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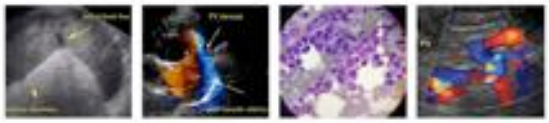

IMAGING PERFORMED BY
pawsonography@gmail.com 530-786-8340

PATIENT

Fauna Libke

SPECIES

Canine

BREED

Dachshund

SEX

Spayed Female

AGE

14 years

WEIGHT

16 Pounds

INTERPRETED BY

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

IMAGING PERFORMED BY

Loetitia Saint-Jacques, RVT

HOSPITAL NAME

Truckee Meadows Veterinary

REFERRING VET

Dr. Rachel K

INVOICE

91964

DATE

9/23/21

PRESENTING CLINICAL SIGNS

History: Medication Strength Dosing Instructions Last given Temaril P 1/2 T PO SID Procedure: Abdominal Ultrasound Current Problem List: History of anal gland impactions Elevated liver values Elevated total Calcium Elevated neutrophils History of allergic rhinitis responsive to TemP Presenting Complaint: Routine Senior labwork evaluated on patient at most recent visit (presented for scooting / discomfort) history of impacted anal glands. Labwork showed markedly elevated liver values, elevated total calcium and elevated neutrophils. Other than scooting, patient has no concerning clinical signs at home. Pertinent Diagnostic Results: 9/20/21 - Senior Wellness Panel CHEM - Ca 12.1 - TP 7.3 - ALB 4 - ALT 210 - ALP 4404 - GGT 21 T4 - 2.3 CBC - NEUs 11686 - PLTs 489 UA - USG 1.036 - pH 5.5 - mod RBCs Markedly elevated liver enzymes: primary hepatopathy vs other vs neoplasia

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder wall appears diffusely mildly thickened with mild mucosal irregularity that measured 0.39 cm. No focal lesions are observed. The trigone, ureteral papilla and proximal urethra to a depth of 2.0 cm appear normal with no evidence of calculi or mass effects. The findings are most consistent with cystitis or decreased urinary distension.

The left kidney has a normal shape and size (4.46 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. Small cortical cysts are noted. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (3.9 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. Small cortical cysts are noted. 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 0.66 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 0.63 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 and the echotexture is homogenous. The splenic capsule is smooth with no visible irregularities. Rare discrete focal hyperechoic, perivascular parenchymal abnormalities are present. The appearance of these lesions is most consistent with benign splenic myelolipomas. The blood flow through the hilus and splenic parenchyma appears normal.

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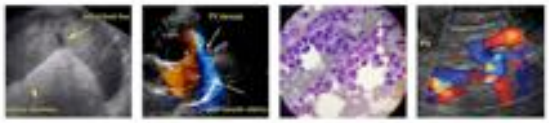

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Liver

The liver is subjectively large 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. A 0.99 cm hyperechoic nodule is visualized in the parenchyma of the liver. The gallbladder lumen is moderately distended. The wall of the gallbladder 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. The duodenum measured 0.43 cm and the jejunum measured 0.31 cm, 0.29 cm. Bowel loops follow a typical curvilinear path with distinct wall layering. Visualized peristalsis appears appropriate. Mucosal speckling is observed in some areas of the small intestine.

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.

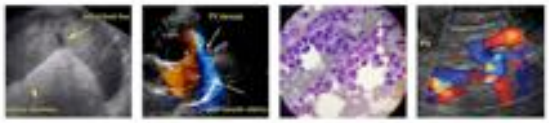
Free Abdomen

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

PRIMARY FINDINGS:

- Mildly, irregular, thickened urinary bladder wall. The bladder mucosal changes could be consistent with cystitis or artifactual due to lack of adequate luminal distension. Bladder neoplasia cannot be ruled out but is considered unlikely in this patient. Recommend urinalysis and culture.
- Large heterogenous liver with hyperechoic 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



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hepatopathy (e.g., copper), infiltrative neoplasia (less likely) or other hepatopathy.

