Case #: 53  Month: February  Year: 2015

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Clinical History: Adult hen with a history of sudden death.

Gross and/or microscopic image:

Follow-up questions: Morphologic diagnosis(es), name the condition, and proposed pathogenesis.
Answers

Morphologic diagnoses:

1–Liver, rupture with severe hemorrhage, multifocal to coalescing

2–Coelomic hemorrhage (hemocoelem/hemoperitoneum)

3–Liver, fatty change, diffuse

Name the condition: Fatty liver hemorrhagic syndrome (FLHS)

Potential pathogenesis/contributing factors:

1–Consumption of a high energy diet

2–Deficiency of antioxidant/lipotropic agents such as vitamin E, vitamin B12, biotin, methionine or choline combined

3–Lack of physical activity

4–Aflatoxin in laying hen diets

Microscopic findings: Variously-sized, single or multiple, round, well-defined, smoothly contoured vacuoles that displace the nucleus with hepatocellular dissociation, multifocal foci of hemorrhage and fibrin deposition (Figures 1 and 2). Disorganization and disruption of reticular fibers (reticulolysis) was evident on Gomori’s stained sections (Figure 3).
Fig. 1. Focally extensive, delimitated hemorrhage. H&E. 10X (inset 2X).

Fig. 2. Diffuse moderate vacuolization of hepatocytes with multiple random foci of hemorrhage and disorganization of hepatic cords.
Comments: FLHS is a sporadic disease with worldwide distribution that occurs primarily in caged layers. Outbreaks are most common in high-producing flocks during hot weather. The cause of this syndrome is still not completely understood although it is believed that nutritional, genetic, hormonal and environmental predisposing factors are involved. Obesity or a very good body condition seems to be almost always involved. The suggested pathogenesis involves disruption of hepatic cords associated with vacuolar changes in the hepatocytes. This is supposed to induce the hemorrhage typically observed in this syndrome. It has also been proposed that the excessive lipid metabolism taking place in overfed laying hens may facilitate oxygen radical-mediated destruction of the reticulin fibers in the liver.
Recommended Literature

Hemorrhagic syndrome in the Backyard Chicken: A retrospective Histopathologic Case Series.

System, Fresno Branch. School of Veterinary Medicine, University of California, Davis.

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