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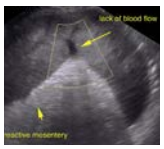
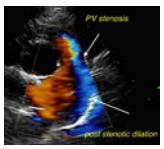
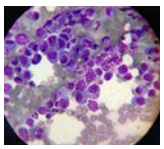
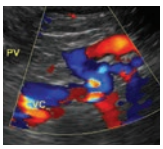

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1-800-838-4268 info@sonopath.com

**PATIENT**

Oliver Rose

**SPECIES**

Canine

**BREED**

Australian Terrier

**SEX**

Neutered Male

**AGE**

12.5 Years

**WEIGHT**

8 kg

**INTERPRETED BY**

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

**IMAGING PERFORMED BY**

Dr. Trudeau

**HOSPITAL NAME**

Petworks VH

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**INVOICE**

44161

**DATE**

1/12/23

## PRESENTING CLINICAL SIGNS

Shaking, panting, pu/pd Elevated liver values Currently on medications for possible back pain (methocarbamol and metacam) Looking for underlying cause of panting and shaking =

Abnormal PE/Chem/CBC/UA Results: Chem :ALT 392 U/L; Lipase 2787 U/L; GGt 14 U/L otherwise NSF CBC: NSF U/A: pH 8; minor amount of blood and low SG at 1.008 fT4 and TSH - WNL

## 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 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 (4.72 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal 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 (4.98 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

### *Adrenal Glands*

The left adrenal gland is normal in size measuring 0.60 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 0.51 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. The spleen echotexture is heterogenous, mottled, and irregular. The blood flow through the hilus and splenic parenchyma appears normal. There is an isoechoic mass effect/bulge visualized in the spleen measuring approximately 1.66 cm x 3.24 cm.

### *Liver*

The liver is large and irregular. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. The hepatic parenchyma is diffusely nodular with too numerous to count, irregular, ill-defined, hypoechoic nodules with occasional mixed echogenic and hyperechoic nodules varying in size from roughly 0.25-2.5 cm.

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/possibly sandy debris. The cystic and common bile ducts are normal/not visible.

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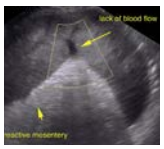
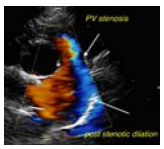
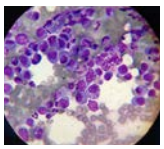
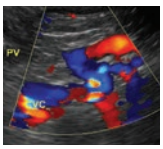

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### *Gastrointestinal*

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.

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. Jejunum wall measures 0.40 cm. Duodenum wall measures 0.46 cm. Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

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.

### *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.

### *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.

## ULTRASONOGRAPHIC FINDINGS

- Large, irregular, heterogeneous, nodular liver – 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. The nodules visualized could represent either a benign or neoplastic process. Recommend a fine needle aspirate.

- Mottled spleen with isoechoic mass effect – The diffuse splenic changes are non-specific and could be consistent with lymphoid hyperplasia, extramedullary hematopoiesis, infiltrative neoplasia, inflammation, other. Cytology or histopathology would be necessary to get a definitive diagnosis. The bulging isoechoic region in the spleen is of uncertain etiology. Consider a fine needle aspirate and close continued monitoring.

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

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The liver is large, irregular, heterogeneous, and has numerous ill-defined hypoechoic nodules with occasional hyper- and mixed echogenicity nodules. These nodules are certainly concerning, and there is concern for a possible underlying neoplastic process, but additionally these could represent benign hyperplasia, etc. Recommend a fine needle aspirate of several regions of the liver. Additionally, consider a liver function test and screening for Leptospirosis. If liver function is abnormal but cytology is benign, consider obtaining biopsies of the liver to better characterize the hepatic disease present to aid possible treatment.

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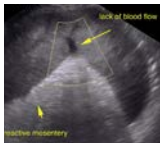
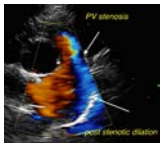
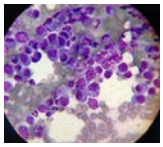
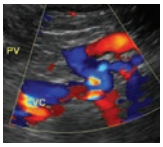

