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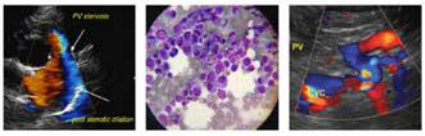

SonoPath
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PATIENT
Austin Elnick

SPECIES
Canine

BREED
Yorkie

SEX
Neutered Male

AGE
13 Years

WEIGHT
9.8 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
44353

DATE
1/19/23

PRESENTING CLINICAL SIGNS

Senior exam, liver enlarged.

Abnormal PE/Chem/CBC/UA Results: His sodium and chloride are very low. We can see this sometimes if they are being over diuresed (such as with the Lasix) or he could potentially have developed a disease called Addison's. The x-ray report didn't show any evidence of heart failure at this time, which is good, and his heart size remains stable compared to previous x-rays done on him. However, his liver appears to be getting a bit bigger and this is a pretty non-specific finding. I would recommend scheduling an abdominal ultrasound for him so we can see what his liver, kidneys, spleen, bladder, and adrenal glands look like and to see if his intestinal wall is thickened (another possible source of electrolyte loss). If his kidneys are starting to fail that could be a reason, we would be seeing the electrolyte loss as well.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic contents. No masses, inflammatory changes, echogenic sediment or cystoliths are observed. 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.

Kidneys are overall normal in size and shape with smooth peripheral margination. A normal 1:3 cortex to medulla ratio is maintained. The medulla and cortices are uniform in texture with some mild increased cortical echogenicity and mild loss of corticomedullary distinction, expected in this age patient. There is no evidence of mineral or infarcts observed. Multiple cortical cysts noted in both kidneys. The right kidney measured 5.39 cm with pyelectasia at 0.42 cm in the transverse view. The left kidney measures 4.86 cm with pyelectasia at 0.43 cm in the transverse view.

Adrenal Glands

The right adrenal gland is normal in size (0.63 cm at the cranial pole and 0.60 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 (0.42 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.

Spleen

Spleen is subjectively large in size with a mildly swollen but smooth capsule. Parenchyma is normal and homogenous in echogenicity and echotexture. No focal nodules or masses are observed. Splenic vasculature appears normal.

Liver

Diffusely, the liver is subjectively enlarged with mildly irregular margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. The right liver, however, is much more affected, with more loss of normal architecture appreciated and an almost mass-like, “moth eaten” appearance. Visible vasculature and biliary tree appear normal without distension or congestion.

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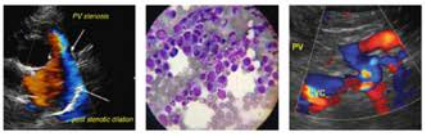

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Gallbladder is moderately distended with anechoic bile as well as mild suspended and gravity dependent echogenic debris. The wall is smooth without visible thickening. There is no evidence of cystic or CBD dilation. There is no evidence of effusion or inflammation.

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. Hyperechoic mucosal fogging or speckling is noted. Small intestinal motility appears adequate (1-3 contractions per min). The lumen is empty with no evidence of obstruction or foreign material.

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 a scant amount of anechoic free fluid noted.

There is no apparent lymphadenopathy noted in these images.

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. Given the more significant change on the right side, an emerging mass or infiltrative neoplasia, including possible round cell neoplasia, can't be ruled out.
- **Hypersplenism –** can be associated with congestion caused by sedation (if sedated) but can also be associated with diffuse infiltrative disease. Both benign conditions such as extramedullary hematopoiesis, lymphoid hyperplasia, as well as infiltrative neoplastic diseases such as round cell neoplasia should be considered.
- **Mucosal speckling –** Mucosal speckling is often present with inflammatory bowel disease (IBD). It is not specific for type or severity of disease. Mild speckling change can occur as a normal patient variant in the post-prandial state.
- Scant amount of anechoic free fluid is noted

SECONDARY FINDINGS

- **Age related kidney changes with multiple bilateral cortical cysts and moderate bilateral pyelectasia –** Differentials for pyelectasia include pyelonephritis, diuresis, congenital malformation or ureteral or lower urinary tract obstruction.
- **Mild gallbladder debris -** 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

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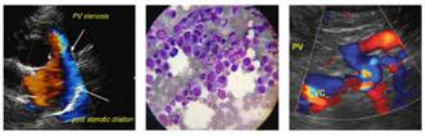

