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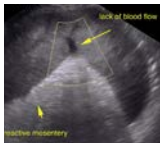
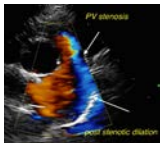
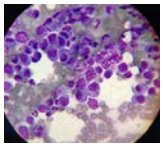
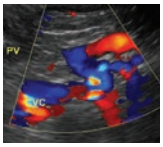

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1-800-838-4268 info@sonopath.com

PATIENT
Oreo Lewis

SPECIES
Canine

BREED
Malti-poo

SEX
Neutered Male

AGE
11

WEIGHT
16.2 Pounds

INTERPRETED BY
Beth Johnson, DVM
DACVIM

IMAGING PERFORMED BY
Dr. Ellen Puthoff

HOSPITAL NAME
Kings Vet Hospital

REFERRING VET
Dr. Ellen Puthoff

INVOICE
46836

DATE
4/20/23

PRESENTING CLINICAL SIGNS

Oreo has a history of excessive panting and heart disease (managed on pimobendan). Historically elevated ALKP and tested negative for Cushing's disease last year. Repeat LDDST positive in September and started on Vetoryl. Did not return for standard recheck until last week - ACTH stim test showed adequate control of Cushing's disease but no change to panting level. Recheck chemistry panel showed continued elevation of ALKP (1259 - up from ~750-800) and new elevation in ALT (176). Creatinine 1.1 with BUN 31 - otherwise unremarkable. Discussed performing abdominal ultrasound to assess liver to ensure no major structural abnormalities.

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 pyelectasia, mineral or infarcts observed. The left kidney measures 4.91 cm. The right kidney measures 4.6 cm. Small cortical cysts noted bilaterally, as well as a larger, approximately 2.0 cm in diameter cortical cyst in the right kidney.

Adrenal Glands

The adrenal glands are unable to be well visualized in these images.

Spleen

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). Multifocal well-demarcated hyperechoic homogenous nodules are noted. Splenic vasculature appears normal.

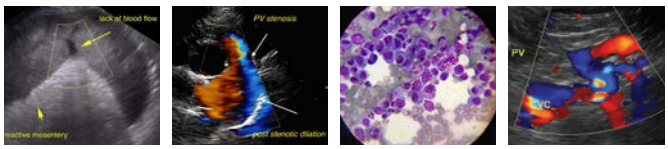
Liver

Liver is subjectively enlarged with mildly irregular margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. In one or two views, there is an approximately 4.0 cm x 4.5 cm area of the liver that appears focally slightly more heterogeneous and hyperechoic to surrounding tissue that could represent the same underlying change, but an emerging mass may be causing the change. Visible vasculature and biliary tree appear normal without distension or congestion.

The gallbladder is non-distended in size. The wall is smooth without visible thickening. Luminal contents are primarily anechoic. There is no evidence of cystic or common bile duct dilation. A 0.40 cm in diameter echogenic density is adhered to the wall of the gallbladder.

Gastrointestinal

The visible stomach wall is normal in thickness and layering. The stomach is moderately distended with echogenic non-shadowing luminal contents and gas consistent with normal ingesta. There is no evidence of obstruction, foreign material or infiltrative disease. However, given the reported history of fasting, delayed gastric emptying could be considered. Soft (cloth) fluid absorbing foreign material is



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considered less likely but cannot be definitively ruled out. If clinical signs are consistent (vomiting, etc.), recommendations include supportive medical care, 24 hours fasting and re-image.

The visible small intestines are normal in wall thickness and layering. Small intestinal motility appears adequate (1-3 contractions per min). The lumen of the small intestine is mildly distended with echogenic non-shadowing luminal contents and gas consistent with normal ingesta. There is 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 pancreatic parenchyma is appropriately isoechoic to surrounding tissue. Visible capsule is smooth and normal in contour. 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.

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. The more focally discrete, heterogeneous, slightly hyperechoic area described above may represent the same underlying, likely benign pathology as the diffuse parenchyma. However, an emerging mass, including both benign hepatoma/adenoma, or infiltrative hepatic neoplasia such as hepatocellular carcinoma, etc. are considerations and can't be ruled out without tissue sampling.

- **Small echogenic density within the gallbladder –** Likely represents mucus. However, a non-shadowing cholecystolith or benign polyp can't be ruled out.

SECONDARY FINDINGS

- Age related kidney changes with bilateral cortical cysts

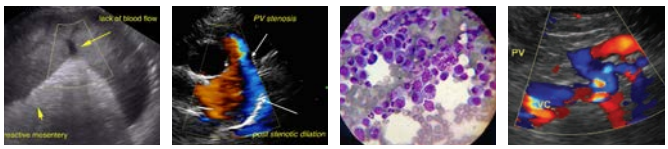
- **Hyperechoic splenic nodules –** most consistent with benign myelolipomas. Other differentials such as fibrosis or calcification caused by old hematomas or infarcts, chronic inflammation, granulomatous disease or metastatic disease cannot be ruled out, but are considered less likely.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Given this patient's newly reported azotemia, 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.

