5-41°C).
- ⇒ Edema of the brisket is a common finding. The feces are dark brown; there may be diarrhea with much mucus and some blood.
- ⇒ The urine is foamy dark red.

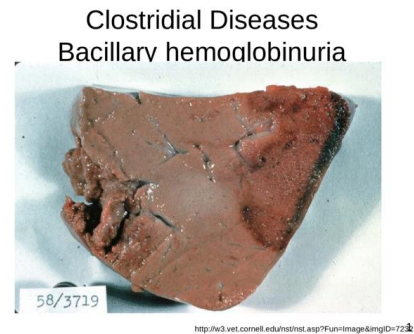
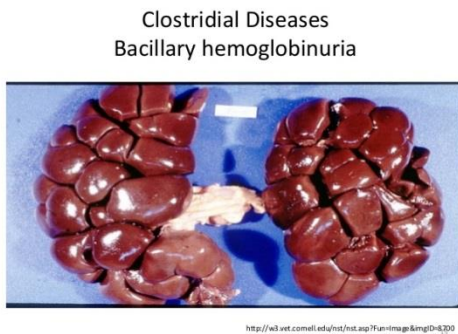
Pathogenesis:

As in black disease of sheep where the liver is damaged by fluke, the bacteria are carried to the liver and lodge there until damage to the parenchyma of the liver and the resulting hypoxia create conditions suitable for their proliferation. The development of an organized thrombus in a sub terminal branch of the portal vein produces the large anemic infarct that is characteristic of the disease. Most of the bacteria are to be found in this infarct and, under the anaerobic conditions, the

necrotoxic and hemolytic beta toxin is released systemically to result in toxemia, generalized vascular damage and intravascular hemolysis.

Necropsy findings:

- Single ischemic pale infarct in the liver surrounded by a zone of hyperemia.
- Red urine is present in the kidneys and bladder and petechiation is evident throughout the kidney.
- Petechial or diffuse hemorrhages or, gelatinous edema, which tends to become crepitate in a few hours, in subcutaneous tissue are characteristic.
- There is a variable degree of jaundice. Excessive amounts of fluid, varying from clear to bloodstained and turbid, are present in the pleural, pericardial, and peritoneal cavities.



Diagnosis:

1. Bacteriology – tissue samples from edge of liver infarct, placed in an airtight container and the cultured.
2. Clinical Pathology :
 - The red color of the urine is due to the presence of hemoglobin (there are no free red cells).
 - In the later stages there is anemia, the erythrocyte count being depressed to between 1 and 4 x 10¹²/L and the hemoglobin to 3-8 g/L.
 - blood glucose levels may be elevated (100-120 mg/dL) in some cases.

D.D

- Acute leptospirosis
- Postparturient hemoglobinuria
- Hemolytic anemia caused by cruciferous plants
- Babesiosis and anaplasmosis
- Enzootic hematuria
- Chronic copper poisoning (sheep)

Treatment

1. Immediate use of -ampicillin [10 mg/kg of BW (I.M.)] every 12 hr for 3 days and
- cefazolin [10 mg/kg (I.V.)] every 24 hr.
2. Supportive treatment – including :
 - blood transfusion about (2.5 L),
 - parenteral fluid, and electrolyte solutions - Ringer's solution (1 L), 25% glucose (1 L).
3. vitamins and mineral supplements containing iron, copper, and cobalt.

Control and prevention:

Vaccination is carried out 4-6 weeks before the expected occurrence of the disease. Annual revaccination of all animals over 6 months of age is necessary in enzootic areas.

The carcasses of animals dying of the disease should be disposed of by burning or deep burial.