



PATIENT

Lola Fluxman

SPECIES

Canine

BREED

Bichon Frise

SEX

Spayed Female

AGE

14 Years

WEIGHT

9.5 Pounds

INTERPRETED BY

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

**IMAGING
PERFORMED BY**

Dr. Cassels-Conway

HOSPITAL NAME

Central Broward AH

REFERRING VET

Dr. Cassels-Conway

INVOICE

26702

DATE

10/27/21

PRESENTING CLINICAL SIGNS

Significant ALP and ALT elevation with recent significant increase. Recent significant increase in azotemia. Diagnosed with CHF 2 months ago due to chronic mitral and tricuspid valve disease. Currently on Pimobendan 1.25mg BID and Cardalis (Spironolactone 20mg/benazepril 2.5mg) 1 tab BID. Blood pressure wnl.

Abnormal PE/Chem/CBC/UA Results: 10/13/21 CBC: WNL CHEM: Hyperglobulinemia 3.9, ALT 259, ALP 1240, BUN 50, Creat 1.6, Na 161 UA: 1.024, clear sediment 6/29/21 CBC WNL Chem: ALT 155, ALP 279, Creat 2.5, BUN 67, TP 6.8 UA: 1.013, 2+ protein, 2+ blood, WBC 11-20, RBC 2-3, cocci 10-25 6/7/21 LDDST: WNL Pre 4.9 Post 4H 0.4 Post 8H 0.4 5/24/21 CBC WNL Chem ALT 199, ALP 578, BUN 29, Creat 0.6

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic urine. There are two large, hyperechoic, shadowing stones visualized in the dependent portion of the urinary bladder, measuring 0.78 cm and 0.57 cm. The bladder wall appears normal in thickness with mild mucosal irregularity. The area of the trigone and visible urethra (to a depth of 2cm) appear normal and free of masses.

The left kidney has a normal shape and size (4.09 cm) with pyelectasia at 0.22 cm and non-obstructive nephroliths visualized. 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 infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.27) with non-obstructive nephroliths and pyelectasia at 0.22 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 infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is normal in size measuring 0.37 cm at the caudal pole. It is observed in its normal position cranial to the left renal artery. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

The right adrenal gland is normal in size measuring 0.45 cm at the caudal pole. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

Spleen

The spleen is subjectively normal in size, echotexture is homogenous, and the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. No focal parenchymal abnormalities are visualized.

Liver

The liver is subjectively normal in size with smooth peripheral margins. The parenchyma is hyperechoic and homogenous in echotexture. The visible portions of the vasculature and biliary tract appear normal. No focal nodules or cystic lesions are observed.

The gallbladder lumen is moderately distended. The wall of the gall bladder is prominent, but not overtly thickened, and has a smooth mucosal surface. There are two cystic appearing structures within the hepatic parenchyma. One is clearly gallbladder. The other is likely another portion of the gallbladder,



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but in the images submitted, I cannot rule out a large hepatic cyst. The cystic and common bile ducts are normal/not visible.

Gastrointestinal

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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.

BREED

Bichon Frise

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 0.33 cm. Jejunum wall measured 0.25 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.

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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.

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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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PRIMARY FINDINGS

- Hyperechoic liver – The diffuse hepatic changes are non-specific and can be seen with vacuolar hepatopathy, reactive change, nodular hyperplasia or, less likely, inflammatory/immune-mediated disease, infiltrative neoplasia, or other hepatopathy.
- Mineralized shadowing stones visible in the urinary bladder
- Decreased corticomedullary distinction in both kidneys with non-obstructive nephroliths – Mild loss of corticomedullary distinction in both kidneys could be consistent with chronic degenerative disease or interstitial nephrosis. The hyperechoic mineralized foci observed at the corticomedullary junction of the left/right kidney are consistent with small, non-obstructive nephroliths.

