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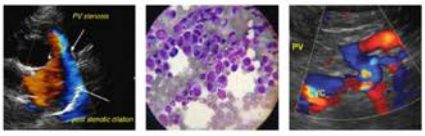

SonoPath
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PATIENT

Humphrey Petit

SPECIES

Canine

BREED

Mini Schanuzer

SEX

Neutered Male

AGE

11 Years

WEIGHT

19.2 Pounds

INTERPRETED BY

Beth Johnson, DVM DACVIM

IMAGING PERFORMED BY

Amy Mayhew, LVT

HOSPITAL NAME

SVS Imaging MI

REFERRING VET

Rochester VH - Dr. Marie Haddock

INVOICE

44358

DATE

1/19/23

PRESENTING CLINICAL SIGNS

Recheck BW due to elevated liver enzymes

Abnormal PE/Chem/CBC/UA Results: His alk phos has increased a little bit and his ALT has improved a little bit. Additionally, his cholesterol and his amylase were higher this time as well. The amylase is an enzyme produced by the pancreas. I would have expected a bit more improvement with the denamarin trial.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic contents. No masses or inflammatory changes. Small, less than 0.2 cm cystoliths (possibly 1-3) are noted along the dependent wall. The urinary bladder, trigone and visible pelvic urethra are normal in thickness with a smooth mucosal surface.

Prostate is normal in size, echotexture and echogenicity for a neutered male.

The right kidney is normal in size (4.25 cm), shape and echogenicity. It has smooth peripheral margination. There is a normal 1:3 cortex to medulla ratio with appropriate corticomedullary distinction. There is no evidence of pyelectasia or infarcts observed. Small, non-obstructive areas of mineralization/nephroliths are noted.

The left kidney is normal in size (4.76 cm), shape and echogenicity. It has smooth peripheral margination. There is a normal 1:3 cortex to medulla ratio with appropriate corticomedullary distinction. There is no evidence of pyelectasia or infarcts observed. Small, non-obstructive areas of mineralization/nephroliths are noted.

Adrenal Glands

The right adrenal gland is normal in size (0.45 cm at the cranial pole and 0.49 cm at the caudal pole), shape and contour. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal.

The left adrenal gland is normal in size (0.47 cm at the cranial pole and 0.50 cm at the caudal pole), shape and contour. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal.

Spleen

The spleen is subjectively normal in size with a normal smooth capsular contour. Parenchyma is appropriately finely textured and homogenous with normal echogenicity relative to surrounding tissue (hyperechoic to liver). A very subtle non-capsule disrupting approximately 1.0 cm hypoechoic nodule is noted in the mid spleen. Splenic vasculature appears normal.

Liver

Liver is subjectively enlarged with mildly irregular margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. In addition to the diffuse heterogenicity, in the caudal right liver there is a discrete mass measuring 2.3 cm in size with a markedly more heterogeneous appearance, primarily characterized by a hyperechoic center with a slightly hypoechoic rim. Visible vasculature and biliary tree appear normal without distension or congestion.

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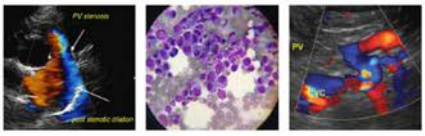

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Gallbladder is moderately distended with anechoic bile as well as mild suspended and gravity dependent echogenic debris. The wall is smooth without visible thickening. There is no evidence of cystic or CBD dilation. There is no evidence of effusion or inflammation. A non-shadowing cholecystolith is noted measuring 0.42 cm.

Gastrointestinal

The stomach wall is normal in thickness (canine < 0.5 cm and feline < 0.4 cm) and layering. The lumen of the stomach is empty with no evidence of obstruction, foreign material or infiltrative disease. Pyloric outflow tract appears patent.

The visible small intestines are normal in wall thickness and layering (canine duodenum < 0.5 cm and feline duodenum < 0.4 cm; other < 0.3 cm). Small intestinal motility appears adequate (1-3 contractions per min). The lumen of the small intestine is empty with no evidence of obstruction, foreign material or infiltrative disease.

The visible colon is normal in wall thickness (< 0.2 cm) and layering. Contents are consistent with normal formed feces and gas.

Pancreas

The observed pancreas appears appropriately isoechoic to surrounding omental fat. The capsule is mildly irregular in shape. Parenchyma is mildly heterogenous and coarse. There is no visible pancreatic duct dilation. There is no evidence of active peripancreatic inflammation.

Free Abdomen

There is no evidence of free peritoneal effusion noted in these images.

The mesenteric and medial iliac lymph nodes are prominent in size with swollen capsular contour. Normal elongated shape (length to width ratio) is maintained. There is no loss of parenchymal detail.

