

Enterotoxaemia in cattle

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Introduction

Enterotoxaemia or pulpy kidney is an acute poisoning condition caused by the bacterium *Clostridium perfringens* type D. The bacterium multiplies in the intestine and produces a toxin that is absorbed into the body, eventually killing the infected animal.

Enterotoxaemia can affect cattle of all ages and is also seen in sheep, goats and other ruminants. The condition usually affects better conditioned animals.

Cause

The organism that causes enterotoxaemia is a normal inhabitant of the intestine but is usually present in low numbers. These organisms produce little toxin and, under normal conditions, are removed by normal gut movements or are inactivated by circulating antibodies.

Sudden changes in diet, grazing lush, rapidly growing pastures or young cereal crops, or heavy grain feeding (as in feedlots) enables the bacteria to multiply rapidly. Toxaemia occurs when the movement of food in the intestine slows or the organisms multiply and produce toxin faster than it can be removed or neutralised.

Signs

Often, affected cattle are simply found dead. There are no prior signs of sickness and no evidence of struggling.

More commonly, the acute cases survive for about 24 hours. Symptoms mostly relate to nervous changes like sudden bellowing and mania followed by convulsions. Adult cattle may develop severe bloat before dying, which usually occurs 1–2 hours after the onset of convulsions.

There is also a less acute form of the disease in which the animal becomes quite dull and docile and appears to be blind. However, if the eyeball or eyelids are touched, the animal may close its eyes. Most of these cases recover completely in 2–3 days.

Diagnosis

Diagnosis is based on: the history of the animal or herd, the characteristic short course of the disease, and, more often than not, the nervous symptoms described above. Post-mortem and laboratory evidence showing increased numbers of *C. perfringens* and toxin in the intestinal contents can assist diagnosis. The disease is harder to diagnose in cattle than in sheep.

Enterotoxaemia can be confused with rabies (not present in Australia), acute lead poisoning, grass tetany (hypomagnesaemia), tetanus, bacterial meningitis/encephalitis, bloat on post-mortem, polioencephalomalacia (especially in feedlots), sporadic bovine encephalomyelitis, acute phalaris poisoning and arsenic poisoning.

Treatment

Treatment is unsuccessful, due to the rapid course of the disease and the damage caused by the toxin.

Control and prevention

Prevention of enterotoxaemia requires the use of vaccines to promote immunity to the toxin and management practices to avoid the predisposing causes of the disease.

A vaccine containing a component protective against *C. perfringens* type D (pulpy kidney) is required.

After the initial course of two vaccinations 4–6 weeks apart, booster doses may be necessary at intervals as short as 90 days, depending on the level of risk. Booster vaccinations should be given just prior to the expected flush of feed or other expected risk period, such as the use of



concentrate feeds. The vaccine is given subcutaneously, preferably on the side of the neck.

Consult your veterinarian for advice concerning your particular herd's situation.

Enterotoxaemia and bloat

Bloat is caused when gases from fermentation are trapped in a stable foam within the rumen. This generally occurs when cattle graze young, rapidly growing pastures with a high legume content, such as clover or lucerne. Bloat, however, may also occur on young lush grasses, particularly oats and barley.

While bloat and enterotoxaemia are quite separate diseases, they are often found together, due to their association with grazing on similar pastures. The post-mortem picture for each is also quite similar.

There are numerous farmer reports of the value in using enterotoxaemia vaccine for the control of bloat. While firm evidence may be lacking, vaccination of cattle where bloat is a problem will do no harm and may decrease losses among cattle that may be from enterotoxaemia.

Summary

Enterotoxaemia is an acute intoxication due to the absorption from the intestine of toxin produced by the rapid multiplication of *C. perfringens* type D. Rapid feed changes and grazing lush, young pastures may predispose stock to the disease.

Vaccination is a cheap and effective insurance against losses. However, the period of protection is short and booster doses may be necessary at short intervals to provide complete protection.

Recommended 5-in-1 vaccination program for cattle

Calves

One month before marking (10 weeks old). Second vaccination at marking.

Cows

Annual booster before calving.

Bulls and steers

Annual booster.

Heifers

Booster as yearlings. Booster before calving. For cattle which may not have been vaccinated (for example, recently purchased stock): vaccinate as soon as possible, with a second vaccination 4–6 weeks later. Annual booster vaccinations.

Enterotoxaemia

Remember, protection is short. Additional booster vaccinations are needed for cattle in high-risk situations. Use vaccine with an enterotoxaemia component like 5-in-1 vaccine at least 14 days before the risk period.

If leptospirosis is a problem use a 7 in 1 vaccine.

Attention

Always keep vaccines cool but do not freeze.

- Inject under the skin of the neck and not into the muscle.
- Keep equipment clean and change needles regularly.
- Follow instructions on the label.

Further information

Further information on enterotoxaemia and its control can be obtained from your veterinary practitioner, District Veterinarian or NSW Department of Primary Industries Veterinary Officers.

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