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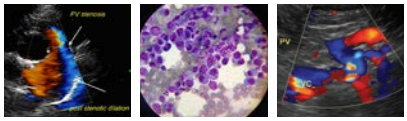

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DATE

1/11/22

PATIENT

Muffin Buchanan

SPECIES

Canine

BREED

Maltese X

SEX

Spayed Female

AGE

1/18/09

WEIGHT

11.9 Pounds

INTERPRETED BY

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

IMAGING PERFORMED BY

Stephanie Pearce RDCS, RVT

HOSPITAL NAME

Greenbrier Vet Clinic

REFERRING VET

Dr. Dellinger

INVOICE

34125

PRESENTING CLINICAL SIGNS

History: P has a urolith that will need to be removed by Sx. Routine blood work shows significant elevation of ALP (1705). Rest of liver values are normal.

Lab Results: ALP 1705, chol 406. Attached separately.
Date of Previous IntraPet Ultrasound: No previous IntraPet scans.
Sedation: Not required to complete full diagnostic ultrasound.
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, or masses. There are a few shadowing dependent mineralizations visualized near the trigone of the urinary bladder, most consistent with small stones, measuring 0.57, 0.51, and 0.42 cm. On some images, some of the sandy, mineralized debris is extending into the proximal urethra.

The left kidney has a normal shape and size (4.03 cm) with small cortical cysts and non-obstructive nephroliths. 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, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.42 cm) with cortical cysts and small pinpoint non-obstructive nephroliths. 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, infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is large in size measuring 0.83 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/borderline plump in size measuring 0.54 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, and 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 focal but somewhat subtle irregular, hyperechoic mass effect within the hepatic parenchyma on the left side, measuring 2.48 cm x 3.23 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 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 uniform diameter with minimal fluid distension. Wall appears subjectively, mildly increased. Bowel loops follow a typical curvilinear path with distinct wall layering. Duodenum wall measured 0.42 cm. Jejunum wall measured 0.35 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.

PRIMARY FINDINGS

- Heterogeneous liver with focal hyperechoic mass effect within the parenchyma – 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 focal mass is hyperechoic, which increases the likelihood somewhat that it is benign. This could represent a benign or cancerous lesion.

- Small, dependent stones within the urinary bladder as well as sandy debris within the proximal urethra – Recommend urinalysis and culture.

- Subjectively thickened small intestine – The mild small intestinal wall changes may be a normal variant in this patient or could be consistent with an inflammatory process (e.g., inflammatory bowel disease).

SECONDARY FINDINGS

- 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.

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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The elevation in ALP reported could be secondary to the lesion visualized within the liver, or if signs of Cushing's disease are presents, could be consistent with a cortisol excess. Options include:

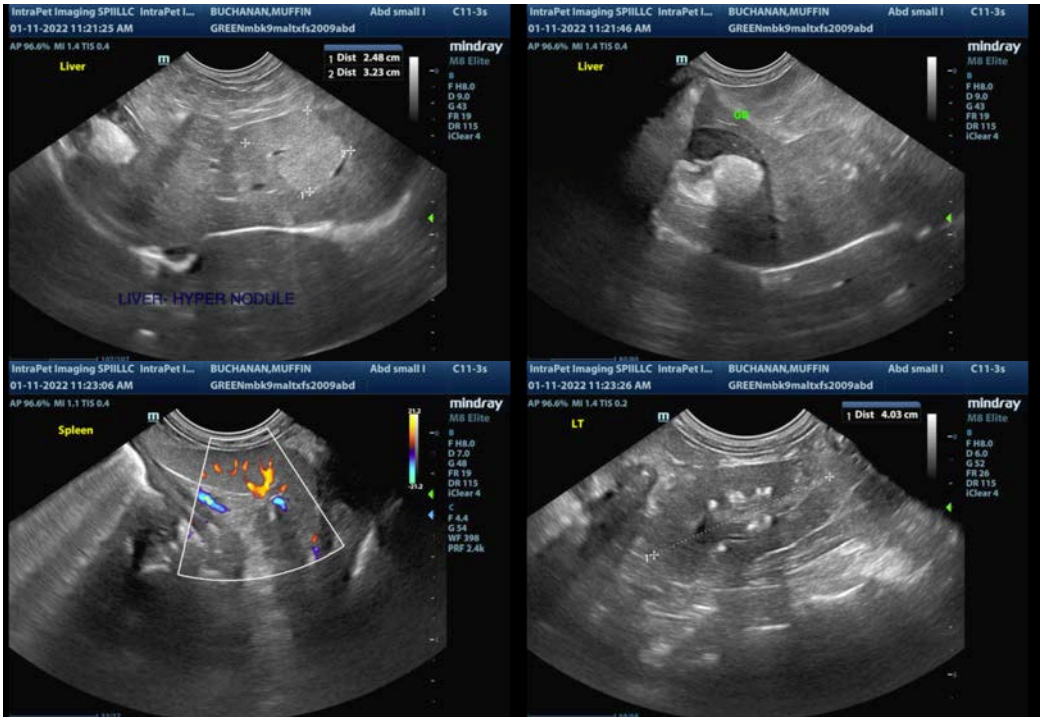
- Fine needle aspirate of the hyperechoic region in the liver.
- If surgical resection would be considered, you could consider a contrast CT scan and evaluation for possible surgery at the time of cystotomy.
- If this type of surgery is beyond what is desired, then consider continued monitoring with ultrasound.
- If signs of Cushing's are present, consider an ACTH stimulation test to assess adrenal function, keeping in mind that false positives could exist due to concurrent medical issues.
- Additionally, you could consider a liver biopsy at the time of surgery for the cystotomy.

