



Latin Comparative Pathology Group

The Latin Subdivision of the CL Davis Foundation

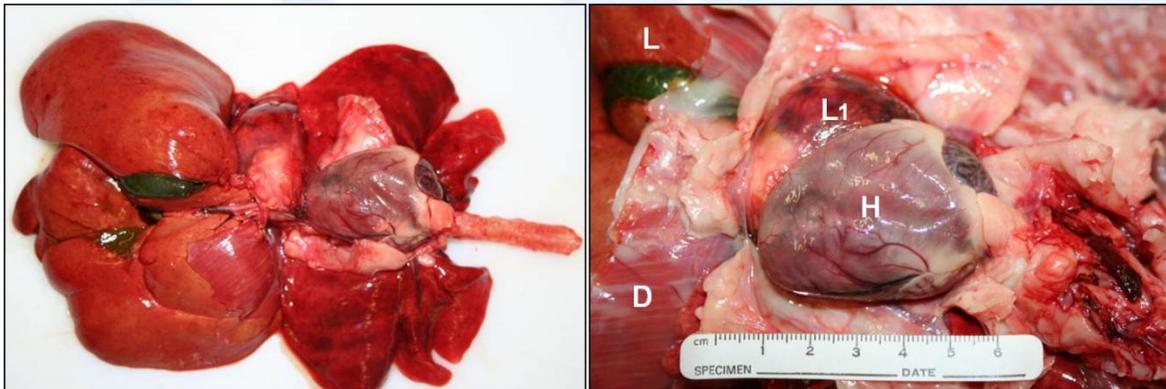
Diagnostic Exercise

Answer sheet

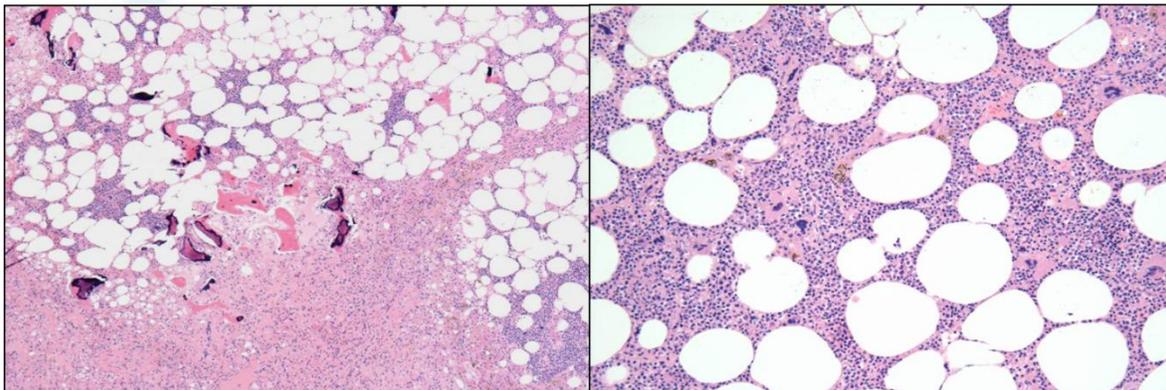
Case #: 23 Month: July Year: 2012

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Signalment and history: A 10.5 year old, castrated male Rag Doll cat. This cat was presented to a private veterinary clinic with dyspnea and a history of diabetes mellitus. The owner declined insulin treatment for diabetes. Treated with glypizide 2.5 mg BID. Cat did well for 1.5 years, but later it suddenly became anorexic. Ultrasound examination of the thoracic cavity revealed a mass in the pericardial sac, compressing the heart. Owner elected euthanasia.



L: Liver; D: Diaphragm; H: Heart. Histopathology taken from L1



Please provide: 1. Description (gross and histopathologic); 2. Morphologic diagnosis.

Gross Description: Approximately 5% of the liver (mainly the left cranial lobe) and a segment of the omentum with fat are herniated into the pericardial sac, compressing the heart. The portion of liver within the pericardial sac measures 5 X 4 X 3.5 cm, and is mottled yellow and red with rounded borders. The rest of the liver, located in the abdominal cavity, is markedly enlarged and friable with intermingled red and yellow areas.

Histologic description: Focally in the liver, there are fairly well demarcated, non-encapsulated masses, composed of large numbers of adipocytes admixed with erythroid and myeloid elements (hematopoietic elements), including numerous megakaryocytes. Also in these areas, a few bone spicules are present. At the periphery, the hepatic cords interdigitate with the mass. Hepatocytes adjacent to these foci are atrophic. Elsewhere, hepatocytes have one to multiple lipid type vacuoles in the cytoplasm. The hepatic sinusoids are focally distended with blood and proteinaceous fluid.

Morphologic Diagnosis: Myelolipoma, in a peritoneo-pericardial diaphragmatic herniated liver lobe.

Comments: Myelolipomas are uncommon benign neoplasms composed of a mixture of well differentiated adipose and hematopoietic tissue, resembling bone marrow. They usually occur in the adrenal gland, spleen or liver of humans, non-human primates, felidae, cattle and other species.

Currently, some groups consider myelolipoma to be a true neoplastic process while others favor metaplasia. In humans, adrenal myelolipomas are usually associated with endocrine disorders, such as Conn's syndrome, 21-hydroxylase deficiency, hormonally active adrenal neoplasms and adrenocortical hyperplasia. In rats, experimental metaplastic transformation of adrenocortical epithelial cells into hematopoietic tissue has been achieved by the application of methyltestosterone and an anterior pituitary extract. Further studies of myelolipomas originating from the adrenal gland in humans demonstrate the adipocytes and myeloid cells have the same clonal cytogenetic abnormality and non-random chromosome X inactivation, suggesting a clonal proliferation from common pluripotent stem cells. However, there have been no such studies on the origin of hepatic myelolipomas.

Peritoneo-pericardial hernias are the most common congenital defect of the diaphragm in cats. These defects are usually an incidental finding, but can cause gastrointestinal or respiratory signs. Previous reports have suggested stimulation of undifferentiated hepatic reticular cells by chronic hypoxia as the reason for the adipose and bone marrow elements in myelolipomas in the liver. Such status would be a product of entrapment of affected liver within the pericardial sac.

Myelolipomas has rarely been reported in dogs and other species, whereas the number of cases in cats would suggest a general predisposition. Differential diagnoses include ectopic bone/bone marrow and extramedullary hematopoiesis. The latter would be constituted of a diffuse infiltrate in contrast to an expansile process. The presence of significant quantities of ossified bone in ectopic bone, compared with rare bone spicules and the presence of adipocytes in myelolipomas allow for differentiation.

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Please send your comments/questions to the whole LCPG list by hitting "reply to all".

A final document containing this material with answers and a brief discussion will be posted on the C. L. Davis website by the end of the current month (http://www.cldavis.org/lcpg_english.html).