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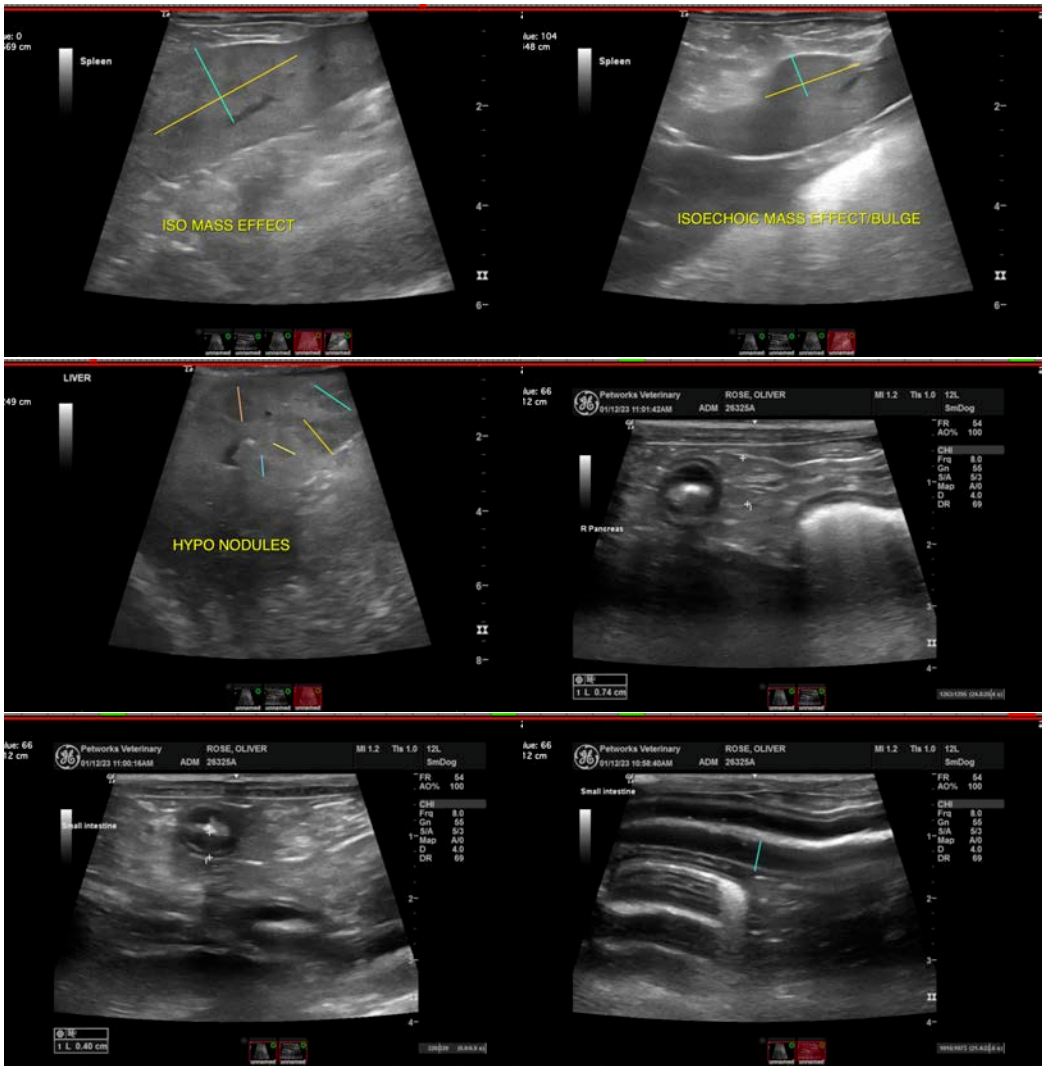
The spleen appears irregular and mottled with an isoechoic bulging mass effect. This could represent a capsular irregularity, etc., but the parenchyma is abnormal, so there is concern this could be a true mass effect, benign or neoplastic. Consider a fine needle aspirate and continued monitoring of this lesion.

Recommend three view thoracic radiographs to evaluate for possible concurrent thoracic disease/involvement.

There is no significant inflammation surrounding the liver, no evidence of overt pancreatic inflammation, etc. to explain the panting and shaking reported. The gallbladder has a moderate amount of debris, which is hyperechoic and could be somewhat mineralized. The gallbladder wall appears relatively normal, but there is some surrounding hyperechoic tissue. This is not the classic appearance of significant gallbladder disease, but I cannot rule out the possibility of cholecystitis causing discomfort. Consider treating with chronic Ursodiol and a course of Amoxicillin, Metronidazole, etc., with continued monitoring of the gallbladder and liver values. The large liver could be causing discomfort, but it would be atypical to see a significant pain response. Continued search for an extra-abdominal cause of discomfort is warranted, as I am not confident that the gallbladder is the source of discomfort.



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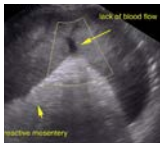
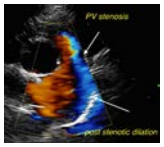
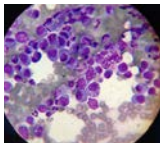
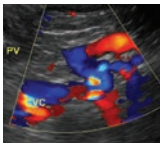

