



PATIENT PRESENTING CLINICAL SIGNS

Zeus Staufft Hx of persistent mild elevated liver enzymes. Mild amylase elevation. Had AUS in July 2022 (invoice # 11216ag) which suggested benign hepatopathy.

SPECIES

Abnormal PE/Chem/CBC/UA Results: Mild ALT and ALP elevation.

Canine

BREED

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

Maltipoo

Urinary bladder is only mildly distended. Visible contents are anechoic. Urinary bladder wall is unable to be fully assessed for pathology without further distension. No visible masses or cystoliths are observed. The trigone and visible pelvic urethra are normal thickness with a smooth mucosal surface. If there are urinary signs and/or concern for urinary bladder pathology, reassessment after complete filling is recommended.

SEX

Neutered Male

AGE

The prostate is unable to be well visualized in these images.

13 Years

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 right kidney measured 4.13 cm. The left kidney measured 4.26 cm. Small cortical cysts are present bilaterally.

WEIGHT

7.4 kg

INTERPRETED BY

Adrenal Glands

Beth Johnson, DVM
DACVIM

The right adrenal gland is normal in size (0.70 cm at the cranial pole and 0.51 cm at the caudal pole), shape and contour. A hyperechoic nodule is noted in the cranial pole measuring 0.60 cm x 0.70 cm in size. Nodule does not disrupt normal shape and/or architecture. Visible surrounding vasculature appears normal.

IMAGING PERFORMED BY

Dr. Sarah Barthelemy

The left adrenal gland is normal in size (0.38 cm at the cranial pole and 0.49 cm at the caudal pole), shape and contour. A hyperechoic nodule is noted in the cranial pole measuring 0.30 cm x 0.60 cm. Nodule does not disrupt normal shape and/or architecture. Visible surrounding vasculature appears normal.

HOSPITAL NAME

Spleen

Signal Hill AC

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). No focal nodules or masses are observed. Splenic vasculature appears normal.

REFERRING VET

Dr. Devall

Liver

INVOICE

Liver is subjectively enlarged with mildly irregular margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. Visible vasculature and biliary tree appear normal without distension or congestion.

43934

DATE

7/12/23

Gallbladder is moderately distended with anechoic bile as well as 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.



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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 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.
- **Moderate 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 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.
- **Hyperechoic adrenal nodules (cranial poles bilaterally)** – Differentials include primary adrenal cortical adenoma or adenocarcinoma, pheochromocytoma, myelolipoma, adrenal hyperplasia secondary to pituitary disease or metastatic disease. Ultrasound alone cannot differentiate between functional and non-functional nodules and/or between benign and malignant disease. Small nodules without other evidence of abdominal disease (to suggest metastatic disease) and/or clinical signs (to suggest adrenal disease) are most often incidental and should be monitored.

SECONDARY FINDINGS

- Age related kidney changes with small bilateral cortical cysts



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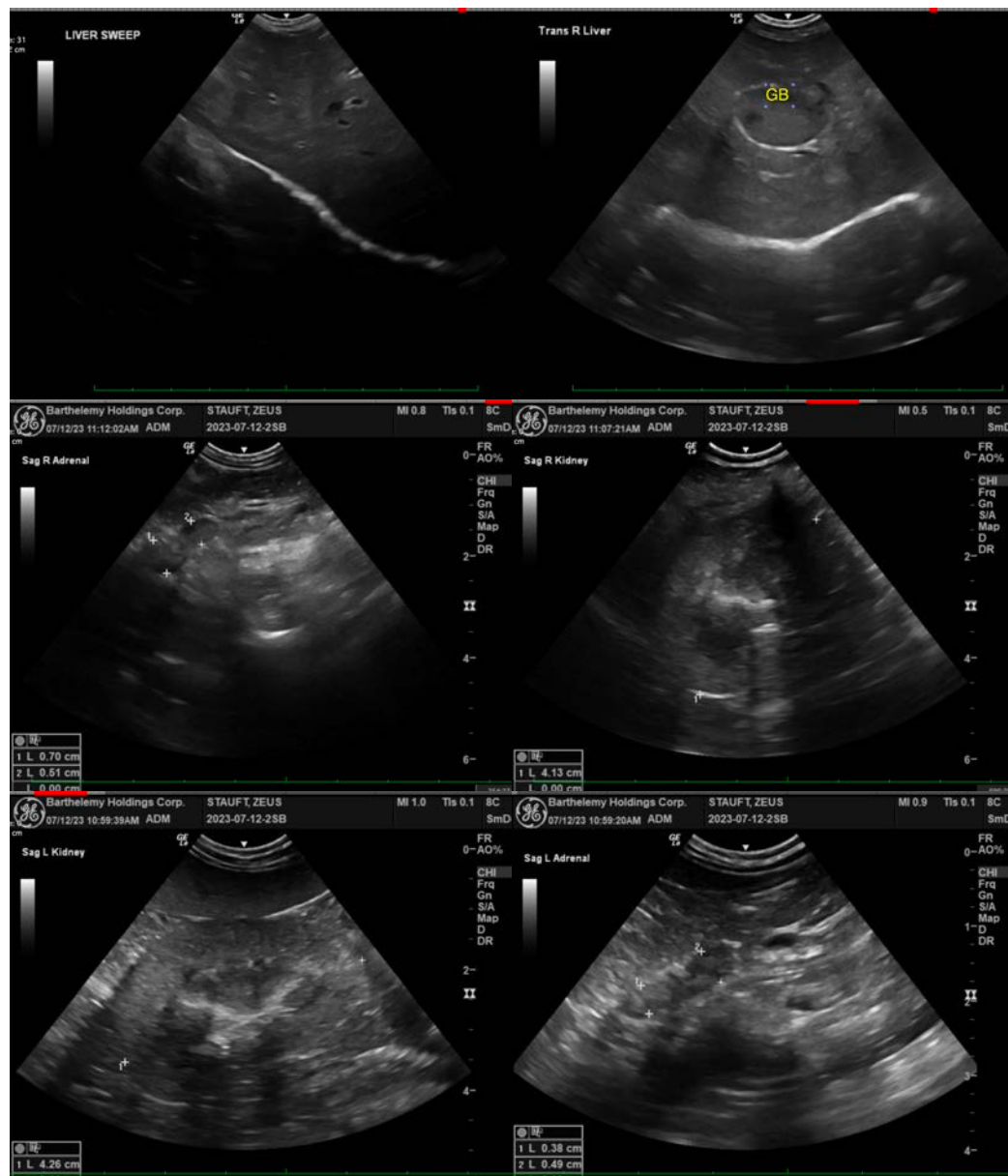
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7/12/23

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Further recommendations for this patient dependent primarily on the ratio of the liver enzyme increases reported, for example whether it is primarily a hepatocellular injury pattern versus a cholestatic pattern, as well as whether this patient is exhibiting clinical signs. The appearance of the liver and gallbladder both trend toward benign. If clinical signs of hyperadrenocorticism are present, there are some subtle changes that could be consistent with hyperadrenocorticism, and further evaluation could be considered, however is not recommended without supporting clinical signs.

Additionally, hepatic nutraceuticals including Ursodiol could be considered, especially if the liver enzyme pattern is a cholestatic pattern, given the presence of gallbladder debris.





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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
info@sonopath.com