



PATIENT PRESENTING CLINICAL SIGNS

PATIENT Drake Franks
SPECIES Patient presented on 11/21/22 for vomiting yellow bile for about 1 month per O. E/D/U/D all normal. Owner had taken Drake to multiple veterinarians prior to NVH. Mass seen on radiographs. True Cut biopsy performed and sent for review. Whole body CT to evaluate if mass in the abdomen for surgical planning. Chest included for Met Check.

CANINE Abnormal PE/Chem/CBC/UA Results: 11/21/22 CBC Reticulocyte Hemoglobin 30.6 pg Lymphocytes 0.77 K/uL Platelets 597K/uL Plateletcrit 0.65 % Chem - ALT 265 U/L Lytes - Sodium 164mmol/L 11/24/22 Lytes Potassium 2.9 mmol/L Sodium wnl PT and PTT normal prior to biopsy collection In house T4 wnl Liver, 4 needle biopsies: Moderate, multifocal, extramedullary hematopoiesis; moderate, multifocal, hemosiderin laden macrophages; moderate vascular congestion; focal lymphoid follicle; focally extensive fibrosis; normal-appearing hepatocytes and bile ducts. Pending special stain for copper; addendum to follow. **COMMENTS:** The varied histologic findings are difficult to correlate with the ultrasound findings suggesting a well-defined mass lesion. The extramedullary hematopoiesis may represent a response to increased demand for blood cells; however, hepatic extramedullary hematopoiesis is often an idiopathic finding. Vascular congestion and hemosiderin laden macrophages often accompany extramedullary hematopoiesis. The lymphoid follicle suggests immune stimulation. The normal appearing hepatocytes and bile ducts might correlate with nodular hepatocellular hyperplasia but this is uncertain given the very small size of the specimens. Hepatocellular copper cannulation is a feature canine hepatopathies. A special stain for copper will be performed at no additional charge and results will be provided in an addendum report. Clinical correlation is recommended. Excisional biopsy of the nodule should be considered if clinically warranted.

BREED Schnauzer/ mix
SEX Male
AGE 11 Years

INTERPRETED BY Sebastian Schaub, DVM
 Dr. med. vet. DipECVDI

HOSPITAL NAME Neel Veterinary Hospital

REFERRING VET Dr. Deepan Kishore

INVOICE 55474

DATE 12-1-22

HISTOPATHOLOGIC DESCRIPTION: Liver, 4 needle biopsies: The specimens have variable lesions. In one specimen, there are multifocal aggregates of moderate numbers of hematopoietic cells and hemosiderin laden macrophages. Moderate vascular congestion is also noted. A lymphoid follicle is present. A specimen contains an extensive zone of fibrosis. In another specimen, there are normal-appearing hepatocytes and bile ducts are present. **ADDENDUM; 11/29/2022 3:47 PM COPPER STAIN (RHODANINE) RESULTS:** Qualitative copper grade: Grade 1 Comments: This qualitative grade is considered within normal limits and does not specifically suggest a copper associated hepatopathy (CuCH). It should be noted that there can be challenges in the qualitative assessment for CuCH, including lobe to lobe variability in copper accumulation and potential for inconsistent correlation between qualitative and quantitative assessment of copper accumulation. The findings should be correlated to additional clinical information, clinicopathologic data, and diagnostic imaging results. Additional information regarding the diagnosis and treatment of CuCH is available online in the ACVIM consensus statement (J Vet Intern Med 2019;33:1173-1200). **QUALITATIVE COPPER GRADING SYSTEM DETAILS (THORNBURG 1986):** Grade 1 = absent or few copper granules in the cytoplasm of an occasional hepatocyte Grade 2 = obvious copper granules in some centrilobular hepatocytes Grade 3 = numerous granules in most centrilobular hepatocytes (one-third of each lobule) Grade 4 = numerous granules in all centrilobular and midzonal hepatocytes (approximately two-thirds of hepatocytes in all lobules) Grade 5 = abundant granules in more than two-thirds of hepatocytes in all lobules Grades 1 and 2 are considered within normal limits. Grade 3 (mild), grade 4 (moderate) and grade 5 (severe) are considered abnormal, and support copper associated hepatopathy when associated with a predominantly centrilobular distribution of copper and when accompanied by histologic inflammatory changes. Copper quantification testing may be indicated in samples with increased copper storage. Ref: Thornburg et al, Vet. Pathol 23:148-154 (1986) **PATHOLOGIST:** Thomas Lipscomb, DVM Diplomate, American College of Veterinary Pathologists



PATIENT **COMPUTED TOMOGRAPHY OF THE SKULL, THORAX AND ABDOMEN**

Drake Franks A high resolution pre- and post-contrast CT study of the skull, thorax and abdomen are provided for review.

