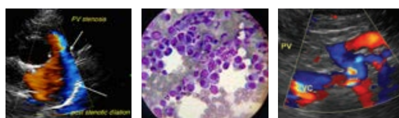




**DATE**
8/25/21

**PATIENT**
Huckleberry Press

**SPECIES**
Canine

**BREED**
Poodle X

**SEX**
Neutered Male

**AGE**
10/22/17

**WEIGHT**
17.63 Pounds

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

**HOSPITAL NAME**
Everhart VC

**REFERRING VET**
Dr. Goodman

**INVOICE**
24934

## PRESENTING CLINICAL SIGNS

History: History of diabetes mellitus since 2012 and liver value elevations since 2018. Recently presented for hyporexia 8/20. Treated supportively with outpatient injections. Hyporexia persists. AFAST showed suspected mass in area near gallbladder. Advise geriatric scan and evaluation for liver mass.

Current Medications: Metronidazole 125 mg PO SID, Cerenia 16 mg PRN, Mirtazapine 3.75 mg PRN, Insulin Novolin N 7 units BID, Prilosec 1/3 tablet SID PM.
Lab Results:
8/20/21: ALKP 1234, ALT 250, glu 181, glob 5.1, chol 410 BUN 54,
5/10/21: ALKP 1845, ALT 400, glu 536, chol 520, BUN 33
4/9/21: ALKP 796, ALT 376, glu 242, chol 854, BUN 43
6/15/20: ALKP 1298, ALT 364, glu 247, chol 391, BUN 44.
Radiographs: 8/24/21 NSF
Date of Previous IntraPet Ultrasound: No previous IntraPet scans.
Sedation: not needed
Stat Report: not requested

## 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 (1.18 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 (4.94 cm). Overall echogenicity is normal with adequate 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 (5.02 cm). Overall echogenicity is normal with adequate 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 left adrenal gland is normal/borderline enlarged in size measuring 0.70 cm at the caudal pole. It is observed in its normal position cranial to the left renal artery. It is largely normal in appearance, but is heterogeneous with small pinpoint hyperechoic foci. There is no evidence of a mass effect.

The right adrenal gland is normal/borderline enlarged in size measuring 0.60 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 largely normal in appearance, but somewhat heterogeneous with hyperechoic speckles. No evidence of a mass effect.

### *Spleen*
The spleen is subjectively normal in size. The spleen echotexture is heterogenous and mottled, the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. There is diffuse hyperechoic speckling throughout the spleen. This favors a benign process.

### *Liver*
The liver is large in size and normal in 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 is a very ill-defined, heterogeneous, slightly hypoechoic, solid nodule measuring 1.57 cm deep to the gallbladder.

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 large amount of non-organized echogenic debris. The cystic and common bile ducts are normal/not visible.

### *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. The duodenum measured as normal (between 0.3-0.5cm in wall thickness) and the jejunum measured as normal (between 0.2-0.47cm.) 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 prominent and mottled compared to the surrounding isoechoic 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.

### *Other*
A brief view of the heart was submitted. No pericardial effusion was seen.

## PRIMARY FINDINGS

- Large, heterogeneous liver with ill-defined, hypoechoic nodule – 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.

- Prominent, mottled pancreas – The pancreatic changes are most consistent with age-related parenchymal remodeling, potentially secondary to a prior inflammatory episode, early fibrosis or chronic pancreatitis.
- Borderline bilateral adrenomegaly – The bilateral adrenomegaly could be consistent with bilateral hyperplasia (e.g., secondary to pituitary-dependent hyperadrenocorticism), bilateral infiltrative neoplasia, inflammatory adrenal disease, other. Correlation with clinical findings is recommended.

## SECONDARY FINDINGS

- Hyperechoic mottling/speckles in the spleen – this is likely a benign process, but cytology or histopathology would be necessary to confirm.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Many of the changes observed on today's scan are expected in a diabetic changes. There are diffuse hyperechoic foci through the tissues, which I suspect is an incidental finding, dystrophic minerlization, etc. Consider evaluating calcium level. It can be difficult to differentiate between diabetes and Cushing's, as both diseases cause PU/PD, big livers, elevated ALP, etc. I typically recommend workup for Cushing's if the diabetes is very difficult to treat or there are concurrent medical issues raising suspicion. Additionally, the gallbladder has a lage amount of echogenic debris. It does not appear overtly inflamed, but I would consider monitoring it closely and starting Ursodiol. In addition to monitoring the gallbladder, I typically recommend the following in dogs that have a significant ALP elevation.

- Induction phenomena are the most common causes 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.

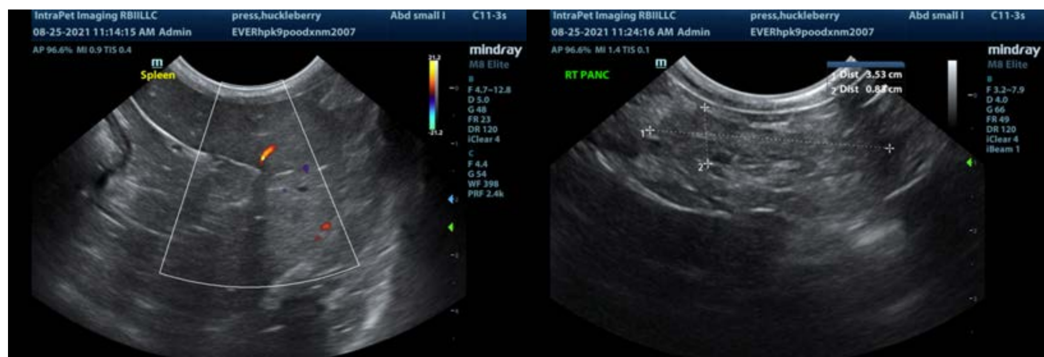
- If signs of cushings disease are present recommend endocrine function testing to evaluate for cushings disease.

