



Diagnostic Exercise

From The Davis-Thompson Foundation*

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Answer Sheet

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1-Microscopic description: Severe, multifocal to coalescent pleomorphic mononuclear cell infiltration (PMCI) was found mainly in perivascular, particularly periarterial, areas in all three pectoral, thigh and leg skeletal muscles (SM) samples. The PMCI was composed of variably sized neoplastic lymphocytes and macrophages. The neoplastic lymphocytes show well delimited cellular borders, round nuclei with dense chromatin, and scarce cytoplasm. The index of mitotic figures was low. Several skeletal myofibers that were adjacent or surrounded by the PMCI were separated in bundles and/or showed degenerative and/or necrotic changes.

2-Microscopic morphologic diagnosis: Skeletal muscle: lymphoma.

3-Etiologic diagnosis: Herpetic lymphoma.

4-Etiology: *Gallid herpesvirus 2* (serotype 1).

5-Name of the disease: Marek's disease.

6-Differential diagnoses: Sarcocystosis, wooden breast/white striping, vitamin E and/or selenium deficiency, lymphoid leukosis.

Macroscopic images:



Figure 1: Mixed-breed, adult pet chicken. Note the severe atrophy and numerous, well-demarcated, variably sized, whitish streaks to nodules on the surface of the pectoral muscle.



Figure 2: Mixed-breed, adult pet chicken. Note numerous, well-demarcated, variably sized, whitish streaks to nodules on the surface of the thigh muscle.

Microscopic images:

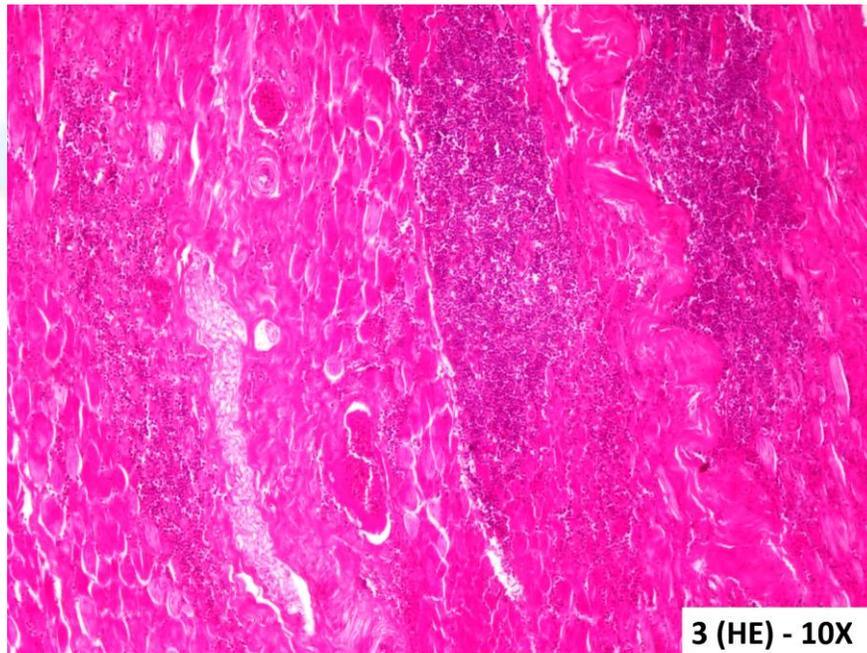


Figure 3: Mixed-breed, adult pet chicken. Thigh skeletal muscle. Note multifocal to coalescing pleomorphic mononuclear cell infiltration separating skeletal muscle bundles in perivascular areas. Hematoxylin and eosin (HE).

