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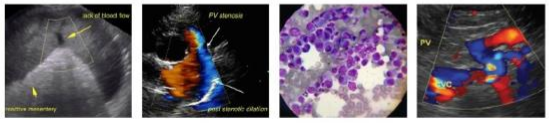

IMAGING PERFORMED BY
pawsonography@gmail.com 530-786-8340

PATIENT

Princess Morrison

SPECIES

Canine

BREED

Terrier X

SEX

Spayed Female

AGE

12 Years

WEIGHT

15.8 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING BY

Loetitia Saint-Jacques, LVT

HOSPITAL NAME

Valley Vet Clinic

REFERRING VET

Dr. Megan Plateman

INVOICE

37351

DATE

5/3/22

PRESENTING CLINICAL SIGNS

Gender (altered?): spayed female Age: 12 yrs Weight (in lbs): 15.8 lbs Breed: terrier mix Chief Concern/Provisional Diagnosis: P is struggling with chronic urinary problems that began in Feb 2022. O said there has been improvement since beginning proin but not yet resolved. Straining to urinate/ posturing/ blood in urine. Diagnosis: DDx: urinary mass, chronic UTI, chronic cystitis History/Physical Findings BCS: 6/9 Hydration status: MM Pink, capillary refill time less than 2 seconds. Heart auscultates normally, no murmur or arrhythmia noted. Lungs auscultate normally. Hair coat appears healthy. OU appear normal. AU are clean in visible ear canal. Nose appears normal. Mouth appears to have grade 2/4 periodontal disease. LN are WNL. Abdomen palpates normally with no palpable masses. No signs of lameness. Urinalysis performed on Feb 16 2022: microalbuminuria elevated at 29.2, PH= 8.0, protein elevated at 2+, occult blood 3+, no crystals, casts, bacteria, epithelial cells noted. Negative for glucose, ketones, bilirubin. Specific gravisty 1.050. Adult wellness panel done on Feb 23, 2022: elevated platelet count all other values WNL. Radiographic Abnormalities: No abnormalities seen on radiographs. Current Therapy and Medications: proin 25 mg ¼ tab PO BID , Blue Buffalo wet with low protein - 8%, carprofen 25 mg: ¼ tab PO BID

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

Although the urinary bladder is inadequately filled, the wall is thicker than normal (dorsal wall up to 3.4 mm). The mucosa is relatively smooth and regular. A small amount of floating sediment is present.

An echogenic soft tissue structure is observed in the region of the trigone. However, it appears to be arising from the distal aspect of the ventral wall of the bladder and not the trigone. The mass measures 1.57 cm in height x 1.39 cm in length (apex toward trigone). The center is slightly vascularized and pinpoint, hyperechoic foci are present along the outer edges of the mass, where it is scalloped. Cystoliths are not observed. The appearance of the structure is not consistent with a polyploid cystitis. The proximal urethra does not appear to be invaded by the mass.

Kidneys

The **left** kidney measures 4.06 cm. The capsule is smooth. The cortex is mildly hyperechoic (isoechoic to the spleen) and a mild loss of the normal definition of the cortico-medullary junction is present. Hyperechoic regions within the cortex suggestive of inflammation, ischemia or fibrosis are also observed. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. A very small, anechoic structure, most consistent with a cyst, is noted at the anti-mesenteric border. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 4.49 cm. The capsule is smooth. The cortex is mildly hyperechoic (isoechoic to the liver, which is also hyperechoic compared to normal). A mild loss of the normal definition of the cortico-medullary junction is present. Hyperechoic regions within the cortex suggestive of inflammation, ischemia or fibrosis are also observed. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. The surrounding mesentery is not hyperechoic.

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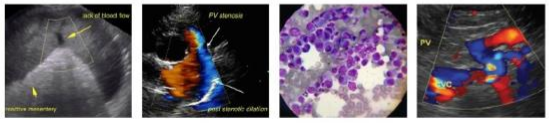

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Aortic bifurcation/trifurcation

No abnormalities observed.