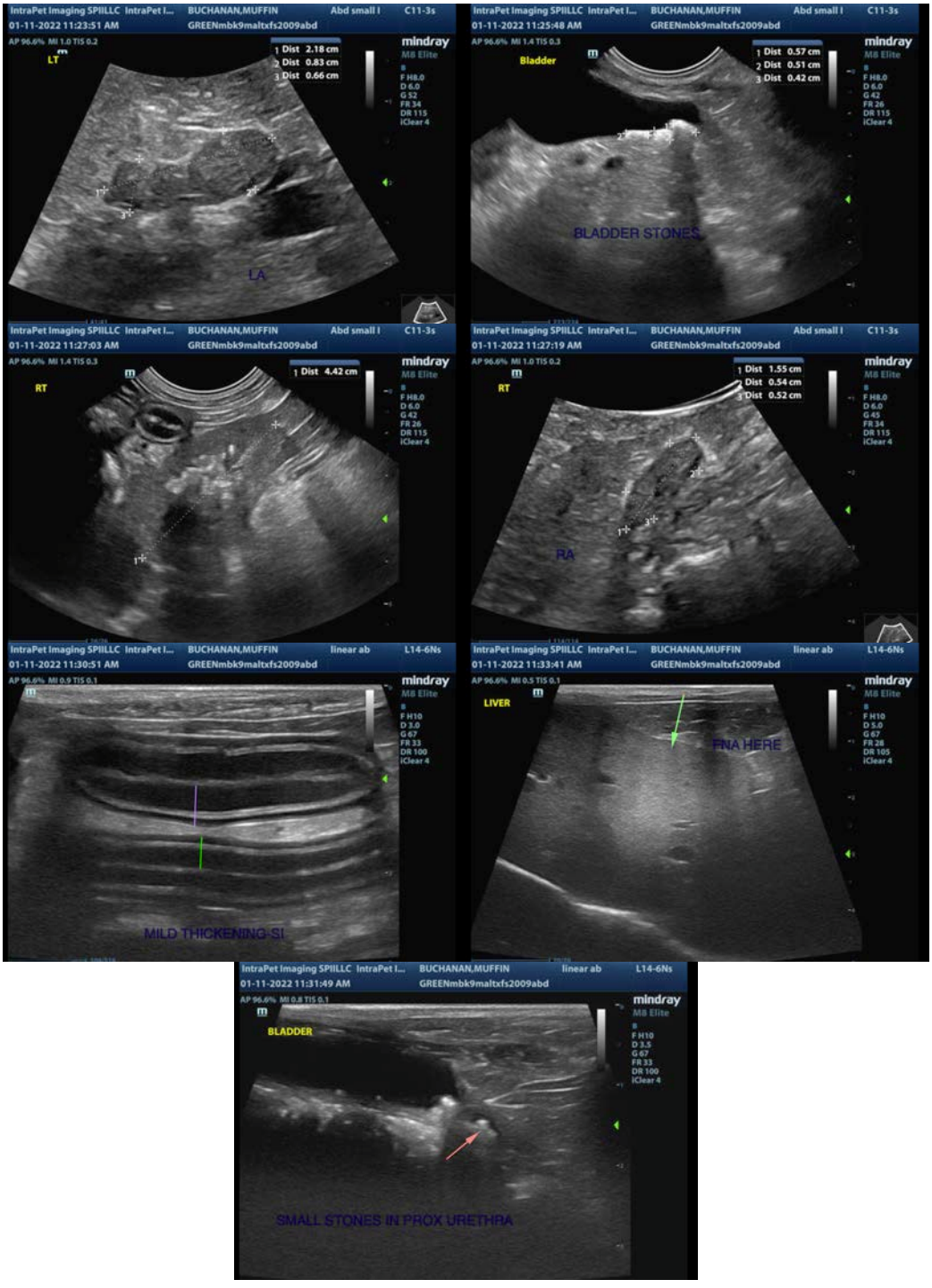
The bladder does not appear overly thickened or irritated due to the stones present. Some of these are small enough to likely pass. Correlate findings with abdominal radiographs to ensure the size warrants surgical removal. Recommend urinalysis and culture.

Additionally, changes were visualized regarding the kidneys, gallbladder and small intestine.
The renal changes likely represent progressive renal disease consistent with age.

The gallbladder sludge is moderate, but the all of the gallbladder appears relatively healthy. Recommend continued monitoring +/- the use of Ursodiol.

The small bowel changes are subjective. If chronic small intestinal disease is present, consider a GI panel to look for evidence of B12 deficiency, dysbiosis, etc.





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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