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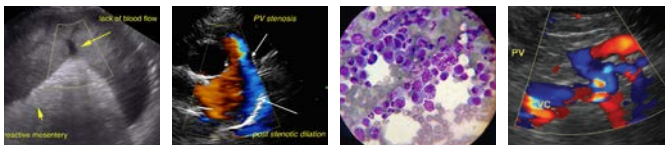


PATIENT

Beatrice Hastings

SPECIES

Canine

BREED

Cattle Dog X

SEX

Spayed Female

AGE

10 Years

WEIGHT

16.6 Pounds

INTERPRETED BY

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

IMAGING PERFORMED BY

Dr. Sorbo

HOSPITAL NAME

Mill Brook AC

REFERRING VET

Dr. Sorbo

INVOICE

42230

DATE

10/20/22

PRESENTING CLINICAL SIGNS

Hx of liver cancer, NOT in remission. Recent UTI and severe, ongoing pollakiuria.

Abnormal PE/Chem/CBC/UA Results: Recent: rods UTI, placed on Clavamox. March 2022: AUS at another facility LAD caudal pole lesion of 9mm with cystic lesion. Hepatomegaly with mottled areas and coarsely textured parenchyma. A 13mm diameter cyst in the R liver near diaphragm.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic urine. The Bladder wall is diffusely mildly thickened, and the mucosa is mildly irregular. The trigone, ureteral papillae, and visible urethra (to a depth of 2cm) appear normal with no evidence of severe mucosal irregularities, masses or cystic calculi. Findings are most consistent with bacterial cystitis or lack of urine distension. Recommend urinalysis and culture.

The left kidney has a normal shape and size (4.92 cm). Overall echogenicity is normal with adequate 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, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.7 cm). Overall echogenicity is normal with adequate 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, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is borderline large measuring 0.55 cm at the cranial pole and 1.19 cm at the caudal pole, and length measures 2.09 cm. It is observed in its normal position cranial to the left renal artery. The caudal pole appears abnormal in that it is large and there is a hyperechoic, partially cystic, mineralized region within the caudal pole measuring 0.98 cm x 0.70 cm, consistent with a nodule on the caudal pole of the right adrenal gland. There is no obvious vascular invasion noted.

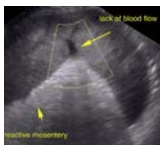
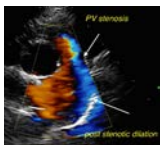
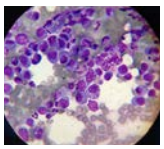
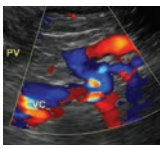
The right adrenal gland is normal in size measuring 0.69 cm at the caudal pole. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

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 irregular. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. There are too numerous to count hypoechoic, ill-defined nodule dispersed throughout the parenchyma, varying in size from 0.8-1.5 cm. Additionally, there is a mixed echogenicity mass effect that has a discrete hypoechoic mass measuring 2.23 cm x 2.27 cm, adjacent to hyperechoic cystic tissue measuring 1.8 cm x 1.3 cm. This lesion is visualized on the left against the diaphragm. There is a cystic lesion measuring 2.27 cm

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visualized on the right side of the liver. Much of the right side of the liver appears rounded, homogeneous, and almost mass like (versus just irregular, rounded margins).

The gallbladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. Luminal contents are mild and primarily anechoic. 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. The duodenum measured as normal (between 0.3-0.5cm in wall thickness) and the jejunum measured as normal (between 0.2-0.47cm.) 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

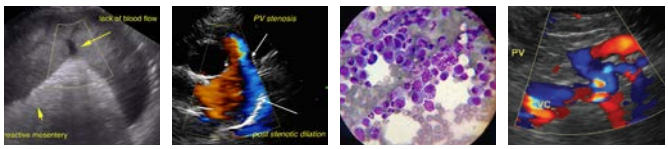
The pancreas is normal and isoechoic to surrounding mesentery. There is no evidence of nodules or cystic lesions. There is no evidence of regional mesenteric inflammation or fluid.