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SECONDARY FINDINGS

- Mild sludge in the gallbladder – The significance of the aggregated gallbladder sludge is unclear. This could represent an early mucocele, cholestasis, or may be secondary to fasting. There are two cystic structures visualized in the liver, which I suspect are two separate portions of a normal gallbladder, but I cannot rule out the possibility of an adjacent hepatic cyst.

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

No significant focal lesions were visualized associated with the liver to explain the recent increase in liver values. There are bladder stones present and mild pyelectasia in both kidneys. Recommend



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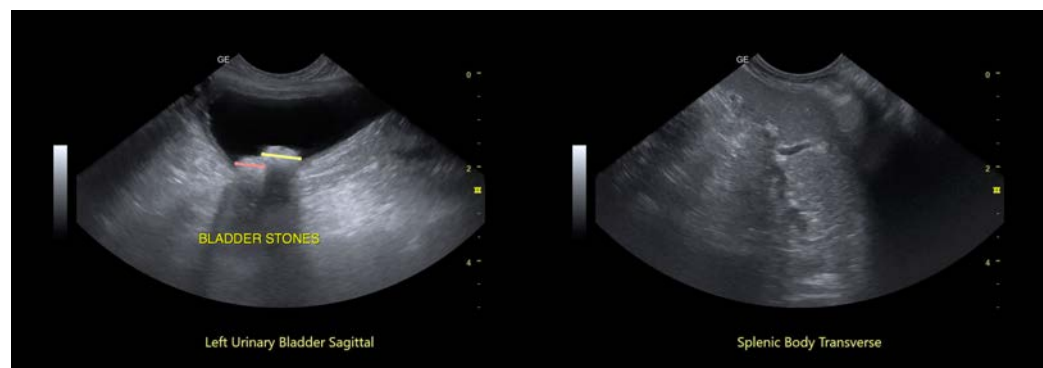
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urinalysis and culture to rule out pyelonephritis, as this can sometimes cause a reactive hepatopathy. It is also possible that Cushing's disease has developed, correlate this with your clinical signs. If signs of Cushing's are present, consider adrenal function testing. The adrenal glands are not enlarged. This does not exclude the possibility of Cushing's disease, but makes it less likely. It is also possible that some of the cardiac meds are playing a role in the azotemia, as there could be prerenal component present. Below are the recommendations I give for dogs with primarily an ALP elevation and relatively normal adrenal glands.

- 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 Cushing's disease are present recommend endocrine function testing to evaluate for Cushing's 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 Cushing's developing.
- A primary vacuolar hepatopathy can be breed related and is seen in Scottish Terriers, Schnauzers, Cocker spaniels etc..

Recommend abdominal radiographs to further evaluate the size of the bladder stones present, and if you think they could pass, need to be surgically removed, etc.





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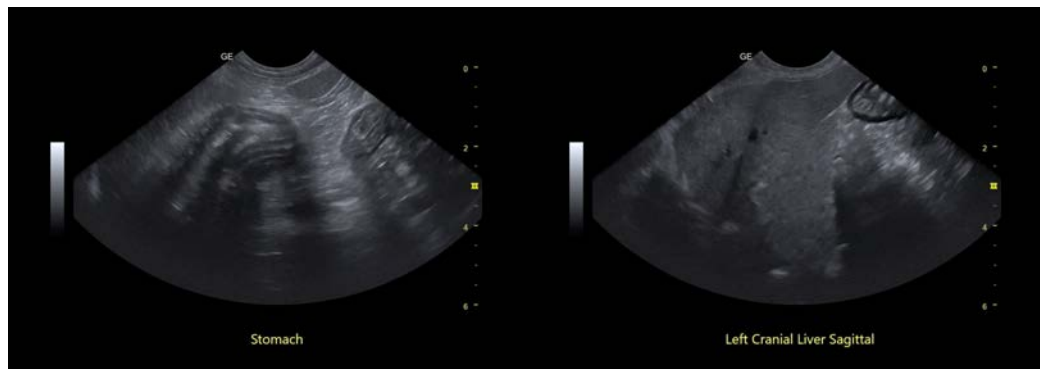
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

REFERRING VET

Dr. Cassels-Conway

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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