Leptospirosis

Etiology:

-**Leptospira interrogans ----serovar pomina**

- Leptospira interrogans ----serovar hardgo which cause abortion in cattle.

Epidemiology :

1- Important carrier host are rodent.
2- Infection has been recorded in cattle ,pigs and horse and ovine .
3- Calves and lambs are highly susceptible .

Source of infection is usually infected animal which contaminates pasture ,drinking water and feed by infected urine ,aborted fetus and infected uterian discharge and Infected semen

4- It hazard to butchers ,farmers and veterinarian .
5- L . present in milk during peak of fever.

Pathogenesis :

- Penetration of skin----------multiply in liver then ---migrate to peripheral blood **–** cause—septicemia
- Capillary damage
- Hemolysis
- Interstitial nephritis.

Clinical Finding :

1- In all animals the incubation period is from 3-7 days.

2- **Acute form**

Calves up to month old are most susceptible , septicemia high fever ,anorexia ,petechiation of mucosa ,acute hemolytic anemia with hemoglobin urea, jaundice ,pallor of mucosa ,increase heart rate and dyspnea.

- In adult cattle ,abortion due to systemic reaction.

-The milk is red color or contain blood clots .

- Mastitis and presence of many leukocyte in milk(diagnosis) .

3- **Subacute form** :

-fever is mild ,fall in milk production and appearance of blood stained or yellow-orange.

4- **Chronic form :** - mild clinical signs

-sever storm of abortion occur in group of cattle it occur during the last third of pregnancy .

- Leptospira meningitis in cattle , there is incoordination ,excessive salivation ,conjunctivitis and muscle rigidity are common signs .

5- Leptospirosis is caused by L. interogan var hardgo occur only in pregnant or lactating cow ,because its occur only in pregnant uterus and lactating mammary gland there is sudden onset of fever ,anorexia and agalactia .,the milk yellow to orange ,the udder is flabby no heat or pain , abortion occur several week later.

- In sheep and Goat:

The disease is rare ,most animal found dead due to septicemia

-affected animal febrile ,dyspnia ,hang their head down,hemoglobinurea,pallor of mucosa and jaundice .

Clinical Pathology:

1-isolation of the organism .

2- serological test.

3- Hamester inoculation test .

4-in septicemic stage the organism present in the blood.

Necropsy Finding :

1-Acute form there is anemia ,jaundice ,hemoglobinurea ,subserous and submucosal hemorrhage .

2- ulcer and hemorrhage in the abomasal ,pulmonary edema and emphysema.

Differential Diagnosis :

1- Babesiosis
2- Anaplasmosis
3- Rap and Kale poisoning
4- Bacillary hemoglobin urea .
5- Acute hemolytic anemia which occur in calves after drinking large quantities of water.

Treatment :

RX

- Streptomycin or tetracycline 12mg/kg.Bw. twice daily for 3 days
- blood transfusion 5-10 liters/450 kg Bw.

Control: - Eradication or limitation of occurance .

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LisTeriosis

Etology :

listeria monocytogen

- wide spread in nature ,optimal growth temperature 30c and can growth and reproduce at 0.4-45 c .
- can survive for several years in fecal material .
- virulent strains produce hemolysin and listeriolysin O., which major virulence factor .
- the organism is susceptible to common disinfectan**t .**

Epidemiology

- disease is primarily of ruminant ,particularly sheep and occur in horse and pig.
- When disease occur have an outbreak of either encephalitis or outbreak of abortion .septicemia in lamb may occur in conjunction with abortion but it is rare have all three syndromes on the same farm.
- Can isolated from animal feces ,human feces ,farm slurry , sewerage sludge ,soil, surface water ,plant, animal feed ,wall and floor.
- In ruminants organism can isolated from feces and nasal secretion of healthy animal .
- Increase in winter period and increase during period of environmental stress and stress of lambing .
- Transmitted by ingestion of contaminated material .
- Transmitted occur from milk (teat) ,from the navel ,and also congenital infection .
- The organism common in habitant of silage , listeria can multiply in silage above (pH 5-5.5) ,present in silage which is poor fermented but it can occur in pockets of aerobic deterioration in good silage .
- Infective material derives from infected animal feces ,urine ,aborted fetus ,uterine discharge and milk .