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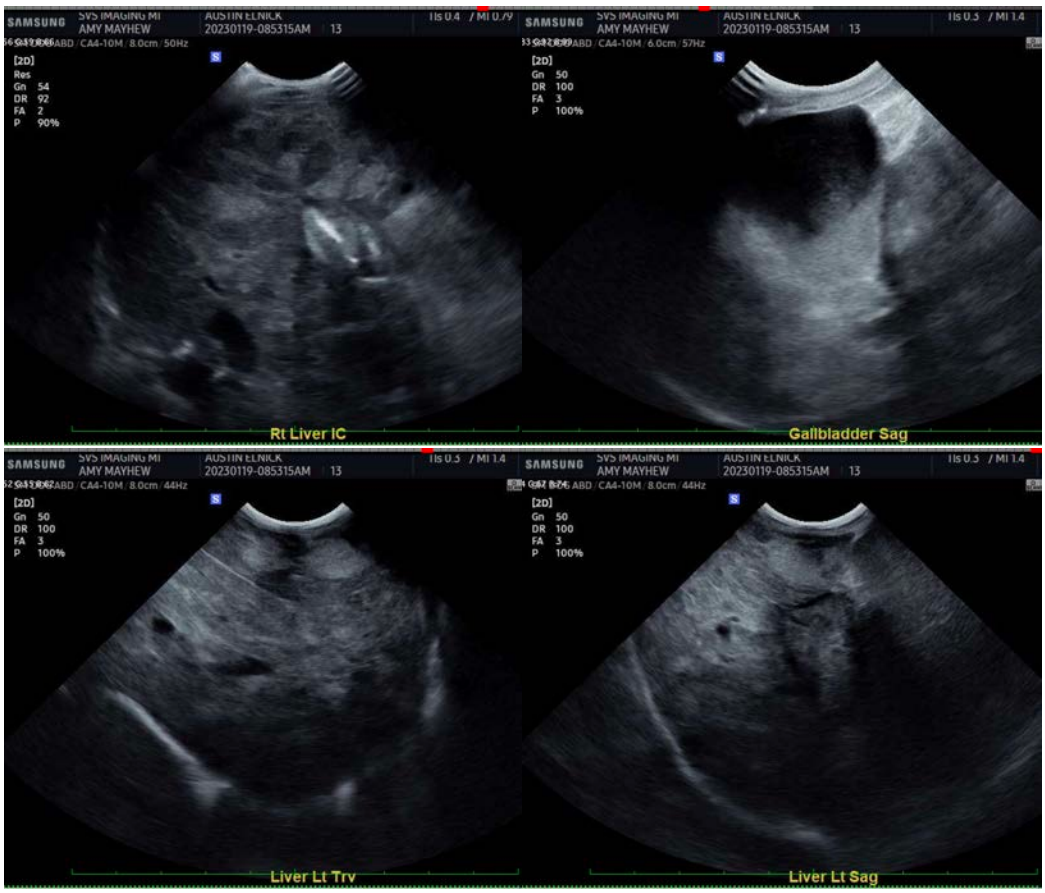
be interpreted in combination with clinical signs such as nausea, inappetence, cranial abdominal discomfort and/or laboratory changes such as increased ALP and/or increased Tbili.

- **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

Further recommendations depend partially on patient clinical signs, especially given the reported normalization of electrolytes. Given the scant amount of anechoic free fluid, further cardiac evaluation could be considered, beginning with thoracic radiographs and an echocardiogram, as well as a blood pressure. Additionally, given the mild mucosal speckling in the bowel, a recheck chemistry panel could be evaluated to rule out hypoalbuminemia as a cause of the free fluid, and if present, and/or bowel disease is suspected based on clinical signs, further evaluation of gastrointestinal health is recommended with a gastrointestinal malabsorption panel (including cobalamin, folate, TLI and PLI) to Texas A&M GI Laboratory.

While the remainder of the changes including the pancreas, kidneys, spleen, and liver could all represent benign aging changes, the degree of heterogenicity in the liver is concerning, and therefore a fine needle aspirate of the right liver +/- the spleen (if patient's coagulation status is appropriate) are recommended.



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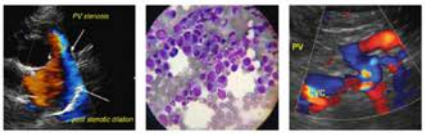

