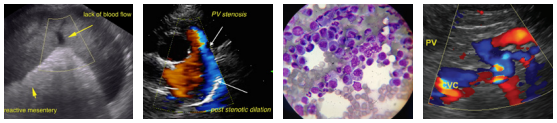


PATIENT
Eddie Johnson

SPECIES
Canine

BREED
Chihuahua

SEX
Neutered Male

AGE
7 Years

WEIGHT
14 Pounds

INTERPRETED BY
Eric Lindquist, DMV
DABVP, Cert. IVUSS

IMAGING PERFORMED BY
Sara Hansen

HOSPITAL NAME
The Vet Hospital

REFERRING VET
Dr. Yomada

INVOICE
35570

DATE
2/9/22

PRESENTING CLINICAL SIGNS

Eddie has a history of seizures since at least 2018 when O adopted him from Greenhill (no anticonvulsants at adoption). O took P to emergency hospital 3 weeks after adoption for grand mal seizures 03/26/2018. Phenobarbital was started at that time. CBC/CHEM17 was normal at that time besides TCHOL 267. Seizures continued on phenobarb so increased dose and added neurocare diet 07/18/2018. Added Keppra when seizures continued 12/10/2018 (Phenobarb 16.2mg tabs 1 tab PO BID, Keppra 1/2 of a 250mg tab PO TID). Pheno increased to 1 tab PO BID on 04/2019 when P had a few breakthrough seizures. 7/30/20 breakthrough seizures again when pheno level was subtherapeutic, increased to phenobarbital to 1 tab (32.4mg) PO TID. Heart murmur detected at that time but rads showed only minor changes (VHS 11, no CHF). Wellness labwork 04/08/21 showed beginning of liver enzyme elevations - TG >500, worsening hepatic values (ALT now 164, ALKP >993, CHOL 339. Tbili high-normal at 0.5, GGT high at 22), so began switching P to zonisamide 50mg PO BID and discontinued pheno. EVH visit for breakthrough seizures 05/2021 - Labwork: ALT 255, ALKP 341, GGT 13 (had been off pheno for 1 mo at the time). Recheck zonisamide levels 12/20/21 after breakthrough seizure event (was low, increased zonisamide from 50mg to 100mg BID); Liver values are progressively worsening (ALT 267 vs. 225 at EVH on 5/22/21, ALKP 972 vs. 341 on 5/22, GGT 27 vs. 13 on 5/22, AST WNls at 30), Mg slightly high at 2.7, ALB high at 4.3, phos slightly high at 5.7. Seizures have been well controlled on 100mg zonisamide, but concern for elevating liver values despite stopping phenobarbital. Eddie has not been ill despite increases in liver values and is e/d/u/d normally. No vomiting/diarrhea. Abnormal PE/Chem/CBC/UA Results: Current Medications Keppra 250mg TID (39.3mg/kg/dose), Zonisamide 100mg BID (14 mg/kg/dose) Radiographic Findings Rads 07/20/20 (none more recently) - 2-View Chest Radiographs: The cardiac silhouette appears slightly large (VHS 11.5) within the chest with no abnormal lung patterns. What is visible of the abdomen has good serosal detail with no abnormalities. The vertebral structures appear normally with no evidence of chronic changes, trauma or joint effusion. On the V/D view, the heart is taking up ~3/4 of the chest and appears generally symmetrical

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.

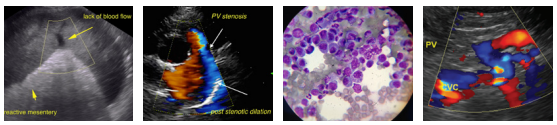
Prostate (neutered) is normal in size, echotexture and echogenicity for a neutered male.

The right kidney is normal in size (4.82 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, mineral or infarcts observed. A small cortical cyst is noted.

The left kidney is normal in size (5.21 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, mineral or infarcts observed.

Adrenal Glands

The right adrenal gland is normal in size (1.94 cm long x 0.42 cm at the cranial pole and 0.55 cm at the caudal pole), shape and contour. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal.



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The left adrenal gland is normal in size (1.98 cm long x 0.60 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.

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

Liver

Liver is subjectively enlarged. Margins are smooth but round. It has a normal homogenous echotexture. Parenchyma is diffusely hyperechoic characterized by less prominent than normal portal vein walls and increased echogenicity relative to the spleen. No focal lesions are observed. Visible vasculature and biliary tree appear normal without distension or congestion.

The gallbladder is moderately distended with anechoic bile and gravity dependent echogenic sediment. 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 (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

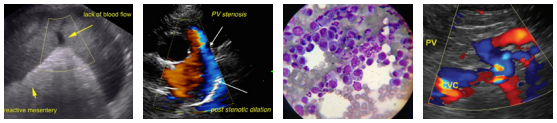
The pancreatic parenchyma is appropriately isoechoic to surrounding tissue. Visible capsule is smooth and normal in contour. There is no visible pancreatic duct dilation. There is no evidence of active peripancreatic inflammation.

Free Abdomen

There is no evidence of peritoneal effusion. There is no apparent lymphadenopathy.

