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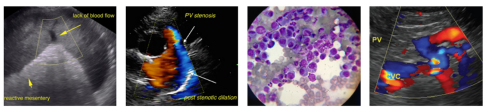

SonoPath
Clinical Sonography & Telecytology
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PATIENT

Daisy Allard

SPECIES

Canine

BREED

Boxer X

SEX

Spayed Female

AGE

12 Years

WEIGHT

95 Pounds

INTERPRETED BY

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

IMAGING PERFORMED BY

Pamela Harrigan, RDCS

HOSPITAL NAME

Anchor AH

REFERRING VET

Dr. Kristin Lavin

INVOICE

36261

DATE

3/17/22

PRESENTING CLINICAL SIGNS

Chronic recurring urinary tract infections, persistent hematuria x 3 years. Multiple treatments with Simplicef, Clavamox and Amoxicillin. In doing cysto for culture marked hematuria noted - recommended ultrasound. Sedated with butorphanol/midazolam

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with severely echogenic urine. The Bladder wall is diffusely severely thickened and irregular, measuring approximately 1.06 cm in thickness. There is hyperechoic and small shadowing debris throughout the urinary bladder. Additionally, there is a soft tissue structure, which I suspect is a broad based polyp measuring approximately 1.7 cm x 1.5 cm in the ventral/apical portion of the urinary bladder. Findings are most consistent with severe bacterial cystitis with polypoid projections, but underlying neoplasia cannot be excluded as a possibility. Additionally, there are some hyperechoic regions along the urinary bladder wall that are suspicious for gas opacity, which could be consistent with emphysematous cystitis.

The left kidney has a normal shape and size (6.99 cm) with mild pyelectasia at 0.25 cm. Overall echogenicity is normal with adequate 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, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (8.35 cm) with mild pyelectasia at 0.19 cm. Overall echogenicity is normal with adequate 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, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is normal in size measuring 0.73 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.

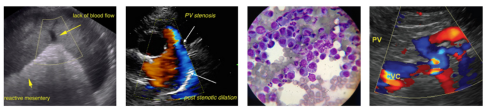
The right adrenal gland is normal in size measuring 0.91 cm at the cranial pole, 0.74 cm at the caudal pole, and 2.9 cm in length. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. It is somewhat irregular in appearance in that there is a subtle hyperechoic region in the cranial pole measuring 1.07 cm x 0.84 cm. This does not appear to deviate the adrenals significantly, but is most consistent with a subtle hyperechoic nodule.

Spleen

The spleen is subjectively normal in size, echotexture is homogenous, and the splenic capsule is smooth with no irregularities. Numerous discrete, focal, hypoechoic, mostly perivascular abnormalities are present. The appearance of these lesions is most consistent with benign splenic myelolipomas, although a neoplastic process cannot be ruled out. The blood flow through the hilus and splenic parenchyma appears normal.

Liver

The liver is large in size, and hyperechoic 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 are numerous subtle ill-defined hypoechoic nodules



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throughout the parenchyma measuring between 0.5-1.5 cm. Additionally, a 1.0 cm hypoechoic cyst is visualized.

The gallbladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. Luminal contents are 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. Duodenum wall measured 0.47 cm. Jejunum wall measured 0.33 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.

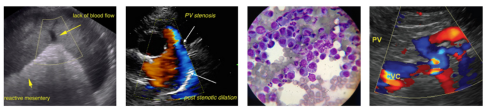
Free Abdomen

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

- Severely thickened, irregular urinary bladder wall with suspected polypoid mass effect – Findings are most consistent with severe bacterial cystitis and secondary polyps.
- Large, hyperechoic and heterogeneous liver with ill-defined 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. These nodules trend towards a benign appearance, but underlying neoplasia cannot be excluded as a possibility.
- Ill-defined hyperechoic nodule in the cranial pole of the right adrenal - This lesion is subtle, and could be normal anatomic variation, hyperplasia or cranial mass lesion (neoplastic or benign).
- Bilateral mild renal pyelectasia – Pyelectasia of the left/right kidney could be consistent with pyelonephritis, chronic renal disease, secondary to PU/PD or fluid therapy (if applicable), other.

SECONDARY FINDINGS



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- There are numerous large, hyperechoic foci throughout the spleen. These have the appearance of benign myelolipomas, but a neoplastic process cannot be 100% excluded.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The findings visualized in the urinary bladder are most consistent with severe bacterial cystitis and polyp formation. A cause for the recurrent urinary tract infections is not readily visualized, but the anatomy is abnormal at this time due to all of the inflammation. If possible, recommend consultation with a veterinary internist for long-term care, as I suspect this will require chronic maintenance. Ideally, the first tep would be to get a culture and sensitivity, as well as a good history as to when this started, what the previous infections have been, etc., as well as treatment history, medication history, etc.

