

Enterotoxaemia in Sheep and Goat

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Introduction-

Clostridium perfringens type D causes enterotoxemia, often known as overeating or pulpy kidney disease. All age group (from one week to several years of age) of sheep and goats can be affected from this disease. There are two main instances when this sickness appears. The first happens when young animals suckle a plentiful supply of milk while grazing on better pastures or being fed high-quality hays and/or concentrates (grains). The second refers to the finishing or feedlot period, during which an animal is fed a heavy grain diet. These bacteria are typically present in soil and as part of the natural microflora in healthy sheep and goats' gastrointestinal tracts. These bacteria may rapidly grow in the animal's colon under certain conditions, creating significant amounts of toxins. The epsilon toxin generated by *C. perfringens* Type D is the most important toxin in the disease's production. Young animals are especially vulnerable. Lambs and kids are susceptible to sudden and high death rates. Although adult animals are susceptible to enterotoxemia, they develop tolerance after being exposed to modest doses of these poisons on a regular basis.

Factors Associated with Enterotoxemia Outbreaks-

Overgrowth of *Clostridium perfringens* type D in sheep and goat intestines, resulting in enterotoxemia, is more likely under the following circumstances.

- Excessive intake of milk or feed containing high concentrations of grain.
- A sudden change of feed
- A condition in which excessive volumes of undigested or partly digested food in the gut devitalizes the intestinal tract and allows for increased toxin absorption.
- while natural immunity is weakened, like while unwell, recuperating from an illness, or under stress
- When animals are infested with gastrointestinal parasites such as nematodes, cestodes (tapeworms), and coccidia.

- When the feed has a high proportion of carbohydrates (grains) and a low proportion of roughage
- A lack of natural or acquired immunity
- When the gastrointestinal tract's motility is diminished

Common Signs of Enterotoxemia-

Young animals are more likely to have the peracute form. It is distinguished by abrupt death, which happens around 12 hours after the onset of the disease's symptoms. Some kids or lambs may exhibit symptoms of central neurological illness, such as agitation or convulsions. In kids or lambs with neurological illness, sudden death can occur in minutes. In some cases, the animal may remain unwell for several hours, a day, or even longer before dying. Lambs and kids who are affected may exhibit neurological symptoms such as trembling, stiff limbs, and convulsive movements. Sometimes the animal falls comatose, with death taking place quietly. Diarrhoea may occur in various circumstances, most notably in goats. While the preceding symptoms are indicative of enterotoxemia, they can also be present in other illnesses that cause abrupt mortality, such as acute acidosis or grain founder, poliоencephalomalacia, listeriosis, acute pasteurellosis, tetanus, and blackleg. As a result, it is critical that the cause of such fatalities be identified quickly and appropriately. Some common clinical signs include:

- Loss of appetite
- Abdominal discomfort
- Profuse and/or watery diarrhoea that may be bloody

Diagnosis-

Clinical indicators, a history of unexpected death, and necropsy investigation are used to make the diagnosis. Positive identification of enterocolitis, anaerobic culture, and identification of *Clostridium perfringens* type D from clinical or necropsy specimens of infected animals can confirm the diagnosis. The occurrence of hyperglycemia and glucosuria in living or dead animals might strongly imply enterotoxemia. Enterotoxemia can be diagnosed using necropsy data. As a result, deceased animals or a complete collection of necropsy tissues, faeces, and so on should be sent to a diagnostic laboratory for confirmation of the clinical diagnosis. Watery contents, blood and fibrinous clots, and tiny ulcers on the mucosa can be identified during a postmortem inspection of the large and small intestines. On physical examination, the kidneys may have a soft pulpy consistency, and encephalomalacia within the brain may develop (typically only observed in sheep). On microscopic inspection, the proximal

tubules of the kidney may show rapid autolysis or generalised acute necrosis. Intestinal specimens may include microscopic ulcers and superficial mucosal necrosis, as well as many associated clostridial organisms and moderate suppurative inflammation. Clostridial organisms are frequently numerous in intestinal lumens, indicating clostridial enteritis/enterotoxemia. Because of the considerable development of clostridial organisms after the animal's death, advanced postmortem autolysis sometimes inhibits definite identification of enterotoxemia during necropsy. Specific *Clostridium perfringens* type D DNA testing tests (PCR) may be beneficial for confirmation of the diagnosis. An ELISA kit is also available for detecting many clostridial toxins, including epsilon toxin, as well as identifying the *C. perfringens* organism itself from intestinal contents.