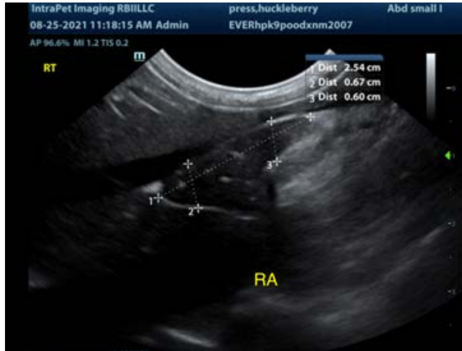
- Consider fine needle aspirate to rule out round cell neoplasia -if this is a concern.

- 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..

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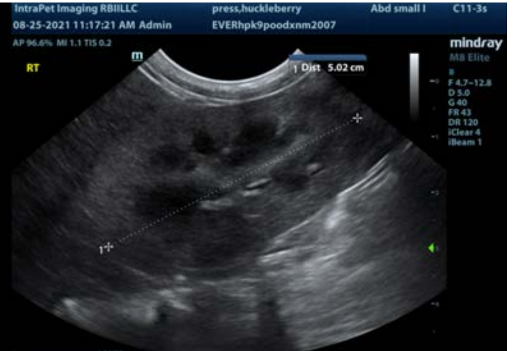
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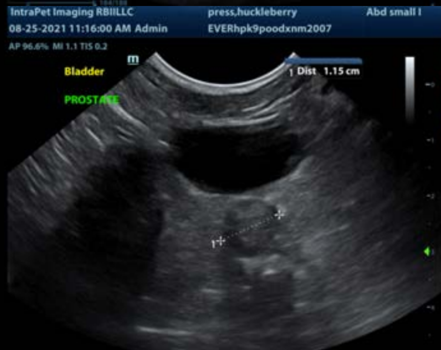
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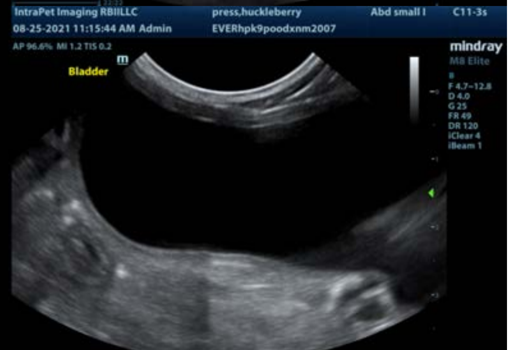
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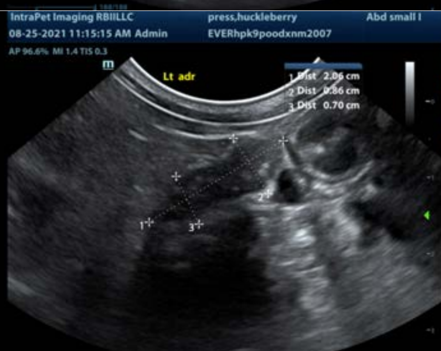
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Lt adr
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M8 Elite
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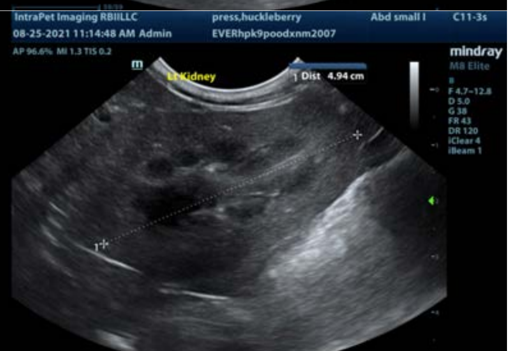
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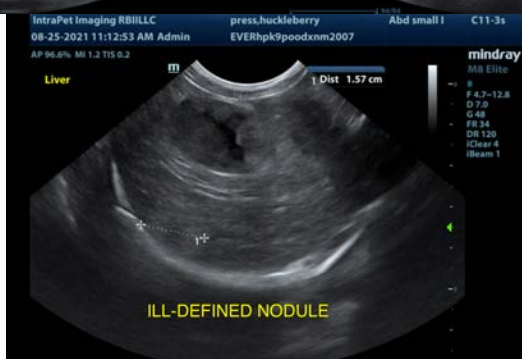
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Liver
mindray
M8 Elite
1 Dist 1.57 cm
F 4.7-12.8
D 7.0
G 48
FR 34
DR 120
iClear 4
iBeam 1
ILL-DEFINED NODULE

**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.

Kathleen Sennello DVM,MS, Diplomate ACVIM (Small animal Internal Medicine)
kathleen.sennello@sonopath.com