Diagnostic Exercise

From The Davis-Thompson Foundation*

Case # **126**; Month: **July**; Year:**2023**

Answer sheet

Title: Quail ulcerative enteritis

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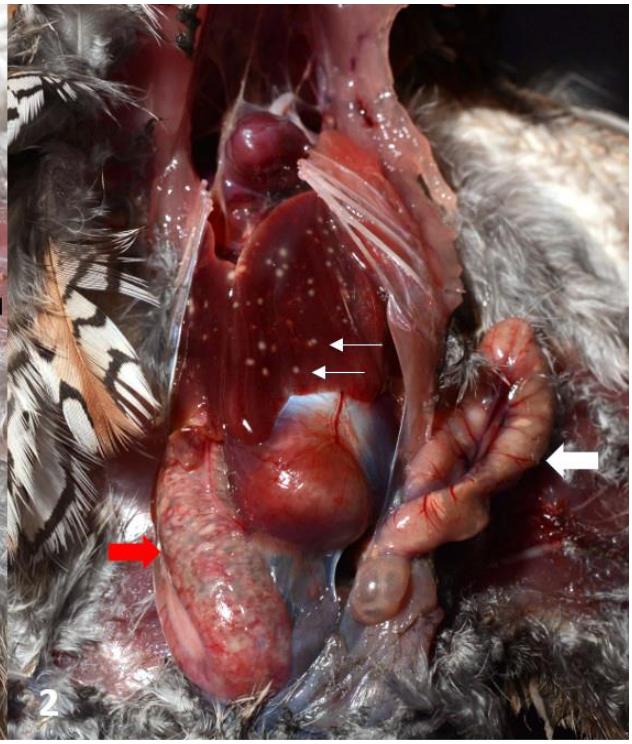
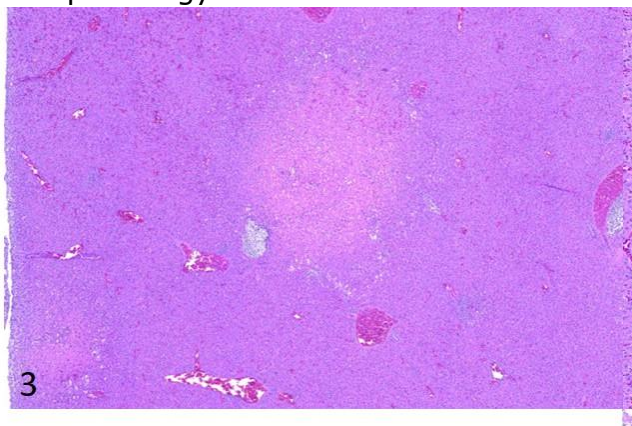
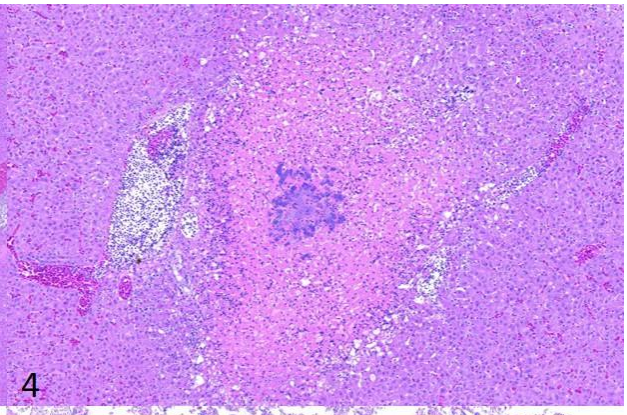
History: Three juvenile quails were submitted for necropsy, with history of weight loss and lethargy of one-week duration. They have lost about 60 out of 250, and 40 died in the last 48 hours. These birds were healthy when received.

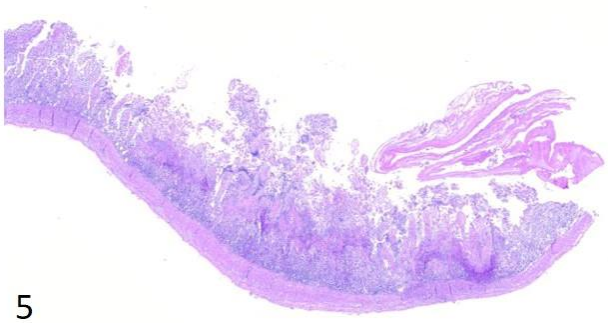
Necropsy findings: All birds were thin, with small deposits of adipose tissue in the celomic cavity. In all, multifocal to coalescing irregular, white to gray, slightly firm, well demarcated plaque-like lesions were observed in the duodenum and jejunum from the serosa (Figs. 1 and 2, black and white thick arrows). In one of them, these plaques coalesced and conferred a granular appearance to the serosa of the duodenum (Fig. 2, red thick arrow). In two birds, multifocal white pin point lesions were identified in the liver (Fig. 2, thin arrows). Samples of the intestine and liver were collected for histopathology (Figures 3-6) and microbiology.

