Salmonellosis

Etiology

The genus Salmonella is classified in the family Enterobacteriaceae, whose members are Gram-negative coccobacilli, With the exception of S. gallinarumpullorum,all Salmonellae are motile with peritrichous flagella

Prevalence of infection

Important zoonosis and food borne illness. Prevalence of infection in healthy animals varies according to species and country. Outbreaks occur precipitated by stressors. Spread by direct or indirect means (infected animal source of organism, which contaminates feed and water supplies). Carrier animals shed organism and may introduce infection into herd. Antimicrobial resistance major public health problem.

Pathogenesis

Special toxins of Salmonellae are responsible for the systemic and enteric forms of salmonellosis. These virulence factors include:- lipopolysaccharides(LPS), - endotoxins,- enterotoxins,- cytotoxin,- plasmids.

The usual route of infection is oral. The bacteria penetrate into the lamina propria and production of cytotoxins and enterotoxins contribute to gut damage causing enteritis. Acute enteritis is the common form in camel calves and in adult camelids when predisposing factors like clostridiosis, coccidiosis or candidiasis exist. The feces have a putrid odour and contain mucus and sometimes blood. A severe hemorrhagic enteritis may develop

Chronic enteritis is a common form in adult camelids. There is persistent diarrhoea, with intermittent fever, emaciation and poor response to treatment.

From the lamina propria of the intestines, Salmonella may be transported into the vascular system, causing septicaemia. During septicaemia, Salmonellae may localise in the brain, meninges, pregnant uterus and distal aspects of limbs, ears and tails. The organisms also frequently localise in the gall- bladder and mesenteric lymph nodes, and survivors intermittently shed the bacteria in the feces.

Salmonella septicemias is a usual syndrome in newborns with outbreaks occurring for up to 6 months. This illness is acute with fever and depression. Death occurs within 48 hours. A factor predisposing to Salmonella septicaemia seems to be mineral deficiency.

Clinical Sign

The disease is characterised by one or more of 3 major syndromes: septicaemia, acute and chronic enteritis

Some Salmonella strains can cause an unusually wide range of clinical syndromes including ischemic necrosis of the tips of the ears, tail or limbs (endotoxin damages the endothelium of blood vessels leading to a localised disseminated intravascular coagulation that causes terminal ischemia).

Septicemic form

New born foals, calves, young pigs upto 4 months old are highly susceptible ,Prominent depression.

Dullness and prostration,High fever 40.5-42 ° C and death occurs in 24-48hours.Nervous signs: incoordination and nysotagamus.

Acute enteric form

Adult animals are highly affected.,High fever,Severe fetid diarrhoea, dysentery and occasional tenesmus, Feces with putrid odour and contains mucus, blood, fibrinous casts, complete tubular casts of intestine,Polyarthritis in calves .

Complete anorexia and increase thirst,Increase heart and respiration rate and congestion noticed,Pregnant animals abort,Severe dehydration, toxaemia, loss of weight, weakness, recumbent, death in 2-5days.

Chronic enteric form

A severe outbreak,Occasional in cattle and horses,Calves intermittent or persistent diarrhoea,Occasional spots of blood, mucus and firm fibrous casts present,Loss of weight and emaciation.

Treatment

1.Fluid therapy-Oral or parenteral electrolytes must be administered to restore fluid balance because death usually results from dehydration.5% Sodium bicarbonate solution 5-8 L/400 kg bw I/V over a 2 hours period.Potassium chloride 30g in 8 L water twice daily
2.Binding of endotoxins/pathogens and their removal from the system*
3.Control of inflammatory response- Non- steroidal anti-inflammatory drugs, such as ketoprofen.
4.Broad spectrum antimicrobial-injectable antimicrobials like Ceftiofur 5mg/kg 1/m 24 hours is effective. Concentration should be maintained above MICs.Amoxicillin, ampicllin, Trimethoprim, sulphadiazine, sulfadimidine can be used.

Prevention & Control

1. Carrier animals should be identified, isolated and treated vigorously. Treated camels must be re-examined several times before there can be confidence that they are not carriers.

2. Feed/water supplies must be protected from fecal contamination(beware of pigeons and rodents).

3. Movement of animals around the farm should be restricted.

4. All persons should be aware of the health hazards of working with infected camels.

5. The use of vaccines (autogenous Salmonella vaccines are of greater value because they include the Salmonella strains involved in the outbreak. These vaccines should be used in problem herds and should be administered twice before parturition in order to provide protection against salmonellosis for the new- borns.

6.In calves The colostral immunity will last approximately 6 to 8 weeks. It is of no use to vaccinate newborn camelids because their immune system is still immature. So eliminating toxins on regular interval

***Toxiclean suspension @ 1-2 ml / kg body wt.(min 600 ml) 2-3 time a day for min. 3 days (with lukewarm water) as supportive treatment**

***Toxiclean suspension @ 0.5-1 ml / kg body wt.(min 300 ml) once in month (with lukewarm water) as prevention**

TOXI-CLEAN
ACTIVATED CHARCOAL, SIMETHICONE WITH SORBITOL SUSPENSION