Diseases associated with Rickettsiales

ANAPLASMOSIS

The Organism

- obligate intracellular bacterial pathogen
- Anaplasma marginale is the causative agent of anaplasmosis in cattle and wild ruminants
- A. avis in sheep and goats
- A. centrale causes mild anaplasmosis in cattle

Epidemiology

- Common in tropical and sub-tropical regions
- sporadic in temperate regions
- Carrier animals are the source of infection
- Disease transmitted by ticks
- Disease can be endemic in tick areas or sporadic in interface regions between endemic and free areas

Clinical Signs

Cattle

- incubation period varies about 3-4 weeks
- with tick-borne infection
- In most cases the disease is subacute, especially in young animals
- Rectal temperature rises slowly and It may remain elevated or fluctuate
- Death can occur but many survive in an emaciated condition, and their fertility is impaired.
- mucous membranes are jaundiced and pallor, particularly after the acute stage but there is no hemoglobinuria
- Peracute cases, with a sudden onset of high fever, anemia, icterus, severe dyspnea and death, often within 24 hours
- Pregnant cows frequently abort.
- In convalescent bulls there may be depressed testicular function for several months

Sheep and goats

- usually subclinical but in some cases, particularly in goats, a severe anemia may occur similar to cattle may be seen
- Severe reactions most frequent when the animals are suffering from concurrent disease
- hyperexcitability and may bite at inanimate objects

Post Mortem Lesions

- emaciation, pallor of the tissues, and thin, watery blood with mild jaundice and the liver is enlarged
- The kidneys are congested and there may be myocardial hemorrhages
- The spleen is enlarged with a soft pulp
- The bone marrow cavity may be reddened by increased hematopoietic tissue in acute cases but there may be serous atrophy of marrow fat in chronic cases.

Clinical Diagnosis

- Case history
- Clinical sign
- P.M. sign

Differential Diagnosis

- Theileriasis
- Babesiosis
- Poisoning
- Leptospirosis

Laboratory Diagnosis

Hematology

- The small dot-like protozoa at the periphery of up to 10% of the red cells in subacute cases, but in peracute cases more than 50%

Samples for confirmation of diagnosis

- Clinical pathology - blood smears from cut surface of an ear
- Histology - fixed spleen, liver, bone marrow

Treatment

- single injection of long-acting oxytetracycline at a dose of 20 mg/kg intramtiscularly
- Blood transfusions are indicated in animals with a PCV less than 15 %
- Imidocarb (3 mg/kg BW) is also an effective treatment for clinical cases

Prevention and Control

- Temporary protection with a single intramuscular injection at 20 mg/kg BW of long-acting tetracycline.
- Prolonged protection by intramuscular injection at 20 mg/kg BW of long-acting tetracycline every 28 days or by chlortetracycline in the feed at 1.1 mg/kg BW daily.
- Vaccination
  - Killed vaccines
  - Living vaccines

'Q' FEVER

The Organism

- Coxiella burnetii
- Obligate intracellular bacterial pathogen

Epidemiology

- Infection and transmission is by direct contact and by inhalation
- Infection of nonpregnant animals is clinically silent and is followed by latent infection until pregnancy when there is spread the infection in the intestine, uterus, placenta and udder and excretion from these sites at parturition.

Clinical Signs

- Anorexia is the only consistent clinical finding
- abortion in sheep and goats
- Abortion occurs during the latter part of the lambing period in the flock and in the latter period of pregnancy in individual ewes
- The dam shows no signs of impending abortion
- In cattle the organism is a rare cause of abortion

Post Mortem Lesions

- foci of necrosis and inflammation in the liver, lung, and kidney microscopically.
- placenta thickened and a purulent exudate or large, red-brown foci of necrosis are typically seen in the intercotyledonary areas.
- large numbers of neutrophils visible on the chorionic surface and swollen trophoblasts filled with the organisms
- placental impression smears stained provides a means of rapid diagnosis.

Clinical Diagnosis

- Case history
- Clinical sign
- P.M. sign

Differential Diagnosis

- Brucellosis (Brucella ovis)
- Campylobacter fetus or jejuni
- Enzootic abortion of ewes (Chlamydophila abortus)
- Listeriosis (Listeria Monocytogenes)
- Toxoplasmosis

Laboratory Diagnosis

Samples for confirmation of diagnosis

- Bacteriology - chilled placenta (CYTO, FAT)
- Histology - fixed placenta, lung, liver, kidney

Note the zoonotic potential of this agent when handling carcasses and submitting specimens

Prevention and Control

- Aborting animals should be isolated for 3 weeks and placental contaminated material burnt
- Feed areas raised to keep them free from contamination with feces and urine.
- Milk and milk products should be pasteurized.
- Vaccine trials with killed vaccines show a good and persistent antibody response and suggest that vaccination can limit the excretion of the organism