PRIMARY FINDINGS

- **Heterogenous liver –** These changes are most consistent with benign processes such as nodular hyperplasia, steroid (vacuolar) hepatopathy, extramedullary hematopoiesis or possibly chronic inflammatory disease and less commonly infiltrative round cell or metastatic neoplasia.
- **More discrete, slightly more heterogeneous right caudal nodule/mass with an almost "target" lesion appearance –** This lesion may represent an expansion of a benign process affecting the diffuse liver. However, infiltrative neoplasia, including primary hepatocellular carcinoma versus infiltrative round cell neoplasia or even a metastatic lesion cannot be definitively ruled out.
- **Mild gallbladder debris with a non-shadowing cholecystolith -** Cholecystic debris is of unknown clinical significance. It can be seen with biliary stasis from fasting or illness. Cholecystic debris is not necessarily related to hepatobiliary disease. Echogenic bile is most commonly an incidental finding in dogs and should be interpreted in combination with clinical signs such as nausea, inappetence, cranial abdominal discomfort and/or laboratory changes such as increased ALP and/or increased Tbili.
- **Reactive mesenteric and medial iliac lymph nodes –** infiltrative neoplastic disease cannot be ruled out but is considered less likely.
- **Hypo to anechoic splenic nodule** – likely represents a benign lesion such as a cyst, hematoma, nodular hyperplasia, extramedullary hematopoiesis, etc., however while considered less likely, infiltrative neoplasia can mimic benign lesions, and cannot be ruled out.

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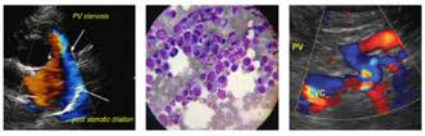

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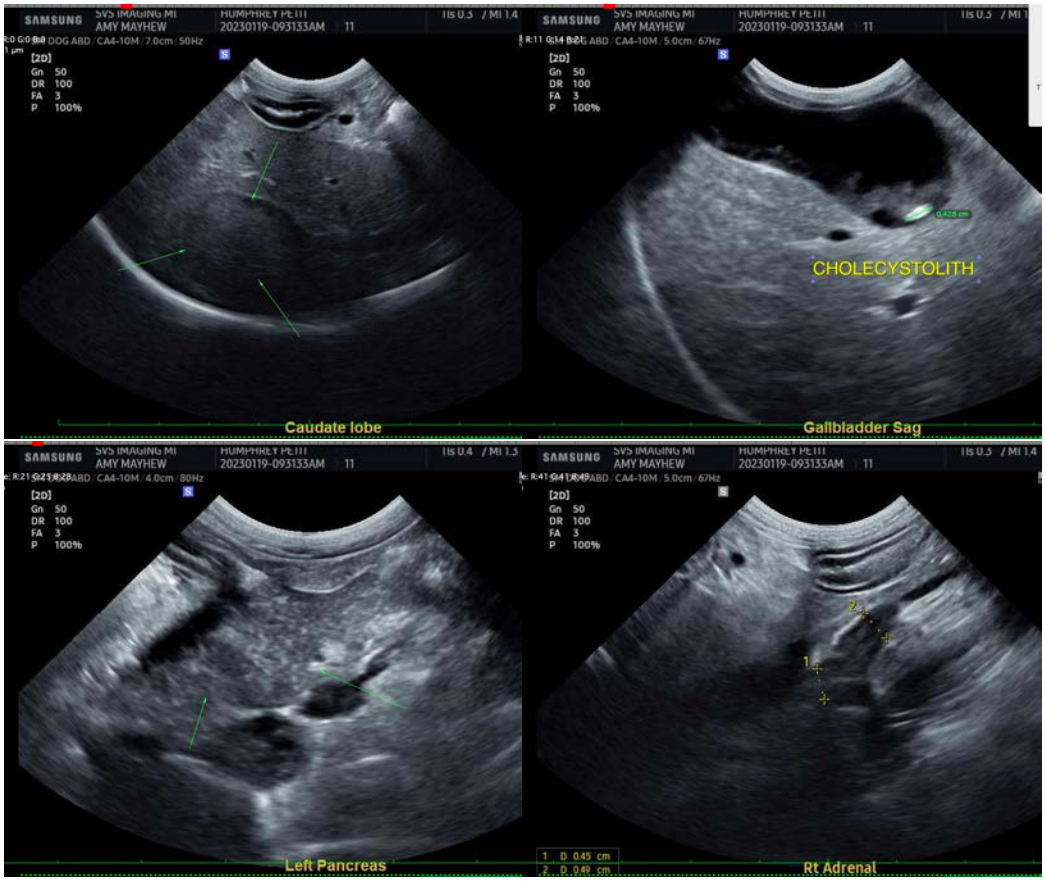
ULTRASONOGRAPHIC FINDINGS