ULTRASONOGRAPHIC FINDINGS

- Hyperechoic hepatomegaly– most consistent with benign steroid (endocrine) hepatopathy or reactive or idiopathic hepatopathy. Infiltrative neoplasia such as round cell neoplasia is also possible, but considered less likely.
- 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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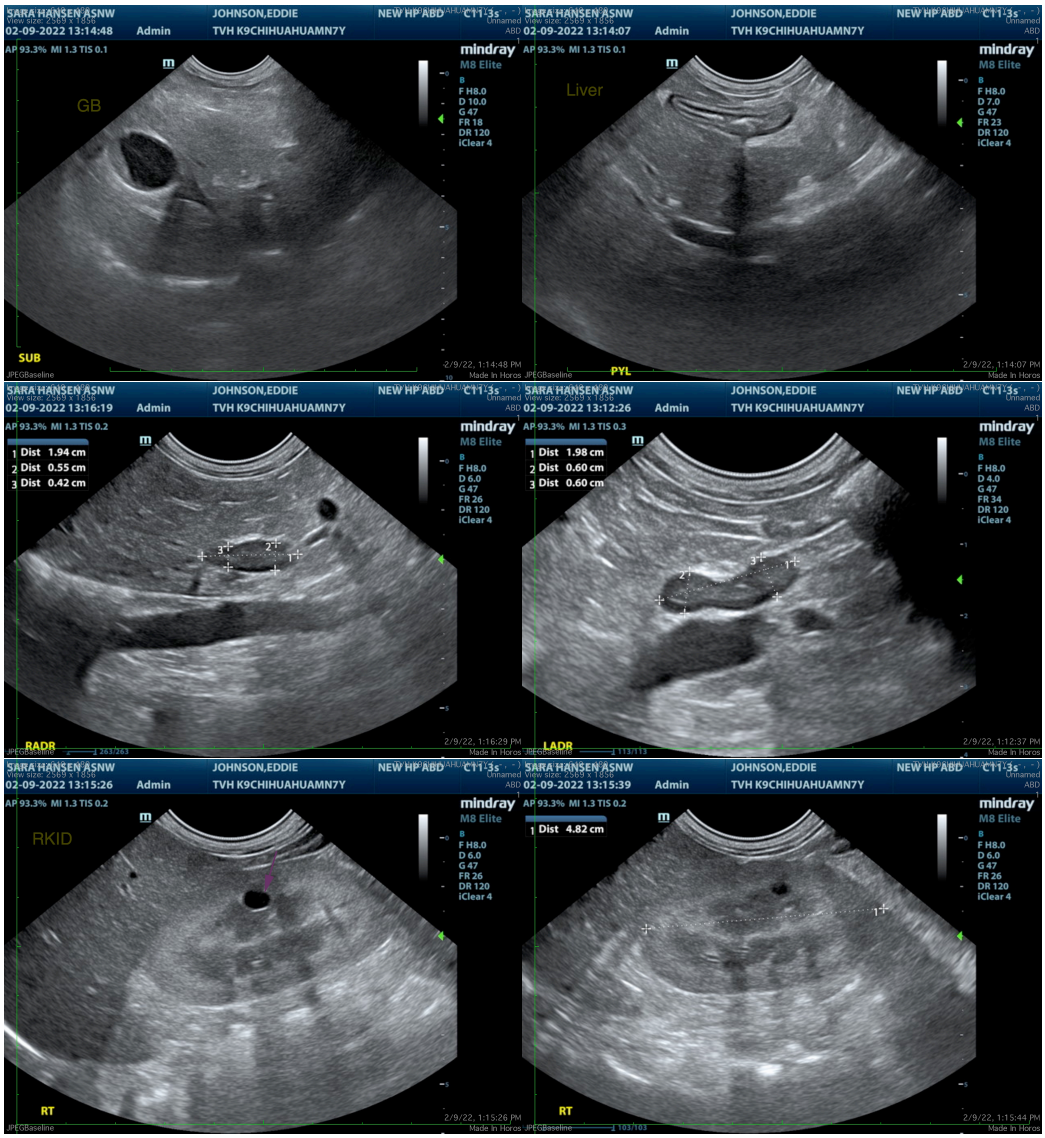
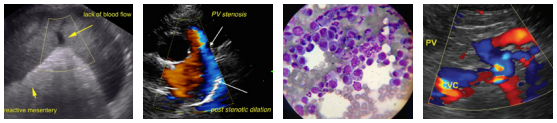
be interpreted in combination with clinical signs such as nausea, inappetence, cranial abdominal discomfort and/or laboratory changes such as increased ALP and/or increased Tbili.

- Incidental right renal cortical cyst

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A fine needle aspirate of this patient's liver could be considered if patient's coagulation status is appropriate. A course of Ursodiol and Denamarin with monitoring of liver enzymes could also be considered, given the mild gallbladder debris. While very rare, Zonisamide can be associated with liver disease. Therefore, if the aforementioned recommendations don't result in improvement and/or liver enzymes continue to progress, tapering off of Zonisamide in exchange for a different anti-epileptic plan may be necessary. If total bilirubin is normal, bile acids could be considered to more specifically evaluate liver function.





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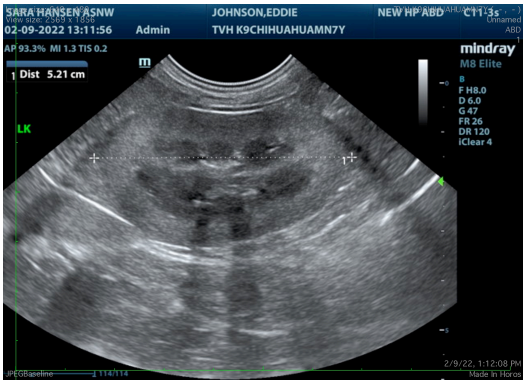

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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