Marek's Disease – Leukosis

Cooperative Extension South Dakota State University

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Marek's Disease—Leukosis

Cooperative Extension Service: South Dakota State University and U. S. Department of Agriculture
Marek's Disease—Leukosis

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The tumors and associated conditions caused by diseases in the avian leukemia complex 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.

Until recently these diseases were termed visceral leukosis, neural leukosis, or avian lymphomatosis. Recent research in England and this country has clarified the cause of these diseases. They can be divided into two distinct diseases now known as Marek's disease and lymphoid leukosis caused by two different viruses.

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 leukosis on postmortem examination.

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

Relationship to other diseases

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

LYMPHOID LEUKOSIS

This virus infection usually does not occur in young chickens, but is seen mostly in sexually mature birds over 16 weeks of age.

A myxovirus is the cause of lymphoid leukosis. Visceral tumors are the result. These tumors affect the liver, spleen, ovaries, kidney, intestine, and other visceral organs. Since the lesions look the same as those caused by Marek’s disease, 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 simultaneously can 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. Death without any observable signs can occur, however. With leukosis 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 usually is made on postmortem examination of dead birds. Postmortem findings vary from no gross lesions to many tumors throughout the body cavity. In both conditions the liver and spleen as well as other organs may be quite enlarged. The nerve tissue is not involved in lymphoid leukosis, 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. A laboratory diagnosis is usually necessary to differentiate these diseases.

PREVENTION AND CONTROL

Lymphoid leukosis and Marek’s disease both are incurable so preventive measures offer the only hope of controlling these diseases. Regardless of when tumors appear, infection begins in the first two to four weeks of life. Man, as well as animal, is suspect in carrying Marek’s disease. The best prevention is to practice strict isolation of all young chicks and avoid contact with the viral agent.

Recent isolation and characterization of the virus causing Marek’s disease has stimulated research in the development of an effective vaccine.
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