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MAREK'S DISEASE - LEUKOSIS

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During the past few years there have been many significant new findings concerning the avian leukosis complex. Until recently these diseases were termed visceral leukosis, neural leukosis, or avian lymphomatosis. Recent research work in England and this country has clarified the cause of these diseases and they can be divided into two distinct diseases. These two diseases now known as Marek's disease and lymphoid leukosis, are caused by two different viruses. Today, the tumors and associated conditions caused by these diseases are the major disease problems of broiler and laying flocks. The loss in the United States from death and condemnation at the processing plant, is estimated to be in excess of 200 million dollars annually.

Marek's Disease

This virus disease is usually in, but not restricted to young chickens. It usually occurs before sexual maturity, but can occur in adult chickens. Marek's disease is caused by a herpesvirus.

Two forms of this disease occur:
1. Uncomplicated nerve and skin lesions. These are inflammatory swellings in the nerves and skin. The nerve lesions may produce paralysis.
2. Tumor-like lesions of the kidney, liver, spleen, ovaries, muscle, and heart. This form cannot be differentiated from leukemia on post mortem examination.

Transmission of Marek's disease is by direct contact. It is a highly contagious disease and spreads rapidly throughout a poultry house. Egg transmission of this disease to chicks is probable but as yet unconfirmed.

Relationship of Marek's disease to coccidiosis and other diseases: This disease results in the production of a large number of lymphoid cells (white blood cells) which are immature. This type of white blood cell is important in disease resistance in its mature form. When Marek's disease is present the bird is less resistant to other diseases. Because of this, coccidiosis is often seen in birds with Marek's disease. Air sacculitis, enteritis, and other infections can also occur simultaneously with this disease. This sort of situation can, of course, add to the monetary loss attributable to Marek's disease.

Lymphoid Leukosis

This disease does not usually occur in young chickens, but is seen mostly in sexually mature birds over 16 weeks of age. A myxovirus causes this disease. Visceral tumors are the result of this virus infection. These tumors affect the liver, spleen, ovaries, kidney, intestine, and other visceral organs. The lesions look the same as those caused by Marek's disease, therefore an accurate diagnosis is difficult.

Lymphoid leukosis is an egg transmitted disease and spreads very slowly from bird to bird.

As with Marek's disease, several other infectious diseases can also affect birds with leukosis and contribute to losses in the flock.

Symptoms

One of the most prominent signs of Marek's disease is lameness or paralysis of one or both legs. Acute deaths without any observable signs can occur however. With leukosis, the birds may lose weight and die and no other external signs will be noticed.

Other than leg paralysis there are no definitive symptoms in either condition. The diagnosis is usually made on post mortem examination of dead birds. Post mortem findings vary from no gross lesions to many tumors throughout the body cavity. The liver and spleen as well as other organs
may be quite enlarged in both conditions. In lymphoid leukosis the nerve
tissue is not involved but this must be determined microscopically.

**Diagnosis**

It is important to get an accurate diagnosis so that any infectious
diseases co-existing with either Marek's disease or leukosis can be determined.
It is usually necessary to get a laboratory diagnosis to differentiate these
diseases.

**Prevention and Control**

Both lymphoid leukosis and Marek's disease are incurable so preventive
measures offer the only hope of controlling these diseases. Regardless of
when the tumors appear, infection begins in the first two to four weeks of
life. Our limited knowledge leaves man as well as animal suspect in carrying
Marek's disease. The best advice at the moment is to practice strict isolation
of all young chicks and hopefully, avoid contact with the viral agent. Recent
isolation and characterization of the virus causing Marek's disease has
stimulated a great deal of research into the development of a vaccine.
Hopefully an effective vaccine can be developed soon.