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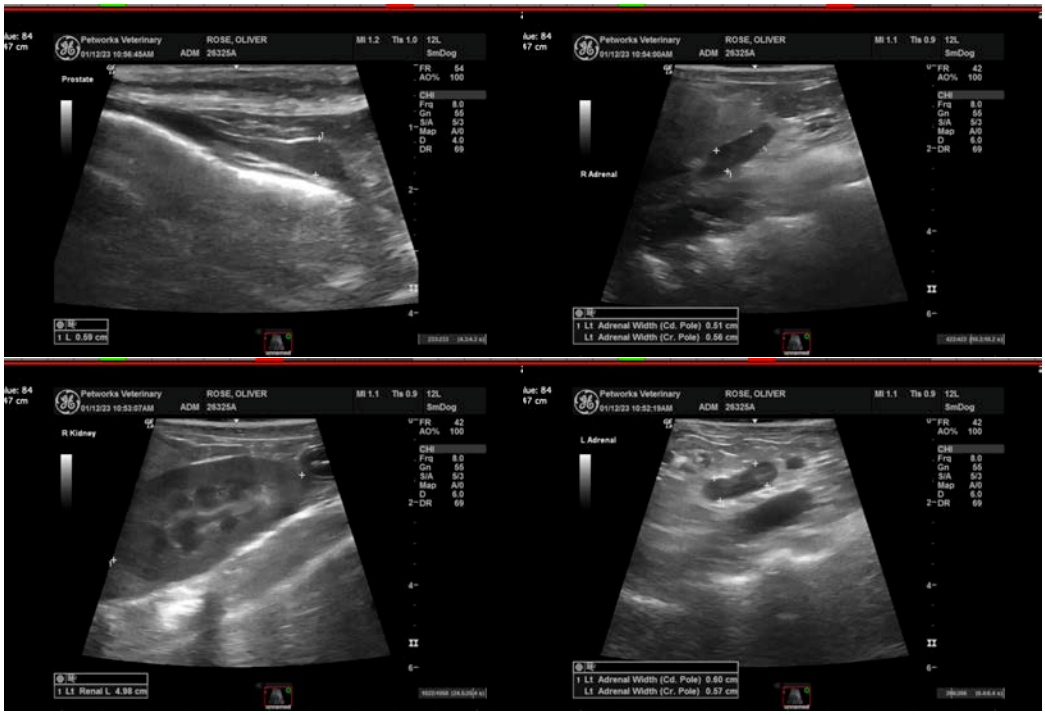


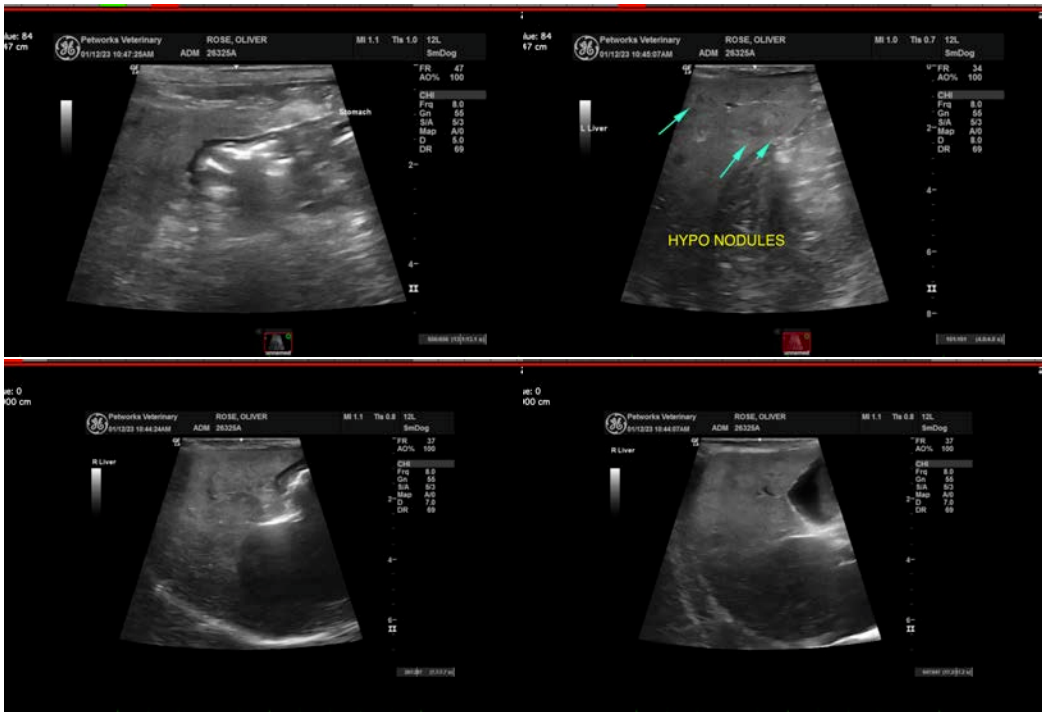

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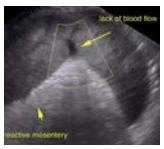
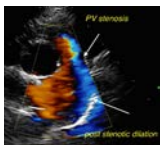
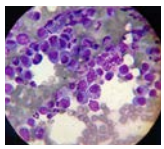
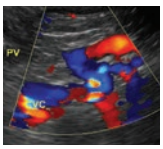

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**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

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

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