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

- Mildly thickened/irregular urinary bladder – 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.
- Enlarged caudal pole of the left adrenal gland with a hyperechoic cystic/mineralized nodule – Left adrenomegaly could be consistent with neoplasia (e.g., adenoma, carcinoma, pheochromocytoma), hyperplasia, inflammation, other.
- Cystic lesion in the liver – most consistent with a benign hepatic cyst.
- Mixed echogenicity hypoechoic mass effect adjacent to the diaphragm in the liver – concerning for a possible neoplastic lesion. This is concerning for a neoplastic lesion, but benign differentials are possible. This is too deep to aspirate.
- Diffusely heterogeneous liver with diffuse hypoechoic nodules – 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 nodules



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observed trend toward a more benign process but underlying neoplasia cannot be ruled out.

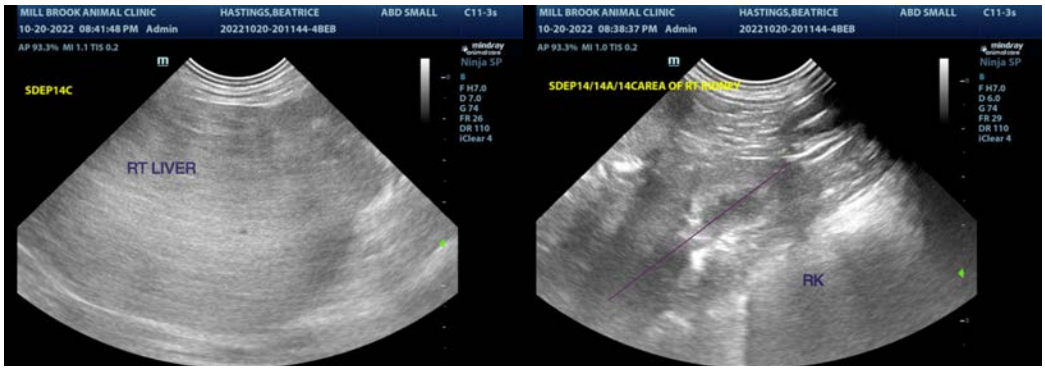
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The liver is very irregular with numerous lesions. The lesion visualized against the diaphragm is the most discrete lesion and possibly the most concerning, but there are other areas of the liver that prominent, rounded, but more isoechoic, making it difficult to differentiate from a prominent rounded liver lobe or an isoechoic mass effect. The appearance of the hypoechoic nodules trends towards a more benign process. The cystic lesion is likely benign.

The caudal pole of the left adrenal gland is enlarged with a hyperechoic cystic/mineralized nodule. Today the caudal pole measures at 1.19 cm (previous measurement 3/22 was 0.9 cm), so it is not significantly increasing in size. This could represent a benign lesion or an early neoplastic lesion. These are my recommendations for evaluation of an adrenal nodule:

- If signs of cushings are present, consider adrenal function testing. I prefer an ACTH stimulation test combined with an adrenal panel to the University of Tennessee's endocrine lab to look for atypical adrenal hormones as well as cortisol. (other testing can suffice)
- If adrenal dependent cushings is suspected and supported by adrenal function testing consider medical therapy with lysodren or trilostane or consider surgical removal (recommend referral to a board certified veterinary surgeon and possible pre op CT)
- Recommend blood pressure evaluation-if hypertensive consider testing catecholamine levels for a possible pheochromocytoma
- If no symptoms of cushings are present, consider either referral for surgery or continued monitoring with ultrasound (in 3-4 months).
- Many of these nodules can be benign and incidental in nature, unfortunately that is difficult to determine with a single ultrasound.
- Understandably, if conservative therapy is desired, then consider a blood pressure evaluation and continued monitoring along with intermittent thoracic radiographs.

I see no obvious underlying process responsible for the recent urinary tract infection. Recommend re-culturing to determine if it has cleared, and make sure a urine protein to creatinine ratio is performed on a non-infected sample.