SPECIES **COMPUTED TOMOGRAPHIC FINDINGS**

Canine Skull

Major parts of the crowns of triadan 104 & 204 are absent.

BREED The nasal cavity presents the expected aerated spaces between thin & even conchae and turbinates with smooth mucosal lining. The rostralateral osseous lamella of the right frontal sinus is separated from the frontal bone by a rounded fracture line.

Schnauzer/ mix

Both temporomandibular joints present congruent joint spaces with even subchondral bone surfaces and are considered within normal limits.

SEX Both tympanic bullae are aerated, the mucosal lining is not seen, the bony wall is smooth and thin. The external ear canals are within normal limits.

Male

The brain presents no deviation from normal anatomy and symmetry. The brain parenchyma is homogeneous and within normal limits for attenuation and distribution of contrast enhancement. The ventricular system is non-dilated and symmetric.

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The submandibular and medial retropharyngeal lymph nodes are small and elongated with a normal short-to-long-axis-ratio is < 0.5, the attenuation and contrast enhancement pattern is uniform.

INTERPRETED BY

Sebastian Schaub, DVM
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The intervertebral disc C2/C3 is mildly protruding into the vertebral canal, distorting the ventral epidural space at the same level.

Thorax

HOSPITAL NAME

The 4th and 5th left rib present with a healed costal fracture with smooth callus formation.

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The periarticular bones of both shoulder joints present mild osteophyte new bone formation and mild exostosis formation within the bicipital groove of the left humerus. A small, well-defined, geographic osteolytic lesion is seen in the left humeral head.

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The sternal, cranial mediastinal and tracheobronchial lymph nodes are small elongated with a normal short-to-long-axis-ratio is < 0.5, the attenuation and contrast enhancement pattern is uniform and considered within normal limits.

The cardiovascular structures including the pulmonary vasculature are within normal limits.

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The bronchial tree presents with regular branching and tapers uniformly towards the periphery as expected, the bronchial walls are thin and smooth. The bronchus-to-artery ratio is within normal limits.

The lung parenchyma presents the expected architecture and attenuation behavior.

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Small incidental gas pockets are seen within the esophageal lumen, there is no evidence of abnormal dilation.



PATIENT Abdomen

Drake Franks The serosal fat presents normal attenuation behavior. There is no evidence of peritoneal effusion or peritonitis.

SPECIES Both kidneys present within normal limits for size, shape and organ architecture. After contrast administration a bilaterally symmetric and uniform nephro- and pyelogram is noted. The prostate is symmetrically enlarged and the prostatic parenchyma has a mild heterogeneous contrast enhancement pattern with small roundish, well-defined parenchymal filling defects.

Canine

The adrenal glands are within normal limits for size, shape and organ architecture.

BREED

Schnauzer/ mix

The spleen presents with normal shape, even surface, uniformly attenuating parenchyma and homogeneous contrast enhancement, unremarkable. Mild mineralization of the intraparenchymal splenic veins is seen.

SEX

Male

Protruding from the caudoventral margin of the quadrate liver lobe, a roundish, uniform soft tissue attenuating and mild heterogeneous contrast enhancing mass is seen, measuring 4.0 x 2.9 x 4.1 cm in size. The remainder of the hepatic parenchyma are uniform soft tissue attenuating and contrast enhancing.

AGE

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The pancreas is evenly contoured, the pancreatic parenchyma is homogeneous and presents uniform contrast enhancement.

The position, delineation, wall and content of the gastrointestinal tract are considered within normal limits throughout.

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Multifocal moderate spondylosis formation is seen along the lumbar spine. The intervertebral discs L2/L3 to L6/L7 are bulging into the vertebral canal, distorting the ventral epidural space.

