



PATIENT PRESENTING CLINICAL SIGNS

PATIENT
Jake Myers

SPECIES
Canine

BREED
Westie

SEX
Neutered Male

AGE
11 Years

WEIGHT
26.5 Pounds

INTERPRETED BY
Kathleen Sennello DVM, MS, Diplomate ACVIM (Small Animal Internal Medicine)

IMAGING PERFORMED BY
Dr. Megan Cassels-Conway

HOSPITAL NAME
Central Broward AH

REFERRING VET
Dr. Janeen Lezcano

INVOICE
33472

DATE
12/15/21

P has hx of inc ALP. Liver bx performed in 2018 which showed hepatopathy characterized by cell swelling and severely increased copper levels. P was treated with d-penicillamine (copper chelator) 150mg po bid and a low copper diet was formulated by UT. Pet's ALP levels have been very stable until recently when they have started to progressively increase. No v/d/c/s. Eating well. No PU/PD/PP. Long term medications are Ursodiol, Galliprant, Apoquel and Cytopoint. P does not tolerate Denamarin. Discontinuing the Apoquel and a trial of Clavamox + Metronidazole did not impact the ALP level (levels actually increased). P also has hx of KCS, currently on Optimune and Optixcare.

Abnormal PE/Chem/CBC/UA Results: 12/21: ALP: 1415H, after 2 weeks on Clavamox + Metronidazole 11/21: ALP: 1263, 2 weeks off Apoquel 10/21: biannual wellness blood work: CBC: NSF, Chem: ALP: 1166H, T4: 1.4, UA: SG: 1.043, pH: 8.5, 1+ prot, quiet sediment 7/21: Idexx: ALP: 517H 11/20: ALP: 669, 2 weeks on galliprant 10/20: ALP: 610 4/20: ALP: 684

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic urine. The Bladder wall, trigone, ureteral papillae and visible urethra (to a depth of 2cm) appear normal with no evidence of wall thickening, mucosal irregularities, masses or cystic calculi.

The prostate is normal in size (0.62 cm) and shape for this neutered male dog. The parenchyma is homogenous and the external margins are smooth. The prostatic urethra appears normal with no evidence of irregularity, invasion, mass effect or calculi.

The left kidney has a normal shape and size (5.02 cm). Overall echogenicity is slightly hyperechoic with poor corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.33 cm). Overall echogenicity is slightly hyperechoic with poor corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The region of the left adrenal gland (cranial to left renal artery) is unremarkable. The adrenal is indistinctly visualized and appears to be approximately 0.25 cm. There is no evidence of mass effect, but a clear adrenal gland is not visualized.

The region of the right adrenal gland (between the right cranial kidney and caudal vena cava) is unremarkable. The adrenal is not clearly visualized, but there is a structure in this area measuring 0.25 cm, which could be consistent with right adrenal (but small). There is no evidence of a mass effect.

Spleen

The spleen is subjectively normal in size and the echotexture is homogenous. The splenic capsule is smooth with no visible irregularities. Rare discrete focal hyperechoic, perivascular parenchymal abnormalities are present. The appearance of these lesions is most consistent with benign splenic myelolipomas. The blood flow through the hilus and splenic parenchyma appears normal.



PATIENT

Liver

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The liver is large in size, and normal echogenicity with smooth peripheral margins. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. There are diffuse ill-defined, hyper- and hypoechoic nodules visualized, varying in size from approximately 0.5-1.0 cm.

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The gall bladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. There is a moderate amount of non-organized echogenic debris. The cystic and common bile ducts are normal/not visible.

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Gastrointestinal

The stomach contains minimal luminal contents. It measures at a normal thickness of <0.7cm with some variability due to the presence of rugal folds. The distinction of the gastric wall layers is adequate and there is no impression of reduced peristaltic activity. No masses or focal lesions were observed.

SEX

Neutered Male

The visualized areas of duodenum, jejunum and ileum have a relatively uniform diameter with minimal fluid distension. Wall thickness is normal. Bowel loops follow a curvilinear path with distinct wall layering maintaining the typical 1:3 muscularis:mucosa layer ratio. Duodenum wall measured 0.32 cm. Jejunum wall measured 0.22 cm. Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

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The ileocecal junction was visualized and exhibited normal intact wall layering and is subjectively of normal thickness. Sections of colon are visualized with formed fecal material and gas shadowing distally. There is no observed focal or generalized colon wall thickening or loss of layering.

