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Poultryhealth BYTES
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023 – M. synoviae

Introduction

This mycoplasma often manifests itself as a subclinical upper respiratory tract infection but when combined with other agents, such as Newcastle disease virus, infectious bronchitis, E. coli or avian influenza, air sac lesions might be seen.

M. synoviae can also cause an infectious synovitis, although this form of the disease has become less frequent in recent years.

The disease

The infectious synovitis form of the disease was typically seen between four and 12 weeks of age but since the 1970s this form of the disease has been in decline and the respiratory form of the disease has dominated. The disease occurs in broilers, commercial layers and turkeys. The major breeders are mainly free of M. synoviae but it is still quite frequently found in commercial broiler breeders in many parts of the world.

In addition, the infection has been found to naturally occur in guinea fowl, ducks, geese, pigeons, quail, partridges and pheasants.

Chronic infections can persist in a flock for the duration of its life and this may not be preceded by an acute infection and may be hard to detect clinically. In broiler breeders sometimes the disease is first suspected following a routine blood test yielding positive results.

Lateral transmission occurs easily and is often quite rapid. Transmission is via the respiratory route and it is not unusual for 100% of a flock to become infected. Vertical transmission occurs. When a breeder flock becomes infected vertical transmission peaks 4-6 weeks later and then declines or often stops. The incubation period is typically 11-21 days.

Clinical signs

In the infectious synovitis form of the disease the first sign is usually a reluctance to walk although pale combs and depressed growth rate are seen. As the disease progresses the feathers ruffle and the joints swell. Typically birds can not reach feed and water so become dehydrated, emaciated and if not culled die.

If birds recover the synovitis might persist for life.

Air sac infection can occur at any age but is often a cause of condemnation in broilers. This condition is most common in winter. The condition is more common in the progeny of positive broiler breeder flocks.

In turkeys lameness is the most common clinical sign and this is often accompanied by a sternal bursitis. Typical mortalities for the synovitis form are 5-20% in chickens and 1-20% in turkeys. For the respiratory form it is <1-10% but typically 90-100% of the flock are affected.

Post mortem findings

In the synovitis form the synovial membranes of the joints, tendon sheaths and sternal bursa and the spleens and livers are often enlarged. As the disease progresses the fluid synovial exudate progresses into a cheesy or caseous exudate and the cartilage on the joint surfaces thins and becomes pitted. Respiratory tract lesions are confined to the air sacs.

Diagnosis

Diagnosis can be confirmed by the isolation and confirmation of M. synoviae. However, isolation is not always easy from chronic cases where blood testing (rapid plate test or ELISA) can play an important role in confirming the diagnosis.

Differential diagnosis

For the synovitis form this includes bacterial causes of synovitis or arthritis such as Staphylococcus aureus, E. coli, pasteurella and salmonella and M. gallisepticum. Viral arthritis needs to be considered.

For the respiratory form M. gallisepticum and the various respiratory pathogens warrant serious consideration.

Treatment

Ideally breeder flocks should be M. synoviae free. M synoviae infections will respond to tetracyclines (especially, chlortetracycline), fluoroquinolones, tiamulin, tilmicosin, lincomycin, spectinomycin and tylosin.

An inactivated oil emulsion bacterin has been used with some success and a live temperature sensitive M. synoviae vaccine has also been successfully used in Australia and some other countries.