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Pathology

Following injury to the mucosal lining of the intestines, malabsorption, maldigestion and loss of protein and fluid occurs. A secretory component to the diarrhoea contributes to further electrolyte and fluid loss. Infections caused by *Salmonella dublin* can have respiratory signs.

Factors that adversely affect the normal enteric flora tend to favour the growth of salmonella, which are often present in very low numbers in the gastrointestinal flora of normal or carrier animals. These animals can infect their calves.

Birth, transport, concurrent disease, and feed or water deprivation, which in turn reduces immunity and/or can cause shifts in the enteric flora, can cause a proliferation of salmonella. In calves, antibiotics can cause shifts in the enteric flora and cause the proliferation of salmonella.

Once a carrier cow is stressed, large numbers of salmonella bacteria are shed and calves, especially naive ones, are at risk. This risk is magnified if crowding, poor sanitation, house location, use of common feeding implements, concurrent disease or stress is present. Calves with persistent BVD virus infection are at a higher risk of succumbing to salmonellosis.

Clinical signs

Calves with salmonellosis typically have fever and diarrhoea. Fresh blood and mucus in the faeces are also common. In addition, if the salmonella infects a certain part of the body, swollen leg joints and lameness (arthritis), nervous signs (meningitis), or pneumonia may be seen. Salmonellosis can occur sporadically in individual animals or endemically. In calves it typically occurs between 2-8 weeks of age. If newborn calves deprived of their colostrum are brought together at one location from different farms, salmonellosis may appear as early as three days of age.

A great variation in clinical severity occurs because of variation of the virulence and infecting dose of the salmonella and the age, immune status and concurrent diseases in the calf.

Young calves have a greater risk of death because of septicaemia and fluid loss via diarrhoea, which leads to severe dehydration and electrolyte imbalances.

The peracute form of the disease may cause death before diarrhoea is seen. These calves have an abdominal distension as a result of rapid fluid loss into the small and large intestines and sometimes the stomach. They often die from a secondary bacteraemia and endotoxaemia, for example caused by *E. coli*.