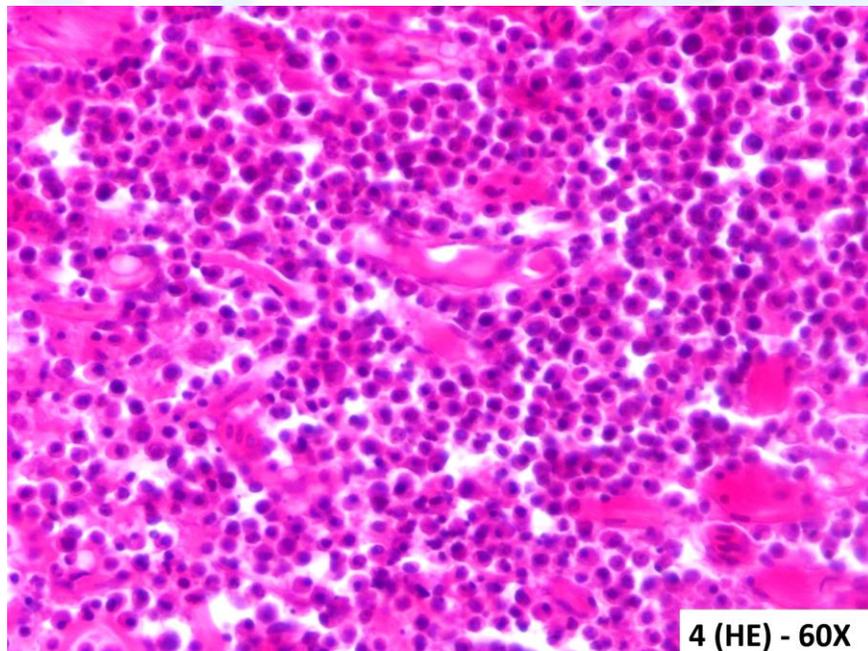


Figure 4: Mixed-breed, adult pet chicken. Thigh skeletal muscle. Note pleomorphic mononuclear cell infiltration due to variably sized lymphocytes and macrophages. Intralesional myofibers have degenerative and necrotic changes. Hematoxylin and eosin (HE).

Discussion: Marek's disease (MD) is a common lymphoproliferative entity of young chickens worldwide. MD is caused by *Gallid herpesvirus 2* (serotype 1) representing one of the leading diseases of commercial, backyard and pet chickens, which in the absence of vaccination can produce high mortalities. Marek's disease virus (MDV) can be classified into four pathotypes: mild, virulent, very virulent and very virulent plus strains. MD is characterized by the presence of peripheral nerve lymphomas and visceral lymphomas affecting a wide range of organs. The provided case revealed lymphomas composed of PMCI affecting the vagus and sciatic peripheral nerves, pectoral, thigh and leg SMs, proventriculus, gizzard, heart, lungs, liver, spleen and kidneys.

MD also represents an immunosuppressive disease that can predispose to other viral, bacterial or fungal infections in chickens. The provided case, however, showed no evidence of secondary infections.

The current literature offers a limited number of reported cases describing SM lymphomas caused by MDV infection in chickens. SM lymphomas were mainly described as variably sized, whitish nodular lesions affecting the pectoral muscle of pure-bred chickens. Our laboratory has recently published an unusual gross presentation of a pectoral muscle lymphoma due to MD, which grossly mimicked *Sarcocystis*-like, rice-grain sized SM lesions in a mixed-breed, adult backyard chicken. The case presented herein involved all three pectoral, thigh and lower leg muscles, and showed whitish streaks to nodular lesions caused by MDV infection, but had similar microscopic findings with the previous case.

The MDV non-vaccinated status of the contributed case is a common feature of backyard, fancy and pet chickens. The importance of the vaccination against MD and other preventative measures are often underestimated by the owners of non-commercial chickens. Thus, the implementation of educational programs could improve the health status of non-commercial flocks in order to prevent the most common diseases such as MD.

References:

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*The Diagnostic Exercises are an initiative of the **Latin Comparative Pathology Group (LCPG)**, the Latin American subdivision of The Davis-Thompson Foundation. These exercises are contributed by members and non-members from any country of residence. Consider submitting an exercise! A final document containing this material with answers and a brief discussion will be posted on the CL Davis website (http://www.cldavis.org/diagnostic_exercises.html).

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