WEIGHT

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Pancreas

The pancreas is normal and isoechoic to surrounding mesentery. There is no evidence of nodules or cystic lesions. There is no evidence of regional mesenteric inflammation or fluid.

INTERPRETED BY

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Free Abdomen

Evaluation of the peritoneal cavity did not reveal any evidence of effusion, or subjective lymphadenomegaly. The Medial iliac nodes appear normal and there was no evidence of a caudal aortic thrombus at the bifurcation. The omentum is of normal uniform echogenicity.

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Conway

PRIMARY FINDINGS

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- Large, heterogeneous liver with ill-defined nodules – The diffuse hepatic changes are non-specific and could be consistent with vacuolar hepatopathy, nodular hyperplasia, inflammatory/immune-mediated disease, fibrosis, extramedullary hematopoiesis, toxic hepatopathy (e.g., copper), infiltrative neoplasia (less likely) or other hepatopathy. Findings are most consistent with a benign process, although an underlying neoplastic process cannot be excluded as a possibility.

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- Moderate gallbladder sludge – The significance of the aggregated gallbladder sludge is unclear. This could represent an early mucocele, cholestasis, or may be secondary to fasting.

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SECONDARY FINDINGS

- Decreased corticomedullary distinction in both kidneys – The bilateral renal findings are consistent with age-related change.

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- Hyperechoic foci visualized in the spleen – most consistent with benign myelolipomas, although an underlying neoplastic process cannot be 100% ruled out.
- Bilaterally small adrenal glands/not clearly visualized.

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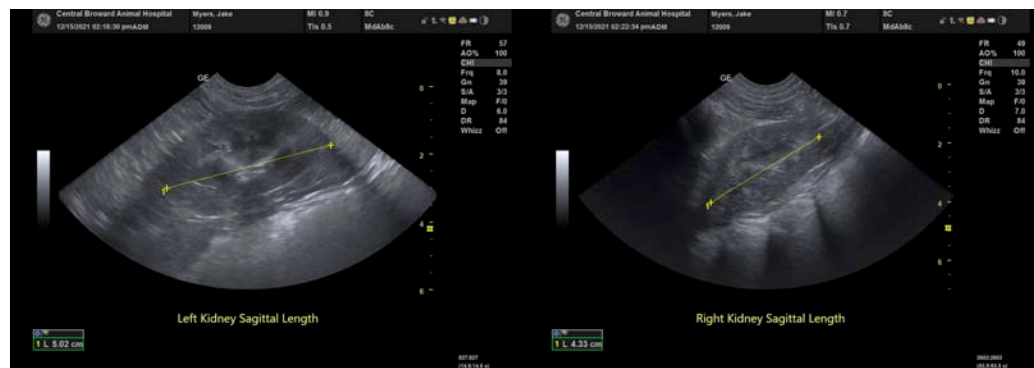
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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

There are no large focal lesions associated with the liver or gallbladder, which I suspect to be responsible for the ALP elevation. The previous finding of copper levels is interesting, as I usually associate this with an ALT and ALP elevation, so I do not know if this is a recurrence of copper accumulation, or more consistent with a vacuolar hepatopathy, less likely neoplasia, etc. Below are my recommendations for primary ALP elevation, and this is a common finding in Westies. An alternate option in this pet would be repeating chelation or re-biopsy of the liver to see what the current copper status is.

- Induction phenomena are the most common cause for an elevation in ALP. These are systemic illnesses that 'turn on' the liver enzyme. Causes of this include Cushing's disease, dental disease, arthritis, and numerous others. In many cases the exact cause is unclear but as long as ultrasound and bile acids tests are normal most patients do not have progressive changes in their liver. While liver biopsy is not routinely performed, vacuolar hepatopathy, is noted on most biopsies. This is often non-progressive but in rare cases can be more severe and lead to liver failure.
- If signs of cushings disease are present recommend endocrine function testing to evaluate for cushings disease.
- Consider fine needle aspirate to rule out round cell neoplasia -if this is a concern.
- If a cause for the ALP elevation is not identified: I recommend recheck general blood work every 6 months, ultrasound once per year, and bile acids test every 1-2 years based on other results. If the ALP continues to climb a biopsy could be considered.
- Consider long term use of denamarin, and monitoring for the signs of cushings developing.
- A primary vacuolar hepatopathy can be breed related and is seen in Scottish Terriers, Schnauzers, Cocker spaniels etc.