Treatment-

The following therapies may be recommended:

- *Clostridium perfringens* C & D antitoxin as directed by the manufacturer (5 mL C & D antitoxin subcutaneously)
- Antibiotics, notably penicillin
- Orally administered antacids
- Anti-bloating medication
- Pain relieving
- Intramuscular thiamine (vitamin B1) to prevent or treat the encephalomalacia
- Supportive therapy such as intravenous or subcutaneous fluids and corticosteroids
- Probiotics after antibiotic therapy to encourage repopulation of the microflora in the GI tract

Prevention-

1. Vaccination-

Vaccines for preventing enterotoxemia in sheep and goats are commercially marketed. All animals (particularly young animals) in the herd should be vaccinated to limit the likelihood of disease transmission. Use vaccinations labelled for sheep and goats and follow the manufacturer's instructions. Check that the vaccination has been chilled, properly kept, and is not expired. Young animals should be vaccinated at four weeks and then again one month later. Adults, even bucks, should be immunized at least once a year. Animals that seem unwell should not be vaccinated, and good vaccination records should be kept for future reference. Caprine enterotoxaemia appears to be poorly effective by vaccination because the intestinal form of the



disease only partially depends on circulating *C. perfringens* toxin. Additional study is needed, especially on the **pathogenesis** and immunology of the illness to give more effective prevention measures for caprine enterotoxaemia.

2. Feeding Strategies-

Smart feeding techniques will also allow you to reduce the likelihood of this disease affecting your herd or flock. Because the causative bacteria proliferate in the intestine in response to abnormally high levels of starch, sugar, or protein, you must exercise caution when feeding certain feedstuffs containing high levels of these nutrients, such as grains, silage or haylage, lush pasture, milk or milk replacer, and protein supplements.

Divide the daily allowance for each animal into as many little feedings as possible (Three to four feedings), rather than offering such feeds in a single, huge meal. It's also a good idea to serve roughages like hay before these higher-risk meals, just to get the animals full on hay first. This helps to decrease the possibility of overeating on high-risk feedstuffs like grain. Consult your veterinarian to identify the best feeding approach for your specific condition.

Always make gradual feed modifications. If you intend to increase the amount of grain provided to a flock or herd, do so gradually over many days. This aids the stomach bacteria in adapting to the food, making it less likely that the harmful bacteria will have access to the nutrients.

To minimize excessive milk production that might threaten their kids, heavily milking mothers may need to be fed more roughage and less concentrate. Maintain a constant meal plan for lactating does and ewes to avoid changes in milk supply for their nursing progeny.

Conclusion-

Enterotoxemia is a very dangerous disease in lambs and kids, and responsible for high mortality in lambs and kids. Enterotoxaemia in sheep and goats is common around the world, however the illness in goats is little understood. The illness has three types: peracute, acute, and chronic, with diarrhoea being the primary clinical symptom of the acute and chronic forms. The predominant biochemical changes are hyperglycemia and glycosuria, and the condition is frequently characterized by haemorrhagic colitis at necropsy. Although the etiology of caprine enterotoxaemia is not fully understood, it is generally considered that the presence of *C. perfringens* type D in the small bowel, together with an abrupt shift to a carbohydrate-rich diet, is the key risk factor. Vaccination appears to be ineffective for preventing caprine

enterotoxaemia. Therefore, to avoid enterotoxaemia occurrences animals should not provide large amount of food to the animals.