- Moderate gallbladder sludge. The significance of the aggregated gallbladder debris is unclear. This could represent an early mucocele, cholestasis, or may be secondary to fasting.
- Mildly thickened small intestine with some areas of observed mucosal speckling. 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). Bright mucosal speckling has been proposed to represent dilated lacteals or focal accumulation of mucus, cellular debris etc. in the mucosal crypts of the small intestine.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The changes observed in the liver are non-specific. The small, hyperechoic nodule is likely benign, but should be monitored for changes. The adrenal glands are not overtly enlarged, but this does not rule out the possibility of Cushing's disease. These are the recommendations I follow when evaluating a pet for an ALP elevation.

An elevation in ALP is a common finding. In general, however, causes of ALP elevation fall into three primary categories:

Induction phenomena, biliary diseases, and primary liver disorders.

- Induction phenomena are the most common. 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..

I recommend an ionized calcium to further evaluate the elevated calcium reported. I recommend careful evaluation of the anal glands to ensure that you are not dealing with an anal gland tumor causing hypercalcemia. I recommend three view thoracic radiographs.

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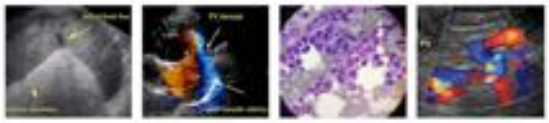

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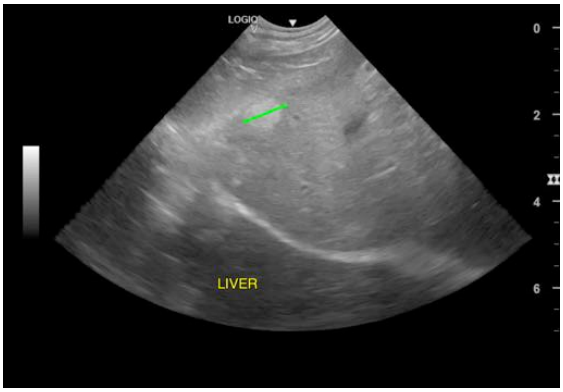
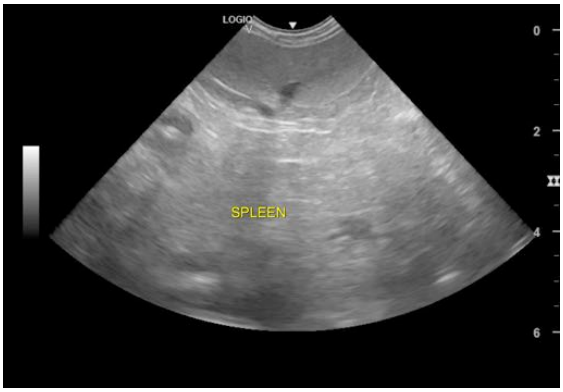
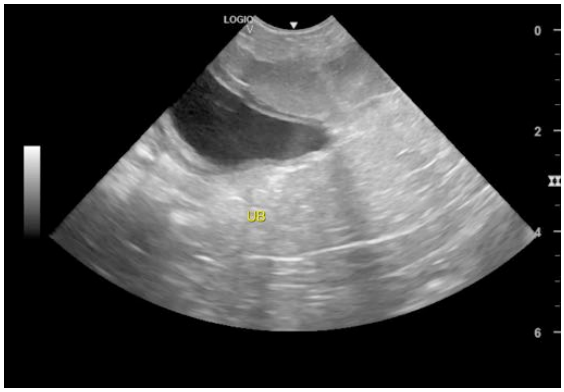
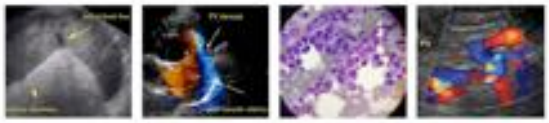






The information and recommendations provided are based on the images presented by the referring



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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