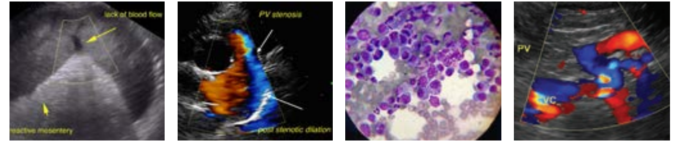
# SonoPath

Clinical Sonography & Telecytology

EDUCATIONAL TELECONSULTATION SERVICES™



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1-800-838-4268 info@sonopath.com

**PATIENT**

Suzie Nicolae

**SPECIES**

Canine

**BREED**

Shih Tzu

**SEX**

Spayed Female

**AGE**

12 Years

**WEIGHT**

12 kg

**INTERPRETED BY**

Beth Johnson, DVM DACVIM

**IMAGING PERFORMED BY**

Dr. Belan

**HOSPITAL NAME**

Woodlands Vet Clinic

**REFERRING VET**

Dr. Lebouldus

**INVOICE**

42668

**DATE**

11/9/22

## PRESENTING CLINICAL SIGNS

Pendulous abdomen suspect Cushings and blood work supports hyperperathyroidism Chest x rays normal concern elevated calcium is related to an abdominal or chest mass or hyperparathyroidism.

Abnormal PE/Chem/CBC/UA Results: Elevated ionized calcium with high normal PTH level. LDDS normal

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The urinary bladder is moderately distended with anechoic contents. No masses, inflammatory changes, echogenic sediment or cystoliths are observed. The urinary bladder, trigone and visible pelvic urethra are normal in thickness with a smooth mucosal surface.

The right kidney is normal in size (4.71 cm), shape and echogenicity. It has smooth peripheral margination. There is a normal 1:3 cortex to medulla ratio with appropriate corticomedullary distinction. There is no evidence of pyelectasia or infarcts observed. Non-obstructive areas of mineralization/small nephroliths are noted.

The left kidney is normal in size (4.61 cm), shape and echogenicity. It has smooth peripheral margination. There is a normal 1:3 cortex to medulla ratio with appropriate corticomedullary distinction. There is no evidence of pyelectasia or infarcts observed. Non-obstructive areas of mineralization/small nephroliths are noted.

### *Adrenal Glands*

Adrenal glands are largely normal in size, shape and contour. Some parenchymal heterogenicity is present without concerning capsular distortion. These changes are likely normal for this age but should be monitored if there is any suspicion of adrenal disease. The left adrenal gland measures 0.54 cm at the cranial pole and 0.63 cm at the caudal pole. The right adrenal gland measures 0.70 cm at the cranial pole and 0.63 cm at the caudal pole.

### *Spleen*

The spleen is subjectively normal in size with a normal smooth capsular contour. Parenchyma is appropriately finely textured and homogenous with normal echogenicity relative to surrounding tissue (hyperechoic to liver). No focal nodules or masses are observed. Splenic vasculature appears normal.

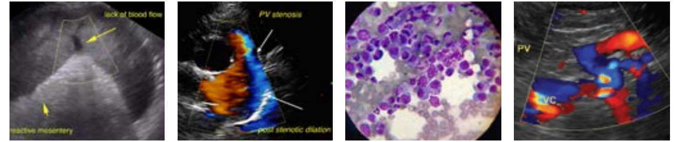
### *Liver*

Liver is subjectively enlarged with mildly irregular margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. Visible vasculature and biliary tree appear normal without distension or congestion.

Gallbladder is moderately distended with anechoic bile as well as suspended and gravity dependent echogenic debris. One suspected hyperechoic benign polyp versus accumulated mucus debris is suspected. The wall is smooth without visible thickening. There is no evidence of cystic or CBD dilation. There is no evidence of effusion or inflammation.

### *Gastrointestinal*

The stomach has some diffuse (including pyloric) mild mucosal hypertrophy with hyperechoic mucosa and some mucosla remodeling. There is no loss of mural detail. Layering is normal. There is mild luminal fluid accumulation. No evidence of masses, nodules, or foreign material present.



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The visible small intestines are normal in wall thickness and layering (canine duodenum < 0.5 cm and feline duodenum < 0.4 cm; other < 0.3 cm). Small intestinal motility appears adequate (1-3 contractions per min). The lumen of the small intestine is empty with no evidence of obstruction, foreign material or infiltrative disease.

The visible colon is normal in wall thickness (< 0.2 cm) and layering. Contents are consistent with normal formed feces and gas.

### *Pancreas*

The pancreatic parenchyma is appropriately isoechoic to surrounding tissue. Visible capsule is smooth and normal in contour. There is no visible pancreatic duct dilation. There is no evidence of active peripancreatic inflammation.

### *Other*

There is no evidence of free peritoneal effusion noted in these images.

A normal shaped, isoechoic medial iliac lymph node is noted, measuring 0.68 cm thick.

