Utah Veterinary Diagnostic Laboratory Mystery Case

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This case is loosely based on cases that have been received at the Utah Veterinary Diagnostic Laboratory, Spanish Fork.

A 10-month-old hen is submitted for necropsy. She is from a small flock of backyard chickens, five birds in total. Clinical signs noted by the owner include limping on the left leg, drooping of the left wing, and she had been off food and drink for 10 days prior to death and had stopped laying eggs for the previous few days. The bird has lost weight in the previous couple of weeks according to the owner. Necropsy findings are as follows. The right pectoral muscle is swollen and pale and a large tan, firm, irregularly shaped mass replaces much of the normal skeletal muscle. Yellow gelatinous fluid is in the coelomic cavity and distends the pericardial sac which is thickened and white (Figure 1). The heart is enlarged and much of the cardiac muscle is replaced by tissue similar tissue to that in the pectoral muscle. Also, the spleen is enlarged and the kidneys are swollen and pale. In addition, the wall of the proventriculus is thickened with a tan-to-white, firm material. Finally, several variable-sized tan, firm masses are in the mesentery and, in some cases, expand into the intestinal wall. No other significant gross lesions are detected. Another hen from the same flock is submitted the following day and has a very enlarged, friable liver with multiple pale areas throughout





Case Summary

Diagnosis: Marek’s Disease

In this case, the young hens both had Marek’s disease. Histologic lesions included neoplastic lymphoid cells (lymphoma) infiltrating multiple organs (heart, spleen, liver, proventriculus, kidney, wall of intestine, skeletal muscle). Lymphoma in chickens is usually due to Marek’s disease, lymphoid leukosis, or reticuloendotheliosis, all viral diseases. We mostly see Marek’s disease in young birds in backyard chicken flocks. In cases of Marek’s disease, the sciatic nerves and brain often have lesions. This helps distinguish the disease from the two other viruses noted here. The cause of Marek’s disease is Gallid herpesvirus 2. The virus affects lymphoid cells and causes tumors in various organs. It is the most commonly diagnosed disease in backyard chickens. Birds that become infected are carriers for life and may exhibit mild to severe clinical signs or may die. Some birds are asymptomatic. The virus is spread mostly by feather dander. It is highly contagious and the environment in which the birds are living will be contaminated with the virus. Other means of transmission include feces and blood. The virus is hardy. It can survive in the poultry environment for many months. Clinical signs typically seen include paralysis of the wings and/or legs, weakness, weight loss, eye changes (the iris of the eye becomes gray), and sometimes sudden death.

Diagnosis is often based on necropsy findings (particularly lesions in sciatic nerves and brain) and history. There are molecular diagnostic tests (PCR) available at some poultry diagnostic laboratories that can distinguish Marek’s disease from lymphoid leukosis. They are quite expensive tests. Please contact me at Jane.Kelly@usu.edu or 801-798-5435 for more information about the tests.

In cases of lymphoid leukosis, there may be tumors in the bursa of fabricius. This is not generally a feature of Marek’s disease. Also, Marek’s disease can occur

in very young chicks (3 weeks of age) and lymphoid leukosis tends to occur in birds at least 14 weeks of age. Reticuloendotheliosis is rare but may look similar to Marek's disease.
If a flock is diagnosed with Marek's disease, new additions to the flock should be housed in a completely different pen at some distance from the affected flock (the virus can be carried in dust and on equipment and clothing). To clean an infected pen, it must be completely cleared of all organic material (dust, feathers, soil, feces, food), cleaned and then disinfected with a 10% chlorine solution applied to floors, roosts, feed and water containers, cages, etc. If possible, leave the cleaned and disinfected premise empty for as long as possible before introducing new birds.

There is no effective treatment for Marek's disease.

Vaccination at the hatchery decreases clinical signs and tumor formation but does not completely prevent infection. Vaccines are available for small flock owners to use themselves but may only be available in large quantities. Vaccines must be stored properly as recommended on the label. Concurrent infections, parasitism, and environmental stress may reduce vaccine efficacy.

References

- Marek's Disease Extension Fact Sheet. June 2013, Sarah Tilley, David D. Frame, Mark C. Bland. Online at: tinyurl.com/MareksDisease-USUExtension
- Color Atlas of Diseases of the Domestic Fowl & Turkey. 1985, C.J. Randall
- The Merck Veterinary Manual, 10th Edition. 2010, "Poultry, Neoplasms", pages 2449-2457