Given the concurrently increased liver enzymes, testing for Leptospirosis could be considered.

If blood pressure monitoring has not been part of this patient's hyperadrenocorticism therapy recently, then blood pressure is also recommended.



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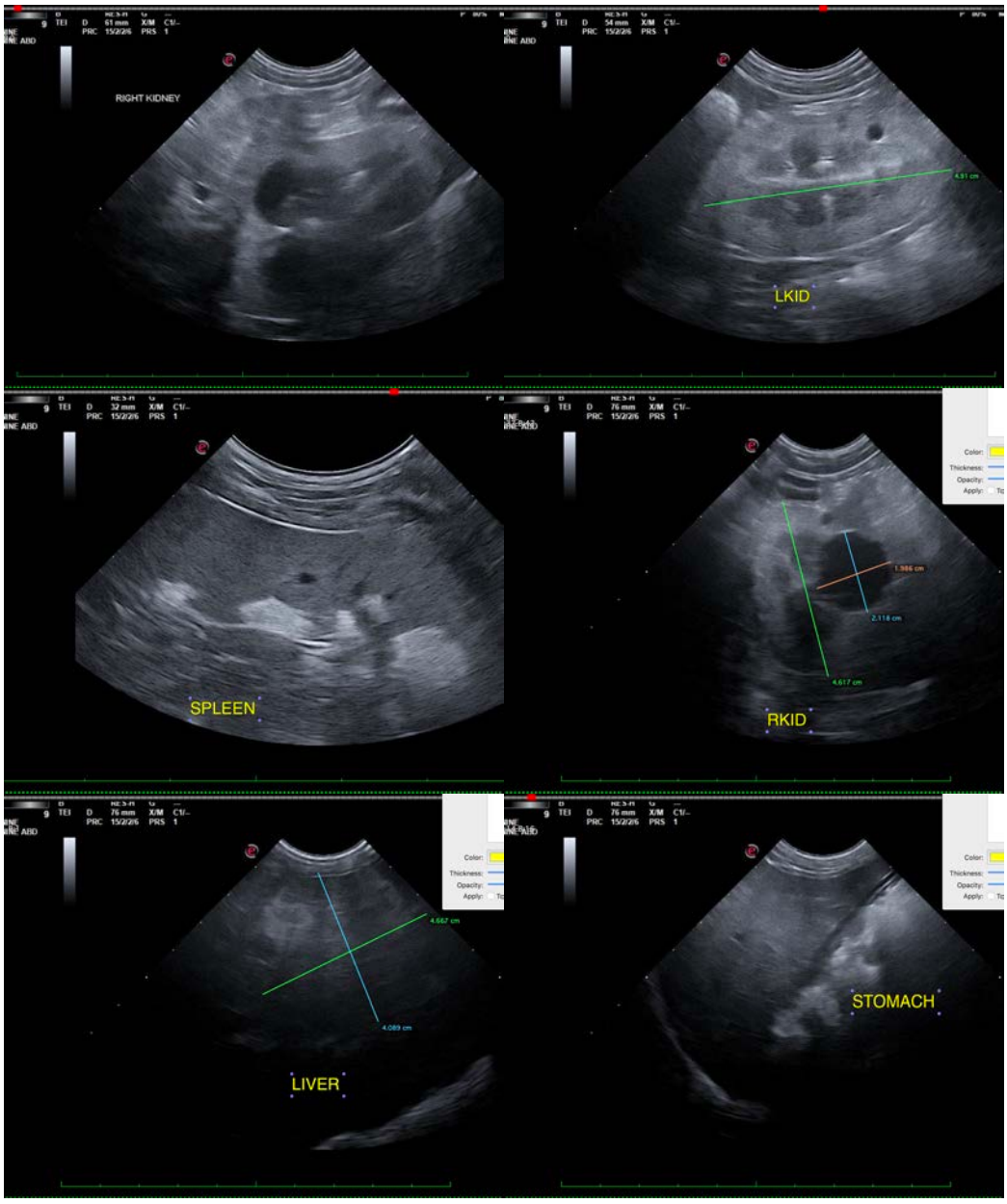
Additionally, a fine needle aspirate of the liver could be considered if patient's coagulation status is appropriate.

Finally, if another underlying cause isn't diagnosed from the above, a dose change in the Vetoryl may be considered, especially if this patient is receiving Vetoryl once daily. Most patients do better with the same daily dose or even a lower total daily dose divided into two doses a day versus one.

Additionally, cortisol levels are cyclical, and a one-time ACTH stimulation test may not be fully representative of the overall majority cortisol levels throughout the day.



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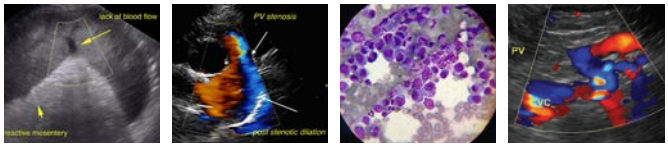

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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