Both thyroid glands are examined. On the left, a cranial, slightly hypoechoic structure measuring 0.40 cm thick is noted but is not the typical appearance of a parathyroid gland, which is usually more hypoechoic than this structure. The left caudal parathyroid gland is definitively visible and measures 0.17 cm x 0.32 cm in size.

## PRIMARY FINDINGS

- **Heterogenous Liver –** These changes are most consistent with benign processes such as nodular hyperplasia, steroid (vacuolar) hepatopathy, extramedullary hematopoiesis or possibly chronic inflammatory disease and less commonly infiltrative round cell or metastatic neoplasia.

- **Gastritis –** Consistent with irritation secondary to dietary indiscretion or intolerance, infection (bacterial, viral, other), parasitic or protozoal disease, toxin, other metabolic disease such as pancreatitis, other. This finding is mild and could be partially normal patient variant and should be interpreted in combination with clinical signs that support possible gastritis. Microulceration cannot be ruled out.

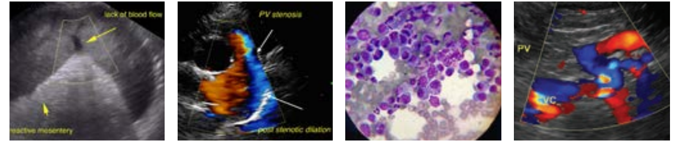
- There is no definitive visible evidence of a parathyroid gland consistent with an adenoma, which are typically larger in size than the ones visualized here, and often expand beyond the thyroid capsule. The larger of the two described above doesn't have a typical appearance of a parathyroid gland, and the more typically appearing parathyroid gland (the caudal one) is not as large as would be expected with an adenoma. Having said that, an adenoma not visualized in these images cannot be ruled out, and/or the left caudal parathyroid gland (since it's relatively large compared to the other parathyroid glands) may be an early or emerging adenoma.

## SECONDARY FINDINGS

- Non-obstructive small nephroliths bilaterally in the kidneys

- Age related adrenal changes

- **Gallbladder debris with a suspect benign polyp -** Cholecystic debris is of unknown clinical significance. It can be seen with biliary stasis from fasting or illness. Cholecystic debris is not necessarily related to hepatobiliary disease. Echogenic bile is most commonly an incidental finding in dogs and should be interpreted in combination with clinical signs such as nausea,



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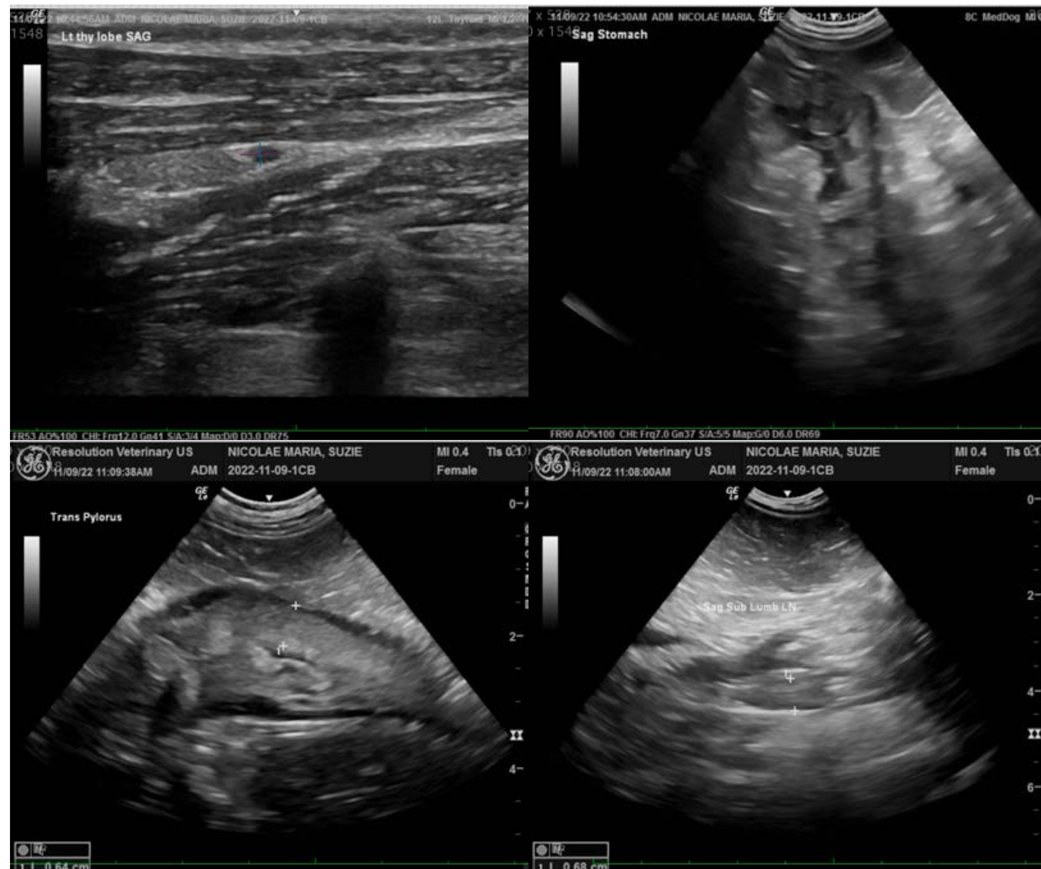
inappetence, cranial abdominal discomfort and/or laboratory changes such as increased ALP and/or increased Tbili.

