



Case 27

TUFTS UNIVERSITY

School of Veterinary Medicine

Department of Pathology

Case # 98.133282

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Signalment: Six year old, spayed female, Collie-X.

History: This patient presented to the Tufts Small Animal Hospital with a 4 month history of lethargy and anorexia. She had been examined by the referring veterinarian several weeks earlier and found to have elevation of liver enzymes. Treatment with amoxicillin resulted in minimal improvement. On presentation at Tufts the dog was found to have cranial organomegaly. Abnormal serum chemistry values were:

GGT	15	IU/L
ALT	1286	U/L
AST	180	U/L

Abdominal ultrasonic examination revealed a large mass associated with the liver. The dog was scheduled for exploratory abdominal surgery. She was euthanized at the time of surgery because the hepatic mass was non-resectable.

Gross Examination: Gross examination revealed 10-15 mls of fresh hemorrhage and a few small blood clots in the abdominal cavity. The liver had a 7.0 X 6.5 cm mass associated with the cranial aspect of the left lateral and left middle liver lobes. On section this region was bright yellow and soft with variable sized, coalescing nodules. A few 1-2 cm diameter foci of cavitated hemorrhage and necrosis were also present. Cut surfaces of the mass showed compression of adjacent, normal liver parenchyma with a sharp line of demarcation between the mass and normal liver tissue. The liver was 7.8% of body weight.

Hepatocellular carcinoma with metastasis
to lymph node.

Patnaik (1981)



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Microscopic description: Microscopic examination of the liver mass reveal sheets of moderately pleomorphic hepatocytes replacing the normal lobular architecture. These cells have vacuolated, eosinophilic cytoplasm with variable nuclear morphology. Many cells show uniform sized, round to oval nuclei but many hepatocytes have large, megalocytic nuclei with prominent, often multiple, nucleoli. Multinucleated hepatocytes are also present with some cells showing more than five nuclei. Cells within this region form compact, cellular aggregates with a few vascular sinusoids evident. There is absence of portal triads or central veins. Sharp demarcation of the proliferative cell population and adjacent normal liver is evident and there is compression atrophy of adjacent, hepatocytes and portal regions. Necrosis and hemorrhage is evident in a few locations. These areas are surrounded by neutrophils and macrophages.

A section of hepatic lymph node (not included on the submitted section) shows clusters of cells similar to those seen in the hepatic mass within subcapsular sinuses.

Diagnosis: Hepatocellular carcinoma arising from left hepatic lobe.

Comment: This case illustrates the dramatic difference in the gross and microscopic appearance of hepatocellular carcinoma. While the gross lesion is suggestive of malignancy, many regions of the mass are microscopically less convincing. H&E sections show occasional cells with multiple, large, nuclei but many cells show only cytoplasmic vacuolization similar to that seen in hyperplastic liver nodules. Impressions of the tumor made at the time of autopsy were more indicative of the pleomorphic nature of the tumor cell population. A core biopsies of this lesion would have represented a diagnostic challenge.

Although clearly malignant, the tumor presented in this case shows a predominately, expansile growth pattern with sharply delineated borders and compression of adjacent, normal hepatocytes. Metastasis to the hepatic lymph nodes is most likely a recent event as suggested by the absence of grossly evident lymphadenopathy and localization of tumor cells to the subcapsular sinuses.

The reported incidence of hepatocellular carcinoma in dogs varies depending on the source. One report suggests that this lesion comprises slightly more than half (55%) of all primary liver tumors. These authors also state that the tumor has a slightly higher incidence in males and is most often seen in the left hepatic lobe. The 1997 edition of Jones, Hunt and King indicates that dogs and cats have a greater frequency of malignant bile duct epithelial neoplasia as compared with hepatocellular carcinoma. These authors emphasize the difficulty in differentiating hepatocellular carcinoma from hepatocellular hyperplasia and hepatocellular adenoma. In either case, current wisdom suggests that hepatocellular carcinoma is far less common than hyperplastic nodule and hepatocellular adenoma. Yet, the subtle histologic nature of hepatocellular carcinoma as illustrated by some of the regions seen in this case suggest that this it may be under-diagnosed in dogs.

References:

Patnaik, Hurvitz, Leiberman and Johnson. Canine Hepatocellular Carcinoma. Vet Path 18:427-438 (1981).

Jones, Hunt and King. Veterinary Pathology (5th edition). Williams and Wilkens 1997. PP 1101-02.