If the infection can be treated, the owner will need to commit to recurrent culture and sensitivities to guide further treatment, or this pet is likely to develop severely resistant infections.

- I typically treat for two weeks past resolution of a negative culture and resolution of all ultrasonographic changes in the urinary bladder.
- This pet should likely be re-imaged approximately 2-3 weeks into therapy to see if the polypoid mass is resolving. If it's not, it should be biopsied.
- If things are improving, then cystoscopy to look for anatomic abnormalities may be warranted.
- A good vaginal exam to look for a hooded vulva, urine retention, etc. is also warranted, as well as metabolic evaluation to look for any causes of recurrent urinary tract infections (Cushing's, diabetes, etc.).

There is some mild speckling visualized in the urinary bladder, which could represent gas. Correlate with abdominal radiographs, as this could be consistent with emphysematous cystitis.

There is nodule present on the right adrenal gland. This nodule is relatively small and is not deforming the adrenal gland significantly and doesn't appear to have any evidence of vascular invasion.

These nodules can be benign or malignant and can secrete hormones or be non-active. Options moving forward include:

- 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.

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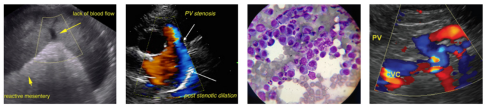

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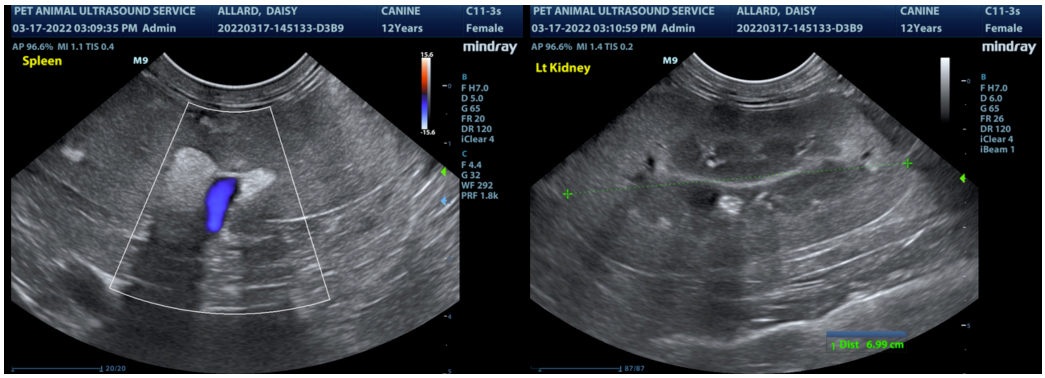

