

**DATE PRESENTING CLINICAL SIGNS**

9/13/22 Elevated liver values, no improvement with Denamarin.

**PATIENT** Current Medications: Denamarin daily for life.

Lab Results: 7/7- ALKP 1117. 8/9- ALKP 1644.

Simba Pinto Date of Previous IntraPet Ultrasound: No previous.

Sedation: Not required to complete full diagnostic ultrasound.

Stat Report: Not requested.

**SPECIES**

Canine

**BREED**

Pomeranian

**SEX**

Neutered Male

**AGE**

5/5/13

**WEIGHT**

17 Pounds

**INTERPRETED BY**

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(Small Animal Internal  
Medicine)

**IMAGING PERFORMED BY**

Rachel Brilhart RDMS

**HOSPITAL NAME**

Banfield Abingdon

**REFERRING VET**

Dr. Simpson

**INVOICE**

41266

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN****Urinary System**

The urinary bladder is moderately distended with mild primarily suspended echogenic debris and some dependent shadowing/sandy debris present. The Bladder wall, trigone, ureteral papillae and visible urethra (to a depth of 2cm) appear normal with no evidence of wall thickening, mucosal irregularities or masses. Some of the sandy debris does appear to extend into the proximal urethra. Echogenic debris of this type can be associated with small crystals, sandy debris or small calculi. Correlate findings with abdominal radiographs, urinalysis and culture.

The prostate is normal in size (1.1 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 (4.03 cm) with pinpoint non-obstructive nephroliths and an occasional cortical cyst. Overall echogenicity is slightly hyperechoic with poor 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, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.72 cm) with pinpoint non-obstructive nephroliths, and a slightly larger nephrolith measuring 0.23 cm. Overall echogenicity is slightly hyperechoic with poor 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, infarcts or hydroureter. Renal vasculature is normal.

**Adrenal Glands**

The left adrenal gland is normal 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 normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

The right adrenal gland is normal in size measuring 0.55 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 large and hyperechoic. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. There are at least two somewhat ill-defined, isoechoic mass effects visualized associated with the liver. One is visualized in the left

sagittal view measuring 4.3 cm x 2.67 cm. Another mass effect is visualized on the right side of the distal liver lobe measuring 2.24 cm x 1.55 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 mild 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. Duodenum wall measured 0.48 cm. Jejunum wall measured 0.26 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, hyperechoic, heterogeneous liver with isoechoic mass effects – These lesions do not have significant criteria for malignancy and trend towards benign lesions.
- Dependent sandy debris/small calculi in the urinary bladder and proximal urethra – Recommend urinalysis, culture, and correlate with abdominal radiographs.
- Decreased corticomedullary distinction in both kidneys with pinpoint non-obstructive nephroliths – The bilateral renal findings are consistent with age-related change.

## **INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The liver is large and hyperechoic, possibly consistent with a vacuolar hepatopathy. Additionally, there are some ill-defined isoechoic mass effects. These could represent prominent hyperplastic tissue, regenerative nodules, early mass lesions, etc. Both lesions are in a relatively good spot for a fine needle aspirate, so this could be considered. These could be incidental findings or a source of the ALP elevation. If the fine needle aspirates are relatively normal, consider the following evaluation.