- Small non-obstructive nephroliths bilaterally in the kidneys
- Several small cystoliths in the bladder
- **Pancreatic age-related remodeling –** Mild irregularities are consistent with benign age-related change. Low-grade smoldering chronic pancreatitis cannot be ruled out and should be suspected in the face of appropriate clinical signs.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cause of this patient's increased liver enzymes may represent a non-specific or reactive hepatopathy, or a benign nodular aging hyperplasia, etc. Additionally, the gallbladder debris and non-obstructive cholecystolith may be contributing. In that case, other than ongoing hepatic nutraceuticals, including Ursodiol, with monitoring for progression may be all that is warranted. However, given the discretely different appearance to the nodule in the caudal right liver, if a more aggressive approach is elected sooner, a fine needle aspirate of that nodule is recommended if patient's coagulation status is appropriate. If a conservative approach is elected, then close monitoring of that nodule, beginning with a recheck ultrasound in 4-6 weeks, could be considered.

Additionally, if not recently evaluated, a urinalysis and, if indicated based on urinalysis results, urine culture are recommended. If protein is present in an otherwise quiet sediment, protein quantification with a urine protein to creatinine ration is recommended.



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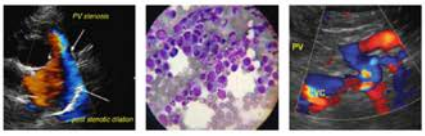

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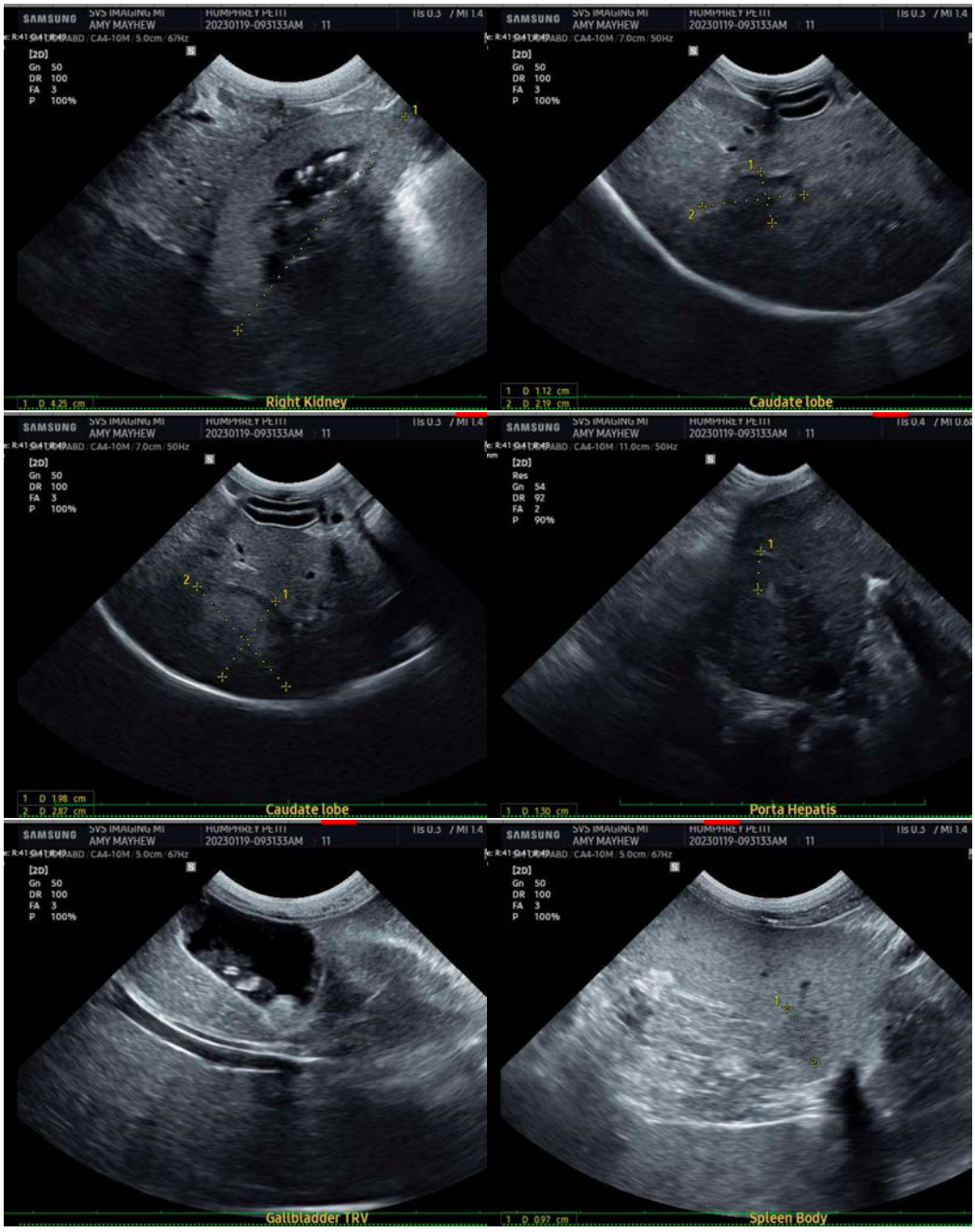