Adrenal Glands

The **left** adrenal gland measures 0.48 cm in diameter. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 0.34 cm at the cranial pole and 0.39 cm at the caudal. The caudal pole is slightly rounded, but a discrete nodule or mass is not present. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

Spleen

The spleen is within normal limits in size, architecture, echotexture, and echogenicity. The capsule is smooth. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

Liver

There are no obvious signs of hepatomegaly. Its borders are smooth and rounded. The liver's echotexture is mildly coarse and granular (within normal limits). Multiple, pinpoint hyperechoic foci are dispersed haphazardly throughout the parenchyma. The latter are considered mineralizations. No abnormalities are observed with the hepatic vessels visualized.

The gallbladder wall is within normal limits in thickness and echogenicity. A small amount of echogenic material is present within the GB. The portions of the cystic and/or common bile ducts observed are not dilated or tortuous, i.e. there are no signs of an obstruction.

Gastrointestinal

A large amount of gas is present within the lumen of the stomach. The gastric wall is within normal limits in thickness and the wall layers are well defined. No obvious abnormalities are observed with its peristalsis.

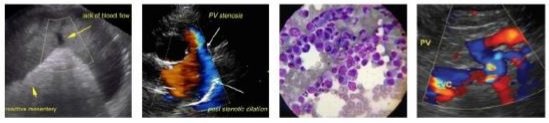
The duodenum measures 0.37 cm. It is filled with ingesta and fluid. The small intestinal wall thickness is moderately thickened, with fogging of the muscularis and increased prominence of the submucosa. Abnormally dilated loops of bowel are not observed.

The colonic wall is not thickened and mural detail is considered normal.

There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction in the gastrointestinal tract.

Pancreas

Pinpoint and very small punctate hyperechoic foci are dispersed haphazardly throughout the parenchyma, in addition to small, hypoechoic nodules of variable size. These changes are suggestive of fibrosis and nodular hyperplasia, respectively; both of which may be due to age-



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related changes. Fibrosis may also occur due to previous episodes of pancreatitis. Signs of active pancreatitis or neoplasia are not appreciated.

Other

Lymph nodes
The left iliac lymph node (LN) is mildly plump, but within the normal reference range, measuring 0.48 cm. It is within normal limits in architecture, echogenicity and echotexture.

The left sublumbar lymph node is increased in size and is heterogenous, with an anechoic center and hyperechoic area at the periphery. The anechoic center is not vascularized and is most consistent with a cyst. The LN measures 1.11 cm in diameter x 1.38 cm in length.

The right sublumbar lymph node is observed and is also enlarged and heterogeneous. The surrounding mesentery is moderately to severely hyperechoic.

The mesentery surrounding the sublumbar lymph nodes and the small intestines in the caudal abdomen is markedly hyperechoic, which is suggestive of inflammation, and also appears “enlarged and fluffy”, as if edematous.

Abdominal effusion is not visualized.

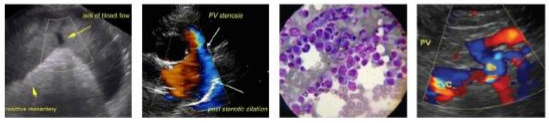
Heart
A brief video clip of the heart was submitted. Pericardial and pleural effusion are not identified. A mass is not observed on evaluation of the cardiac chambers, however, a mass may be overlooked in the absence of pericardial effusion.

Mild myxomatous degeneration of the mitral valve.

No obvious abnormalities with contractility (measurements not performed).

ULTRASONOGRAPHIC FINDINGS

- A transitional cell carcinoma or urothelial carcinoma is the most likely diagnosis for the mass located in the urinary bladder. The mass appears to be arising from the distal aspect of the ventral wall of the bladder and not the trigone. The proximal urethra does not appear to be invaded by the mass.
- The sublumbar lymph nodes are enlarged and the surrounding mesentery is hyperechoic. These changes are highly suggestive of metastases, with secondary saponification of the fat and inflammation. Reactive hyperplasia is much less likely.
- Renal changes are suggestive of age-related degeneration and possible previous ischemic episodes that caused hyperechoic regions within the cortices.



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- The pancreatic changes are suggestive of fibrosis and nodular hyperplasia, both of which are age-related changes. Fibrosis may also occur due to previous episodes of pancreatitis. Signs of active pancreatitis or neoplasia are not appreciated.