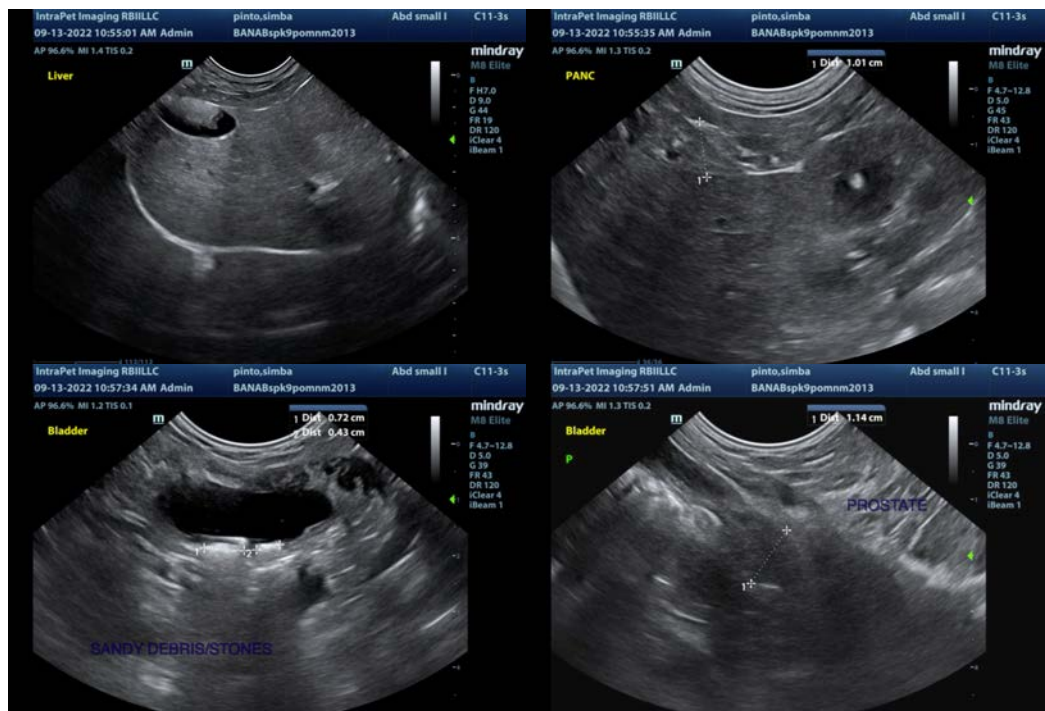
- Induction phenomena are the most common cause for an elevation in ALP. These are systemic illnesses that 'turn on' the liver enzyme. Causes of this include Cushing's disease, dental disease, arthritis, and numerous others. In many cases the exact cause is unclear but as long as ultrasound and bile 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.

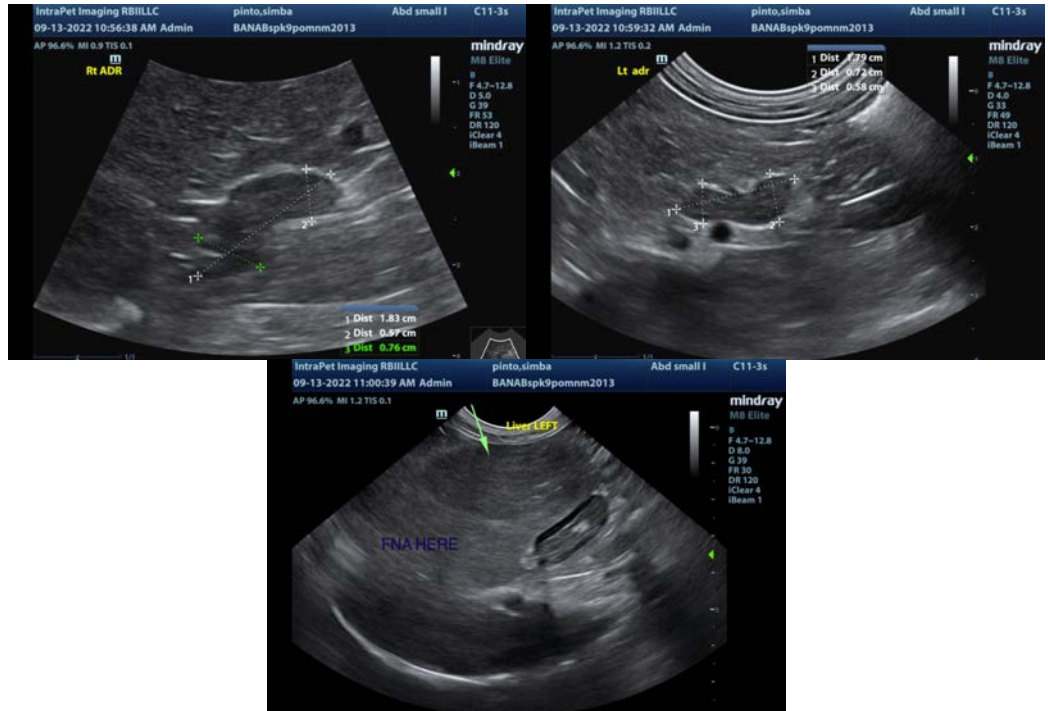
- If signs of cushings disease are present recommend endocrine function testing to evaluate for cushings disease.
- Consider fine needle aspirate to rule out round cell neoplasia -if this is a concern.
- If a cause for the ALP elevation is not identified: I recommend recheck general blood work every 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..

The changes observed in the kidneys are consistent with mild mineralizations and age related change. Recommend continued monitoring and a blood pressure evaluation.

The sandy debris in the urinary bladder is extending into the proximal urethra. Consider a urinalysis and culture and close continued monitoring for the development of lower urinary tract signs.







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.

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