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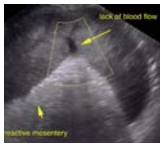
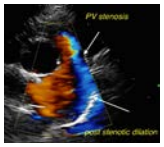
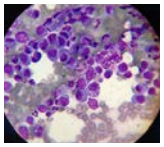
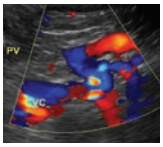

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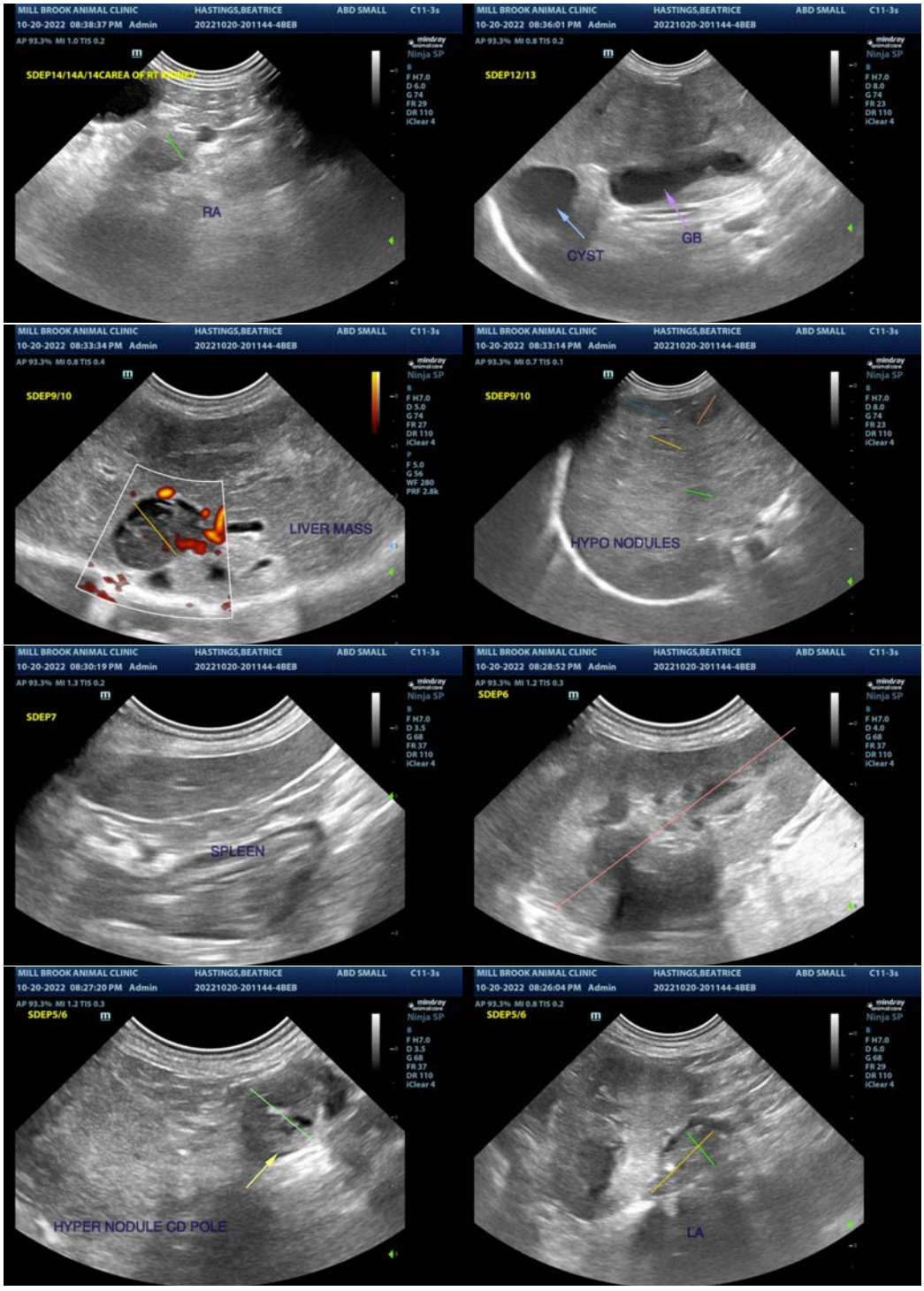

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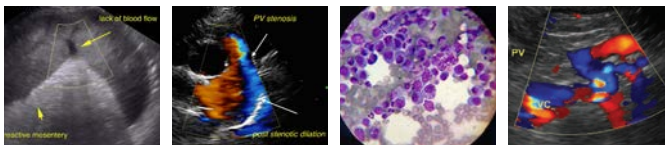

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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

kathleen.sennello@sonopath.com