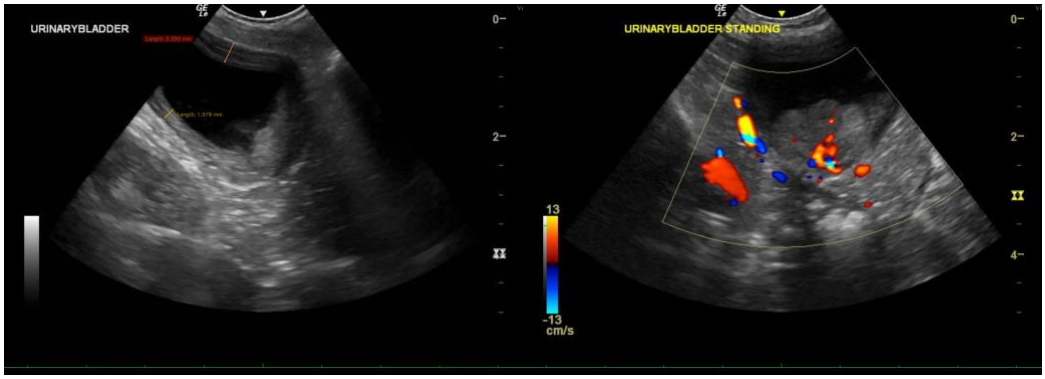
- The mild, but diffuse hyperechogenicity of the liver, and mildly coarse or granular echotexture may be due to vacuolar and reactive hepatopathies, respectively. A vacuolar hepatopathy may occur due to chronic illness. Other differential diagnoses for a diffusely hyperechoic liver include, hepatitis, cholestasis and cholangitis/cholangiohepatitis. The latter are considered unlikely based on Princess' history.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A urine culture and sensitivity obtained by free flow method is recommended. The vulva and peri-vulvar area should be disinfected with chlorhexidine prior to collecting the urine sample.
Thoracic radiographs (3 views) are suggested to evaluate the sternal lymph nodes
A non-steroidal anti-inflammatory, such as meloxicam or deracoxib, both of which have anti-neoplastic effects, may be prescribed, in addition to gabapentin.

If aggressive chemotherapy will not be pursued, treatment with toceranib (Palladia®), a tyrosine kinase inhibitor, is suggested. This medication can help slow down the progression of the tumour. It is administered by mouth three days a week. Routine blood work, consisting of a CBC and serum biochemical profile, is required to monitor for neutropenia and elevated liver enzyme activities.

Princess may eventually require a stool softener, such as PEG 3350 or psyllium, if she begins demonstrating signs of tenesmus.



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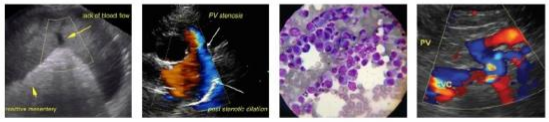

