Necrotic Enteritis

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Species

Necrotic enteritis (NE) s a bacterial disease of the intestinal tract that occurs in a variety of species. It is primarily a disease of commercial broiler chickens, but also occurs in turkeys, and wild and domestic waterfowl.

Status in Canada

Necrotic enteritis is one of the most significant diseases of commercial broiler chickens and is becoming more important in commercial turkeys. It is less common in domestic waterfowl and occasional die offs of wild waterfowl have been reported associated with supplementary feeding of corn or grain during the winter.

Etiology

NE is caused by the bacterium *Clostridium perfringens* (types A and C) that can produce a range of powerful toxins when it overgrows in the gut. The term necrosis means cell death. Necrotic enteritis is a condition where there is massive death of the cells lining the intestinal tract.

"pasting" of the vent of a bird with diarrhea from necrotic enteritis. Often chickens may die before any diarrhea is observed.

The Disease

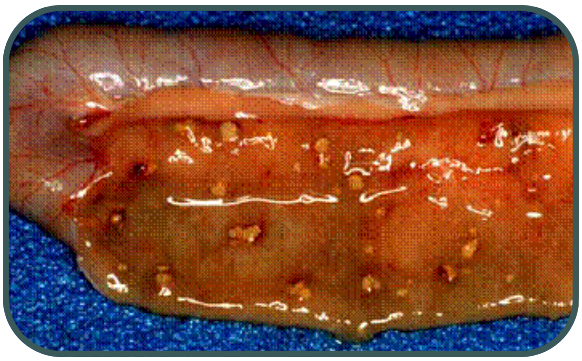
Necrotic enteritis causes mortality in broiler chickens 2 weeks of age and older. In commercial birds the disease is most common around 3 weeks of age at the time birds are switched from starter to grower rations.

C. perfringens bacteria are a normal part of the intestinal bacterial flora. Any event that changes the normal contractions of the intestinal tract may allow this bacteria to multiply. If anaerobic (low oxygen) conditions and substrate for bacterial growth are correct, the proliferating bacteria produce powerful necrotizing toxins that destroy the cells of the intestine. Feed changes, a switch from a high protein to a lower protein ration, feed high in wheat or fish meal, or concurrent infections with coccidia all predispose to this disease.

Affected birds are depressed, lethargic and often have diarrhea. More often they are found dead.

The main changes at necropsy are found along the mucosal surfaces of the small intestine. These can range from small erosions or ulcerated areas to extensive necrosis and formation of what looks like a thick "membrane" of dead tissue coating the intestinal surface.

The microscopic changes begin with superficial damage to the surface enterocytes and this progresses to severe necrosis of the entire intestinal villi. Large numbers of gram positive bacteria are usually present within the necrotic debris.



Opened intestine from a broiler chicken with necrotic enteritis. The intestinal wall is thin, the lumen contains blood-tinged fluid and there are white areas of ulceration.

Opened intestine from a broiler chicken with severe necrotic enteritis. The surface of this intestine is covered with a thick "membrane" of dead tissue giving it a teri-towel" appearance.

A diagnosis is made by the presence of typical gross and microscopic lesions and confirmed by culture and/or identification of the bacterial toxins.

Diseases that might look like this would include infection with certain species of coccidia like *E. brunetti*, acute Salmonella infection and possibly ulcerative enteritis (caused by a separate type of bacteria *Clostridium colinum*)

Treatment

Affected flocks can be successfully treated with a variety of antibiotics including penicillin, ampicillin, lincomycin or zinc bacitracin. If coccidia are a factor, the use of anticoccidial drugs may be helpful. The choice of medication and the decision on whether or not treatment is necessary should be done in consultation with your veterinarian.

Prevention

Many commercial chicken producers use routine antimicrobial medication to prevent NE. Antibiotic use is generally targeted at specific times where the disease is predictable such as just prior to the change of ration at 3 weeks of age. Good anticoccidial programs are also important in reducing NE and certain anticoccidial drugs like the ionophores have some additional antibacterial effects.

However there is growing global concern about the routine use of antibiotics in agriculture and there is increasing pressure to prevent and manage necrotic enteritis using other means. These include the use of coccidiosis vaccines, careful use of certain dietary ingredients like high wheat content that may predispose NE, maintaining good litter quality including keeping litter moisture content as low as possible, decreasing bird densities in the barn to reduce bacterial load in the litter, and good barn ventilation. There is some indication that competitive exclusion using probiotics may have a beneficial effect and some producers are experimenting with other methods of control such as using acidifiers in feeds or water (to change the pH in the intestine and reduce growth of clostridial.

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