COMPUTED TOMOGRAPHIC DIAGNOSIS

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Neel Veterinary Hospital

- Hepatic mass, quadrate liver lobe
- Complicated dental fracture 104&2B4
- Prostatomegaly with intraparenchymal cysts – most consistent with benign prostatic hyperplasia
- Multifocal intervertebral disc protrusions along the lumbar spine with possible dynamic myelocompression
- Healed costal fracture 4th & 5th left rib
- Spondylosis deformans

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The findings are fitting the history of a hepatic mass and benign lesion such as nodular hyperplasia/regeneration nodule, adenoma as well as malignant hepatocellular carcinoma, neuroendocrine tumor, other are considerations. Complete surgical excision of the hepatic mass is considered feasible.

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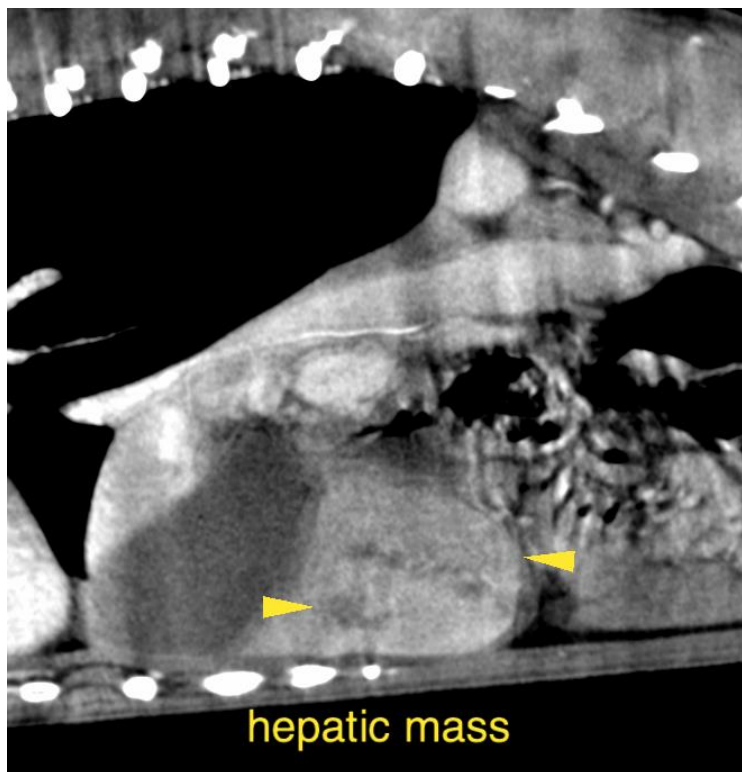
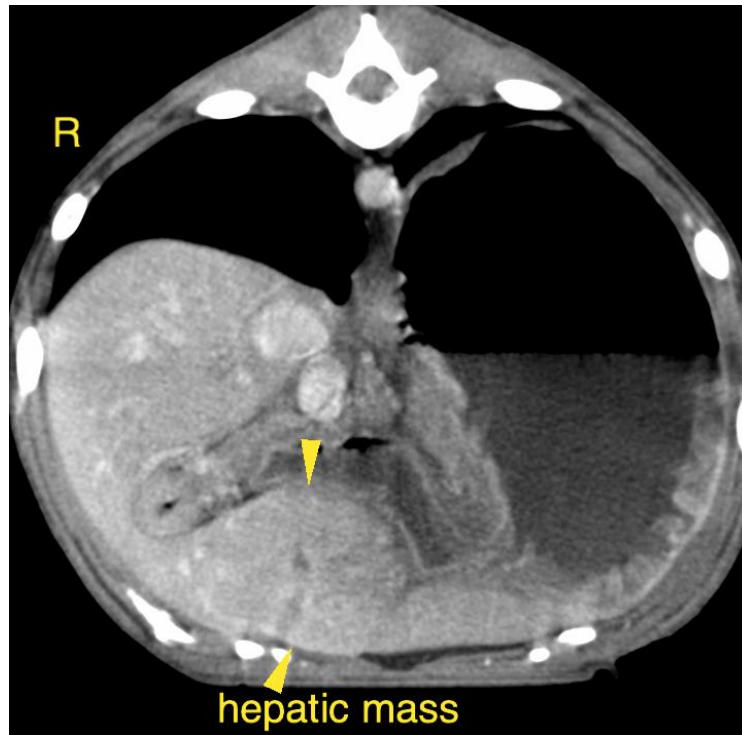
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

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