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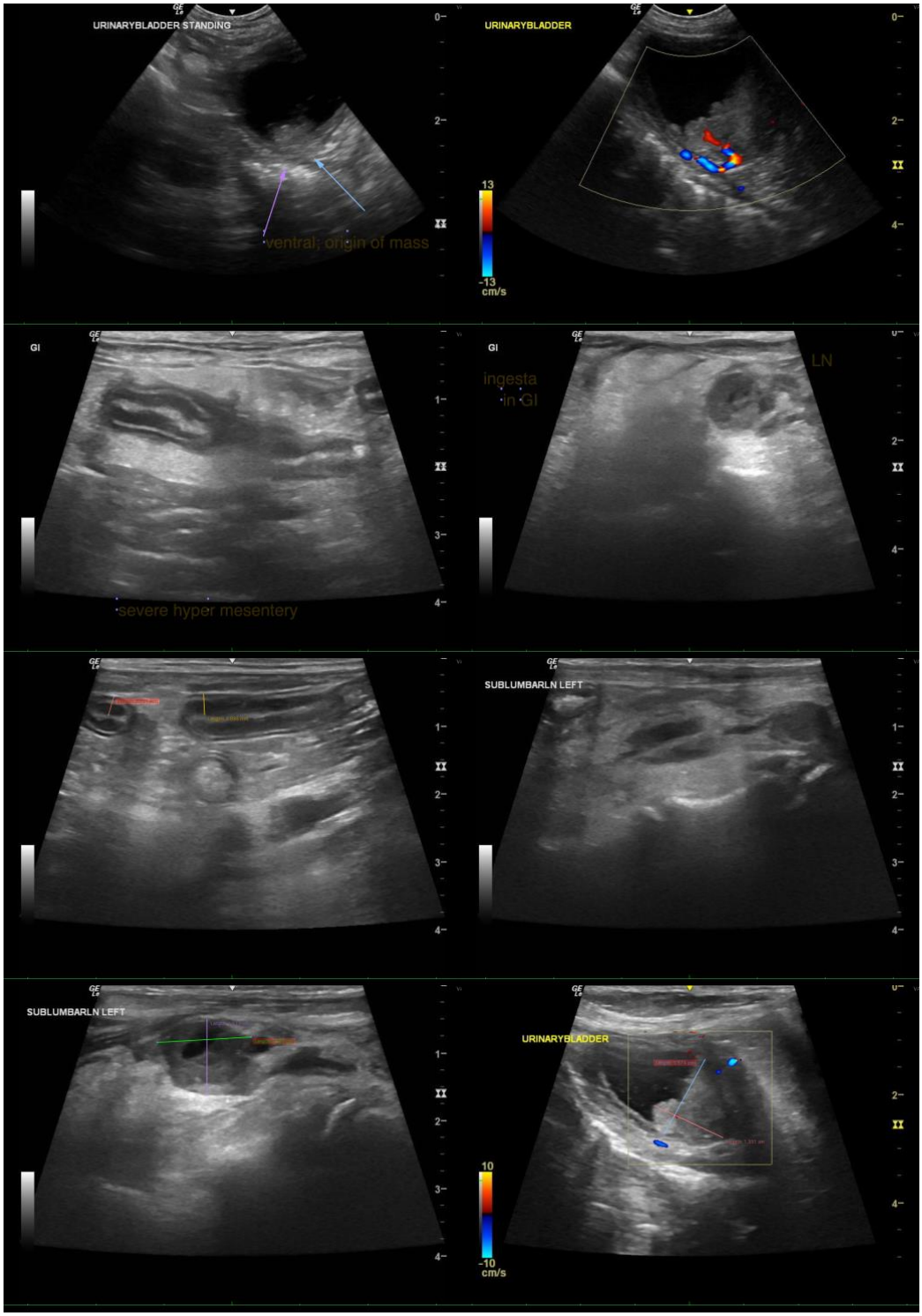

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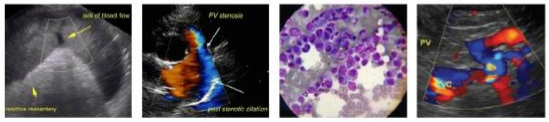