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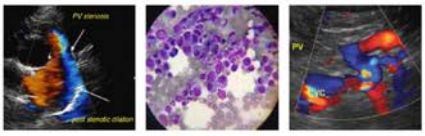

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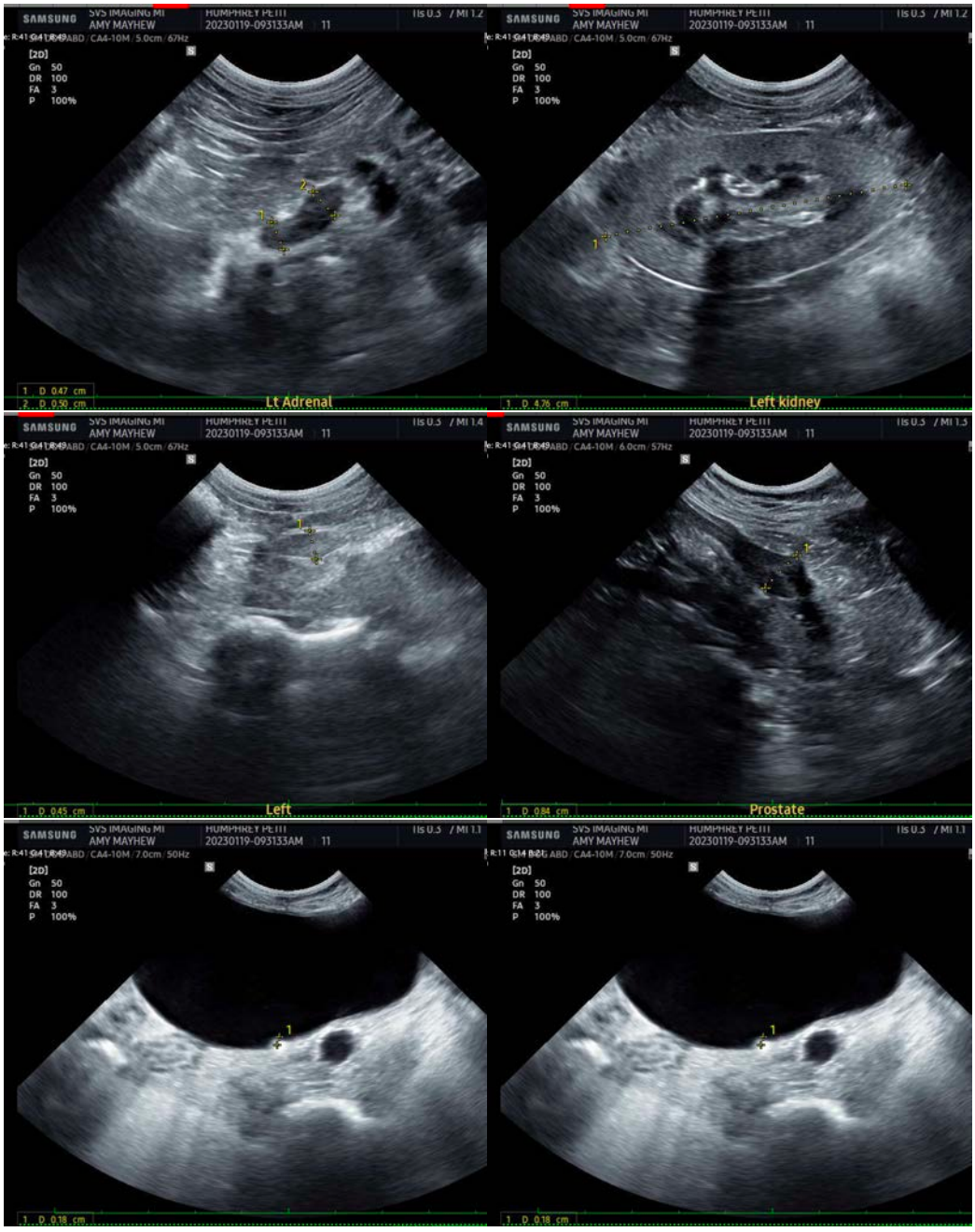

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Beth Johnson, DVM, DACVIM
Beth.Johnson@sonopath.com