Both adrenal glands were measured as very small in this patient or difficult to visualize. This could be just incidental. Other differentials for small adrenals would be an external steroid source (consider eardrops, eyedrops, skin topicals, etc.) or Addison's disease (which seems unlikely), but an ACTH stimulation test could be helpful to both look for Cushing's and Addison's.





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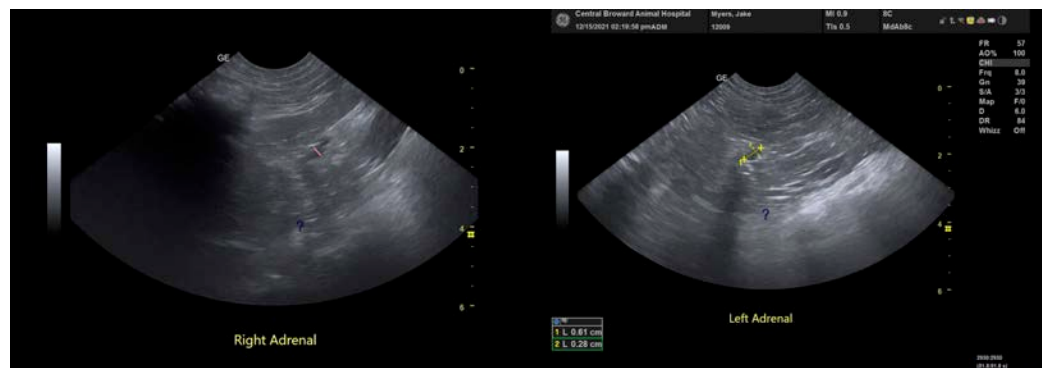
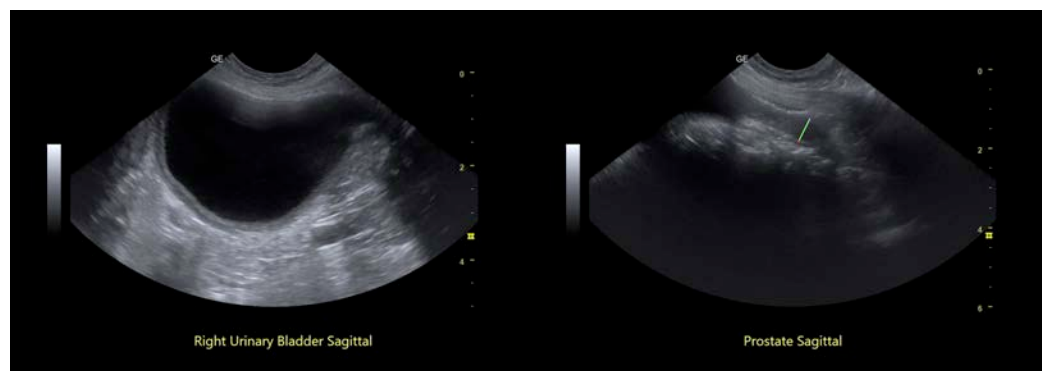
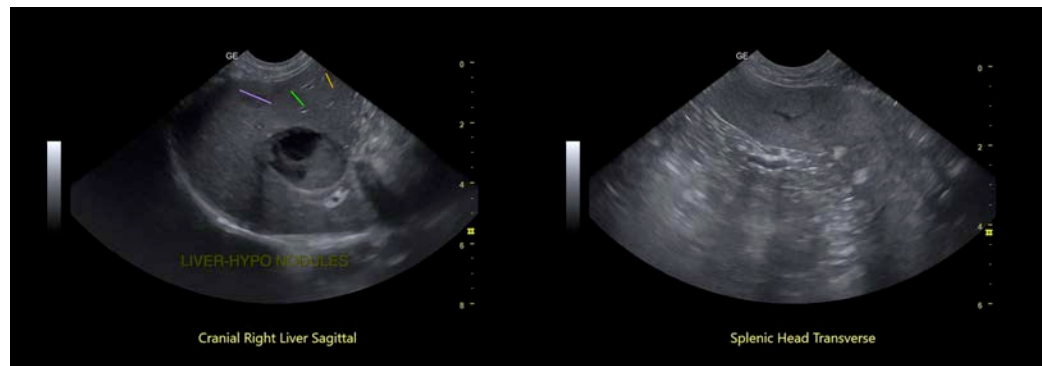
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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