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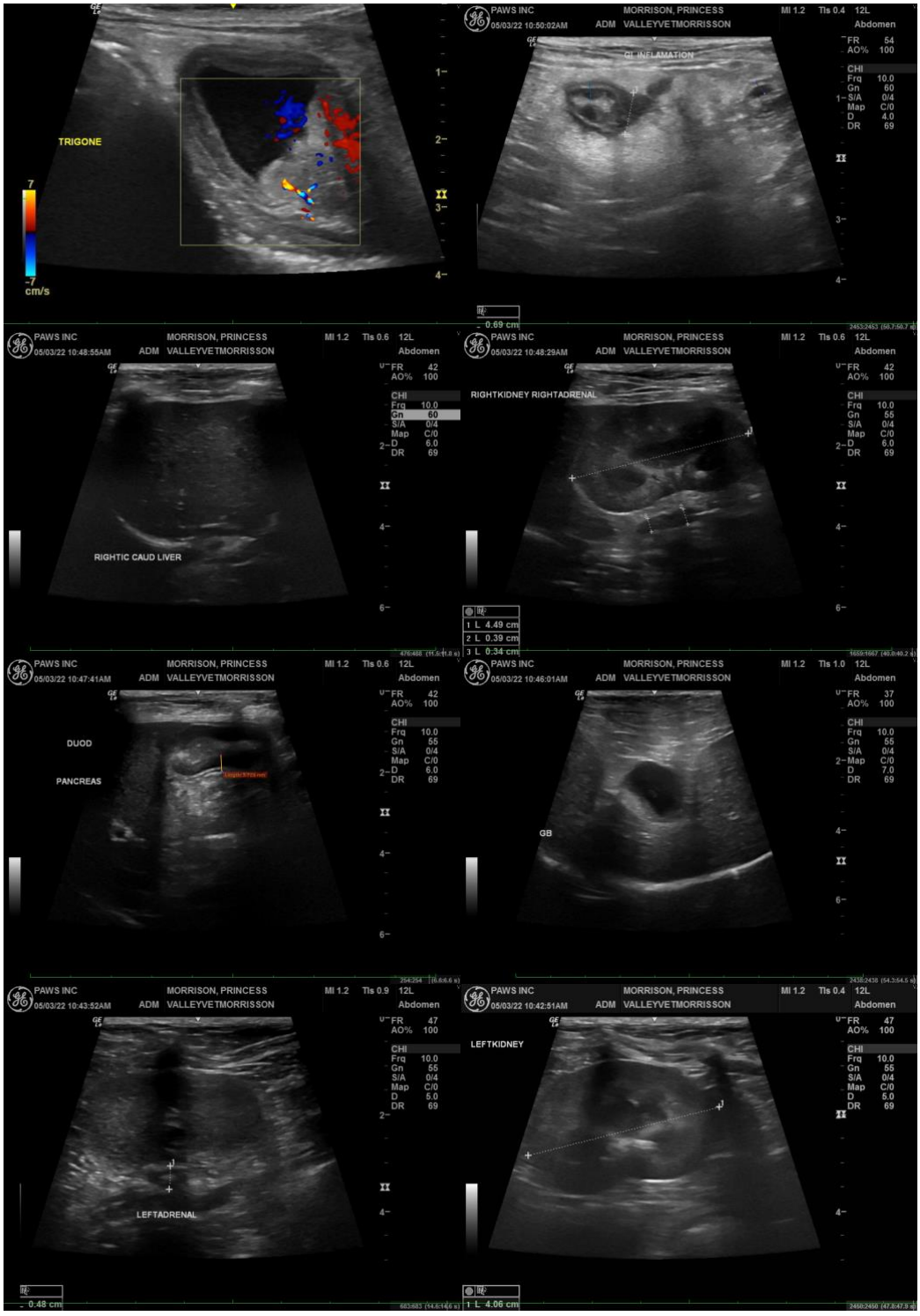

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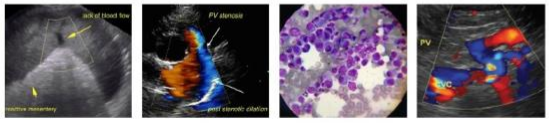

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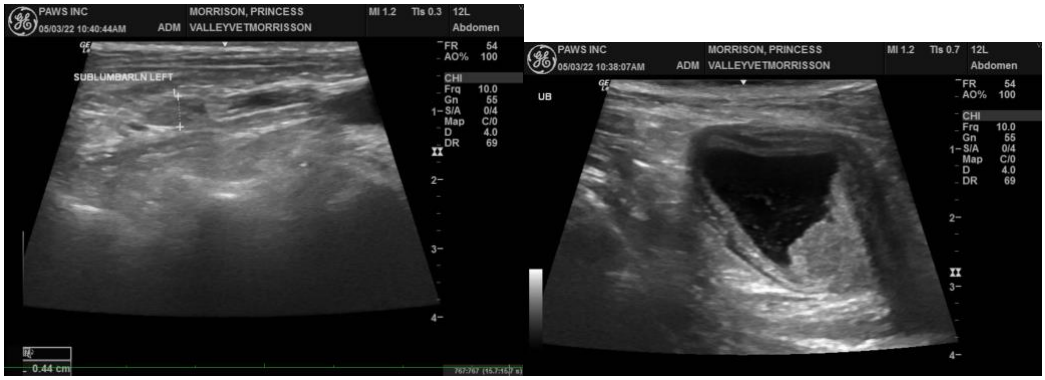

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Lisa Carioto, DVM, DVSc, Diplomate AVIM

Lisa.Carioto@sonopath.com