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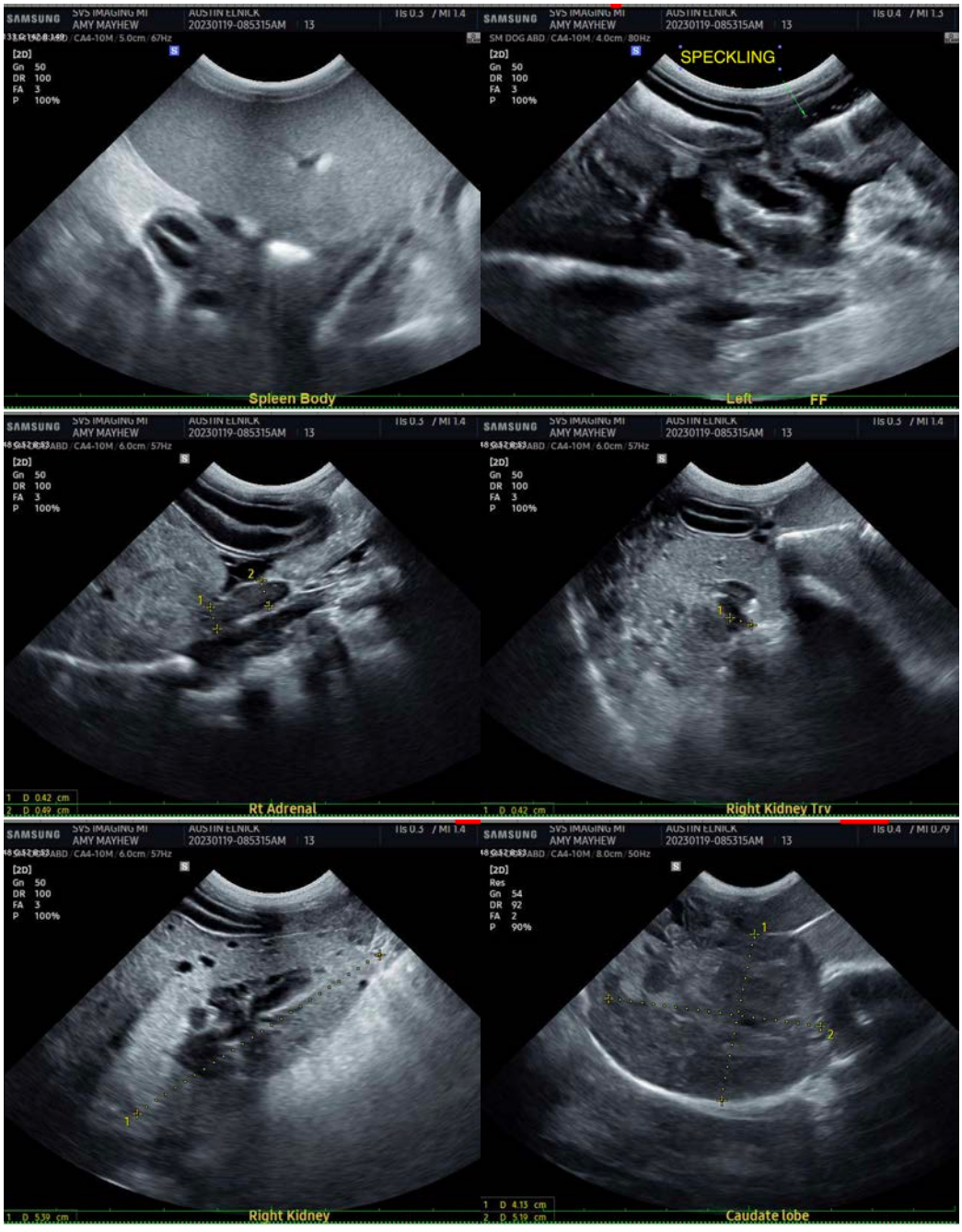

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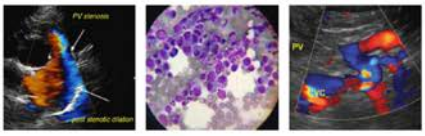

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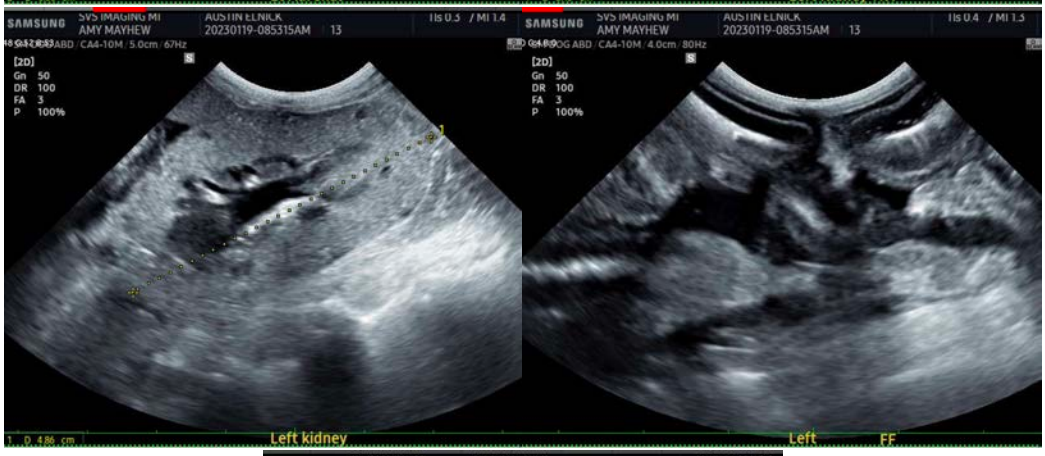

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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