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Colisepticaemia - IV

Systemic forms of colibacillosis

As well as localised forms of colibacillosis there are various forms of systemic colibacillosis. Colisepticaemia arises when a pathogenic strain of E. coli of some virulence enters the bloodstream, rapidly spreads around the body and establishes infection in a variety of internal organs. Colisepticaemia can be seen as an acute septicaemia, a sub acute polyserositis (inflammation of internal surfaces, such as the peritoneum, air sacs, pericardium or heart sac and the surface of the liver), or a chronic granulomatous inflammation. Granulomas are nodules of inflammatory tissue.

Neonatal colisepticaemia

This form of colisepticaemia typically afflicts chicks within two days of hatching and mortality remains higher than normal for two or three weeks. Stunting is a real consequence of neonatal colisepticaemia and this will necessitate a thorough cull if its consequences are not to come home to roost later in life or at processing. Such birds can have complications such as osteomyelitis (bone marrow infection) or arthritis as sequels to their earlier infections. Typically, affected chicks initially show darkened lungs and enlarged spleens (splenomegaly) and this picture progresses into one of fibrinous pericarditis, pleuritis, peritonitis and air sacculitis.

Respiratory colisepticaemia

In turkeys and chickens the most common form of colisepticaemia is that which has its origins in E. coli that access the bloodstream after crossing the damaged respiratory tract lining or epithelium. Common causes of this damage include infectious bronchitis, avian pneumovirus infection, Newcastle disease, administration of live respiratory disease vaccines, mycoplasma infection and ammonia. It has been shown that five days after the administration of live Newcastle disease vaccine by the respiratory route the clearance of E. coli administered as an aerosol by the same route is significantly reduced. It has also been shown that exposure to ammonia or airborne dust causes deciliation of the upper respiratory tract of birds. The cilia are microscopic hairs that line the upper respiratory tract and are an important part of the defence mechanisms of the respiratory tract. The disease that is produced is often referred to as chronic respiratory disease (CRD) or air sac disease. Interestingly, the strains of E. coli involved often differ from the strains in the digestive tracts of afflicted birds. The lesions of this form of colisepticaemia are tracheitis, bronchitis, pneumonia, air sacculitis, pericarditis and peritonitis. As infection progresses the air sacs thicken and many of the pathologies previously cited progress into their fibrinous forms, such as fibrinous pericarditis as fibrin and inflammatory detritus amasses. Turkeys commonly have a pneumonia and/or pleuropneumonia, whereas chickens more often than not have a pleuritis (inflammation of the pleura or outer surface of the lung) and/or a pleuropneumonia with not so much lung involvement. With this form of colisepticaemia most of the mortality occurs in the first five days

Enteric colisepticaemia

This form of colisepticaemia is seen in turkeys and rarely in chickens as a sequel to something that has damaged the lining of the digestive tract, such as haemorrhagic enteritis in turkeys. In these cases the strain of E. coli associated with the lesions of colisepticaemia in the body are the same as those found in the birds' digestive tracts. At the outset, the main lesion is one of liver congestion or greening but within a few days afflicted birds develop internal lesions similar to those seen in respiratory colisepticaemia.

Colisepticaemia in laying birds

Most colisepticaemias are seen in younger birds but a noticeable exception to this is in layers where an acute colisepticaemia is quite frequently seen, especially at the onset of lay. Afflicted birds can die suddenly. Typically on-going mortality is elevated and some pasted vents are seen. Internally perihepatitis, pericarditis and peritonitis are seen and free yolk in the abdominal cavity is not uncommon. The precise pathogenesis of this entity is not known but the stress of birds coming into lay is thought to be a key factor. Risk factors for colisepticaemia in layers include proximity to other poultry farms and high stocking densities. Treatment is via the use of an appropriate antibiotic or chlorination/disinfection of the drinking water.

Colisepticaemia in ducks

The presentation of colisepticaemia in ducks differs from that in chickens and turkeys. Instead of a fibrinous pericarditis, peritonitis and airsacculitis the picture in ducks is characterised by a moist, granular pericarditis, peritonitis and airsacculitis. Typically the liver is enlarged (hepatomegaly), dark and bile stained and there is a splenomegaly. It should be noted that in the differential diagnosis of colisepticaemia of ducks Reimerella anatipestifer infection should be seriously considered. This condition occurs at all ages and appears to be farm, rather than hatchery, related.