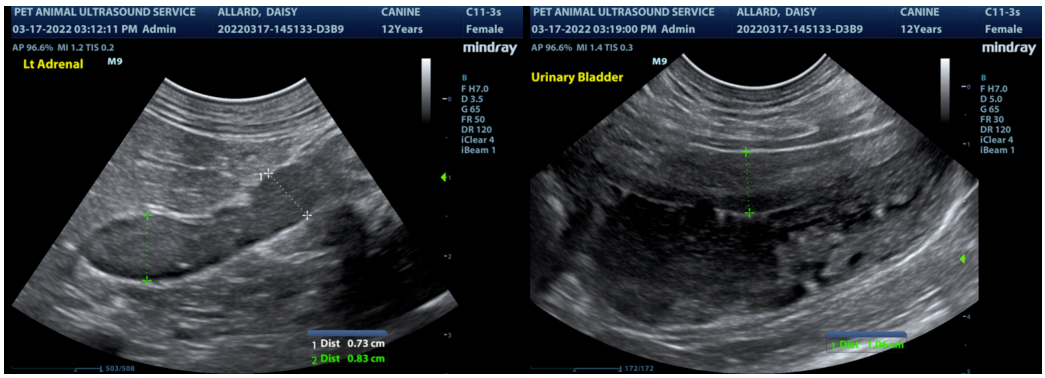

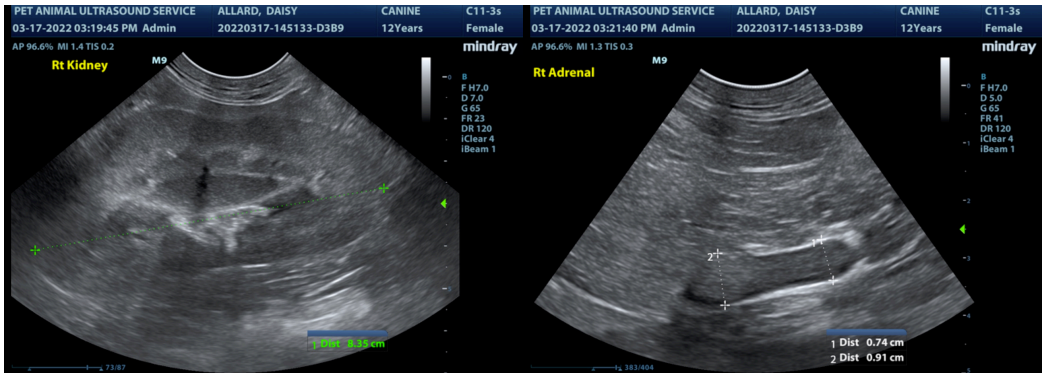

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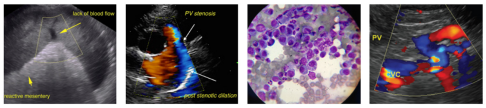

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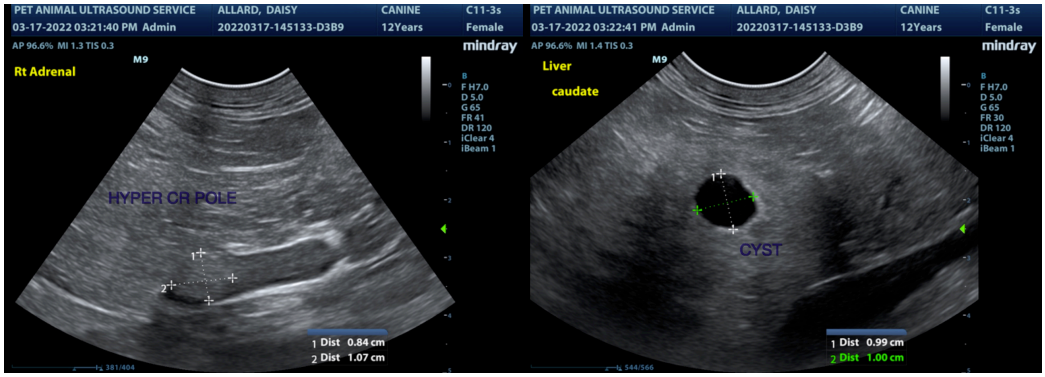

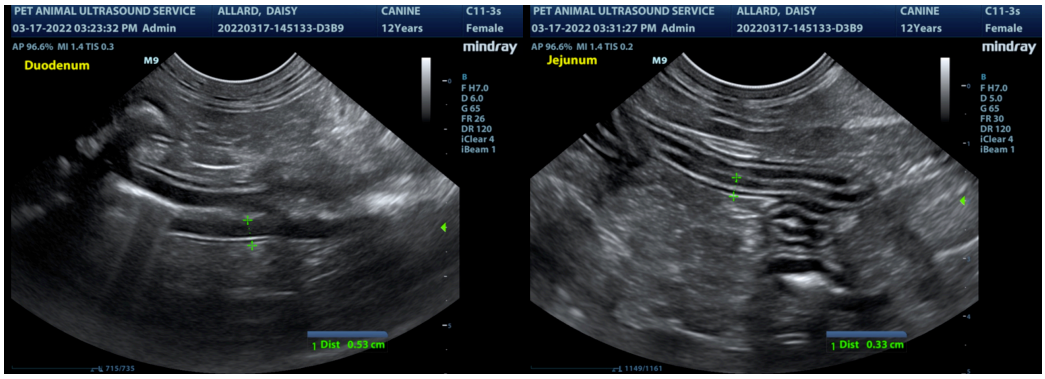

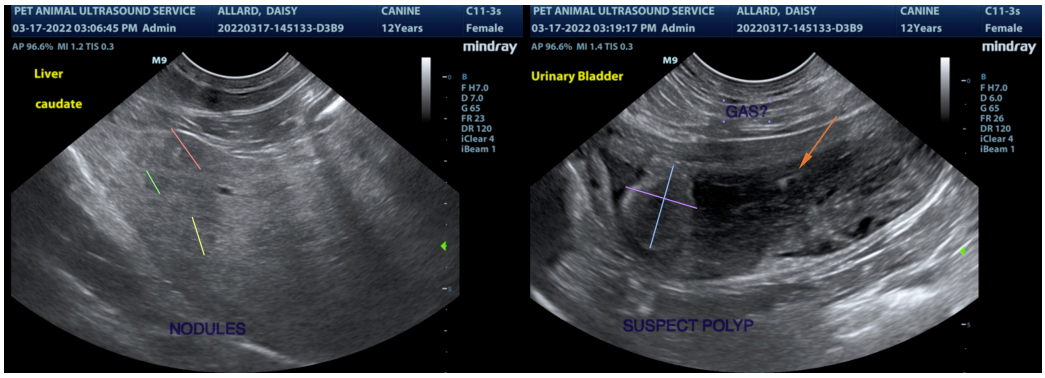

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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