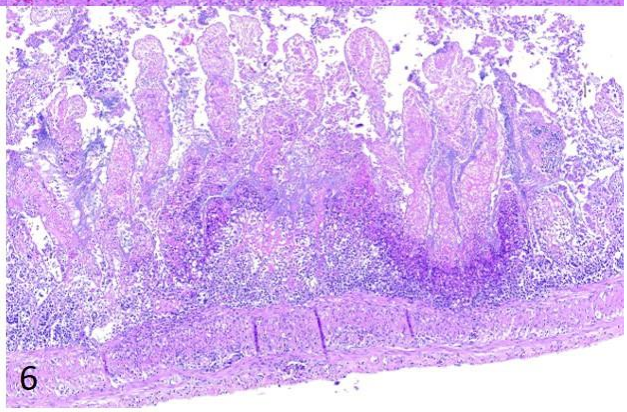


Histopathology:









Histologic description:
Liver (Figs. 3 - 4): There are multifocal, random, areas of acute hepatic necrosis, some of them containing numerous bacillary bacteria in the center (Fig 4), together with small numbers of heterophils.
Small intestine (Figs. 5 - 6): There is multifocal, transmural, ulcerative and necrotizing enteritis. The mucosa is necrotic and covered with innumerable bacillary bacteria. There is a thick inflammatory band containing heterophils and macrophages demarcating viable and necrotic tissue. Similar inflammatory infiltrates are also present in the other layers of the intestine. In one bird, numerous apicomplexan oocysts were identified in the lumen of the intestine (not shown).

Microbiology results:
Clostridium colinum was isolated from the anaerobic culture of the liver.

Morphologic diagnosis:
1. Ulcerative enteritis, transmural, multifocal to coalescing, acute.
2. Necrotizing hepatitis, multifocal, acute with intralesional bacterial colonies composed of bacilli.

Etiology: *Clostridium colinum*
Name the disease: Quail ulcerative enteritis.

Comments:
Clostridium colinum is the causative agent of "ulcerative enteritis", a disease of quail and other game birds, young chickens, turkeys, and less commonly other avian species. It is a gram-positive anaerobe bacterium and the mechanisms of its virulence are incompletely understood. The disease was first reported in the United States in 1907 and first described in quail, hence it is often referred to as 'quail disease.' Clinical disease, characterized by diarrhea (watery to hemorrhagic), lethargy, or sudden death, is most commonly seen in young birds (4-12 weeks old) but can occur less commonly in adults. Predisposing factors include coccidiosis (seen in the present case) and immunosuppressive infection including infectious bursal disease and infectious anemia. In susceptible birds, the disease can manifest with sudden death without clinical signs and with up to 100% mortality in a two to three days.

Gross lesions in the acute stage of disease feature hemorrhagic enteritis, primarily affecting the duodenum, with punctate hemorrhage multifocally visible through the serosa. These focal hemorrhage progress over time into ulcers throughout the intestine and cecum. Chronic lesions are characterized by transmural white focal areas of necrosis. As in the present case, histologic features in affective intestine include mucosal necrosis and ulceration, with variable submucosal to transmural

coagulation necrosis, pseudo membrane formation, inflammatory infiltration, and colonies of bacteria. Lesions in the liver include multifocal to coalescing red to white areas of hemorrhage and necrosis. Splenic enlargement due to multifocal hemorrhage and necrosis can also be present. Presumptive diagnosis of ulcerative enteritis can be achieved with compatible gross and microscopic lesions and confirmed by isolation of *Clostridium colinum* from liver, intestinal lesions, or spleen. Ulcerative enteritis-like disease was described in Bobwhite quail due to *Clostridium perfringens* type A, and the lesions of ulcerative enteritis can overlap with those of necrotic enteritis due to *Clostridium perfingens* and enteric coccidiosis. One useful distinguishing feature is that liver lesions are not commonly seen in cases of necrotic enteritis.

References:

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