- Outbreak of encephalitis which occur in sheep after introduction to silage about 3-4 weeks later.
- Septicemia occur after 2 days of introduction to silage .
- Abortion occur after 6-13days of introduction .

Pathogenesis

-after ingestion of organism ,there is penetration mucosa of intestine there are many form ,

1- in apparent infection with prolong fecal excretion of organism .

2-bacteremia localized in various organs:

- invasion of placenta and fetus occur 24hr. of onset bacteremia , edema and necrosis in placenta (abortion ,and metritis) .
- encephalitis in ruminant occur as acute inflammation of brain stem unilateral.

3- development of fatal septicemia .

Clinical Finding

- encephalitis and abortion rarely occur in the same outbreak **.**

1- Encephalitis

- Common form of the disease ,separation from the flock (in sheep) **,depression** ,sheep show desire to escape but incoordinate as they run and fall easily .
- Head deviasion some time with head tilt ,walking in circles .
- Unilateral facial hypalgesia and facial paralysis manifest with drooping of ear, paralysis of lips and ptosis on the same side of the face as the hypalgesia .
- Keratitis sever cause corneal ulceration ,strabismus and nystagmus occur in some .panophthalmitis ,with pus in anterior chamber of one or both eye in cattle
- Paresis of muscle of jaw or dropped jaw, prehension and mastication are slow and Animal stand for long period drooling saliva and food hanging from mouth.

-the head may be retroflex or ventroflex depending on the localization of lesion ,the deviasion can not corrected.

-progression is in circle in the direction of the deviation and the circle of small diameter.

-the animal recumbent, death due to respiratory failure.

2-**Abortion**

- Abortion sporadic in cattle in last third of pregnancy.
- Outbreak of abortion occur in sheep and goat occur from the 12^{th} weeks of pregnancy ,blood-stained vaginal discharge .
- Some time of goat from septicemia if fetus is retain**ed.**

3- Septicemia

-acute septicemia is not common in adult ruminant ,but occur in monogastric animal ,including lamb and calves.

-depression ,weakness ,emaciation ,pyrexia and diarrhea, hepatic necrosis and gastroenteritis at necropsy.

-**less common syndrome :** corneal opacity, dyspnea and nystagmus **.**

-Mastitis : infection in udder, single quarter is chronic poorly responsive to treatment .

-Spinal myelitis : most common ,there is initial knuckling of hind limbs, weakness and paralysis in some sheep there is paresis and paralysis of front limb.

Clinical Pathology

- Hematological examination not much value .
- Examination of cerebrospinal fluid for inflammatory cell and increase protein .
- Serological test **.**

Necropsy finding

1- Cerebrospinal fluid cloudy ,congestion of meningeal vessels
2- Histological examination of brain tissue to detect micro abscesses which characteristic present in brain stem.
3- Multiple foci of necrosis in the liver, spleen, endocardium and myocardium specially in septicemic form.

Differential Diagnosis

1-acetonemia in cattle
2- Pregnancy toxemia (in early cases) in sheep.
3- Polioencephalomalacia
4- Brain abscess
5- Sheep with otitis media ,otitis interna.

6- Rabies .

Treatment

In cattle

1- Chlortetracycline 10 mg/kg daily for 5 days I/V .

In sheep:

Penicillin 44000unit/kg daily for 7 days I/M ,or to 10-14 days**.**

Control

1- Reduce the amount of ensilage fed .

2- Feeding of low level of tetracycline .

3- Killed vaccine .

4- Autogenous vaccine .