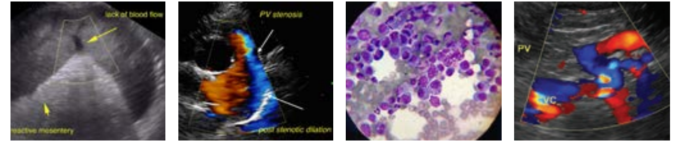
## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

If this patient's hypercalcemia and PTH results are suggestive of hyperparathyroidism, as they reportedly are, a surgical exploratory is warranted despite the grey zone ultrasound results. There is no other obvious visible cause for the hypercalcemia in these images at this time.

A fine needle aspirate of the liver could be considered if the patient's coagulation status is appropriate. However, the nodular appearance trends towards the benign.

Further evaluation of the stomach wall changes could also be pursued. However, again, this is a mild, likely normal patient variant finding and/or potentially exacerbated by the hypercalcemia. Therefore, recommendations for any clinical signs consistent with gastritis and/or consistent with hyperadrenocorticism could all be secondary to hypercalcemia, GI signs, PU/PD, etc. Therefore, addressing the suspected hyperparathyroidism is recommended first.





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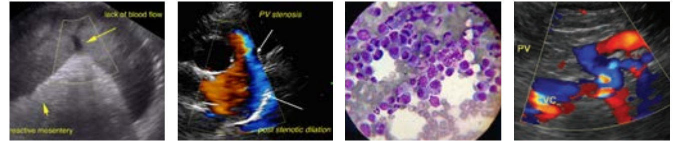

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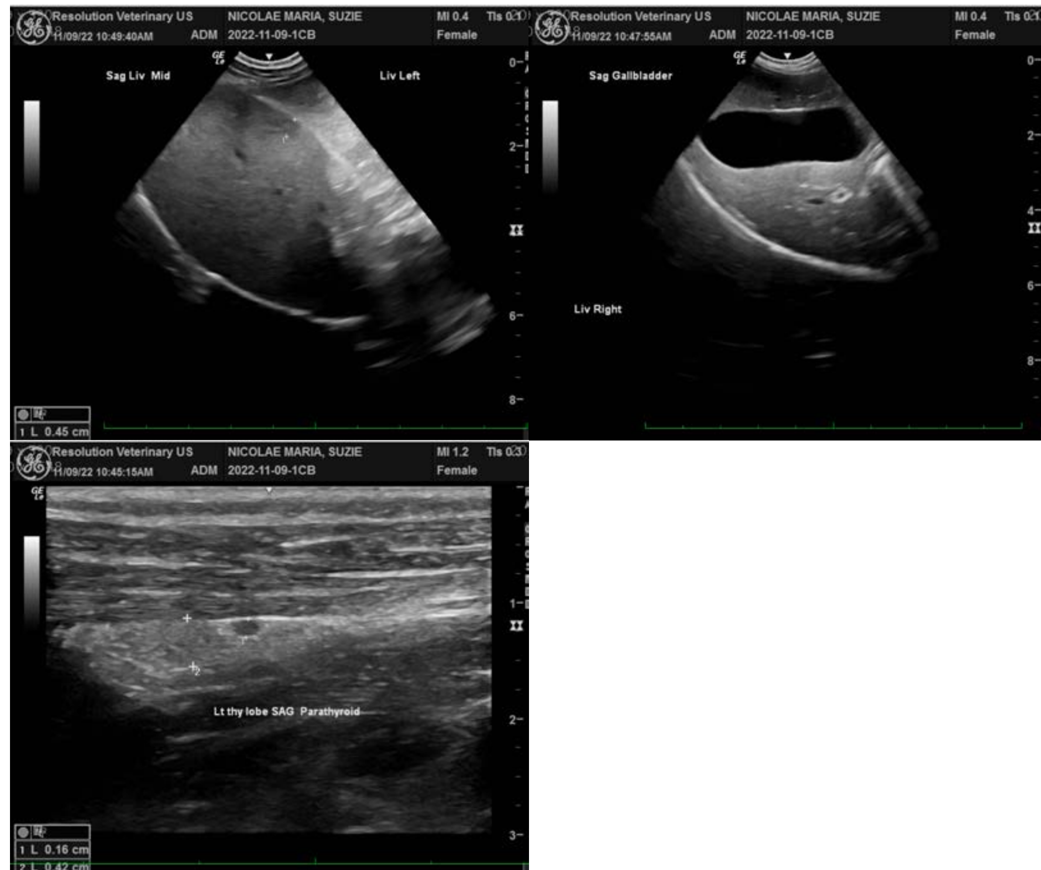


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

**Beth Johnson**, DVM, DACVIM
Beth.Johnson@sonopath.com