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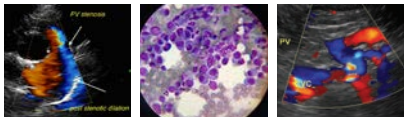

SonoPath

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DATE

4/19/22

PATIENT

Daisy Gehrman

SPECIES

Canine

BREED

Pug

SEX

Spayed Female

AGE

9/28/11

WEIGHT

31.6 Pounds

INTERPRETED BY

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

IMAGING PERFORMED BY

Rachel Brilhart RDMS

HOSPITAL NAME

Edgewood Vet Hospital

REFERRING VET

Dr. Wright

INVOICE

36968

PRESENTING CLINICAL SIGNS

Overweight, possibly Cushingoid pug. Owner thinks pet has ascites.

Current Medications: Cyclosporine ophth drops, Galliprant for arthritis/weak rear legs.
Lab Results: ALKP 406.
Date of Previous IntraPet Ultrasound: No previous.
Sedation: Not required to complete full diagnostic ultrasound.
Stat Report: Not requested.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with mild dependent echogenic debris present. The Bladder wall, trigone, ureteral papillae and visible urethra (to a depth of 2cm) appear normal with no evidence of wall thickening, mucosal irregularities, masses or calculi. Echogenic debris of this type can be associated with small crystals, cellular debris and proteinaceous debris.

The left kidney has a normal shape and size (5.79 cm) with pyelectasia at 0.41 cm and pinpoint non-obstructive nephroliths. 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. There is no evidence of infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.22 cm) with pinpoint non-obstructive nephroliths and pyelectasia at 0.31 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. There is no evidence of infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is normal in size measuring 0.72 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 1.15 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 in size, and normal in 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. There are numerous ill-defined, hypoechoic nodules. A more discrete nodule visualized measures at 1.12 cm in diameter.

The gall bladder is large. The wall of the gall bladder is not thickened and has a smooth mucosal surface. There is a moderate amount of primarily non-organized echogenic debris, although there are some early striations forming in the dependent portion of the gallbladder, and some of the debris is hyperechoic and mineralized, most consistent with small stones. Two stones visualized measure at 0.61cm and 0.81 cm. The

proximal bile duct appears somewhat dilated and tortuous, measuring 0.45 cm. This is lost distally, but there are some pinpoint mineralizations that could represent mineralizations within the bile duct.

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

- Large, echogenic debris within the urinary bladder – The echogenic debris in the bladder lumen could be consistent with cells, crystals, and/or mucus.
- Decreased corticomedullary distinction in both kidneys with bilateral pyelectasia – Mild loss of corticomedullary distinction in both kidneys could be consistent with chronic degenerative disease or interstitial nephrosis. Pyelectasia of the left/right kidney could be consistent with pyelonephritis, chronic renal disease, secondary to PU/PD or fluid therapy (if applicable), other.
- Large, 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. The appearance of the hypoechoic nodules trends towards a more benign process, but underlying neoplastic change cannot be excluded.
- Large gallbladder with early organizing debris, gall stones, and mild bile duct dilation – most consistent with very early mucocele development and gall stones. Recommend close continued monitoring and Ursodiol.
- Large, irregular right adrenal gland – Left/right adrenomegaly could be consistent with neoplasia (e.g., adenoma, carcinoma, pheochromocytoma), hyperplasia, inflammation, other.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The right adrenal gland is large and somewhat irregular in shape. There is no obvious vascular invasion observed. Findings are most consistent with a right adrenal mass, although atypical hyperplasia is also a differential. These are my recommendations for an enlarged adrenal gland:

- 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 and/or consider surgical removal (recommend referral to a board certified veterinary surgeon and possible pre op CT)-This can be a challenging surgery with significant risk for complication

- Recommend blood pressure evaluation-if hypertensive consider testing catecholamine levels for a possible pheochromocytoma

- Due to the invasive nature of these masses a CT scan is recommended to evaluate for metastasis and vascular invasion.

- If no symptoms of cushings are present, consider either referral for surgery or if surgery is not an option consultation with a veterinary oncologist regarding chemotherapeutic options and continued monitoring with ultrasound (in 4-6 weeks) can be considered.

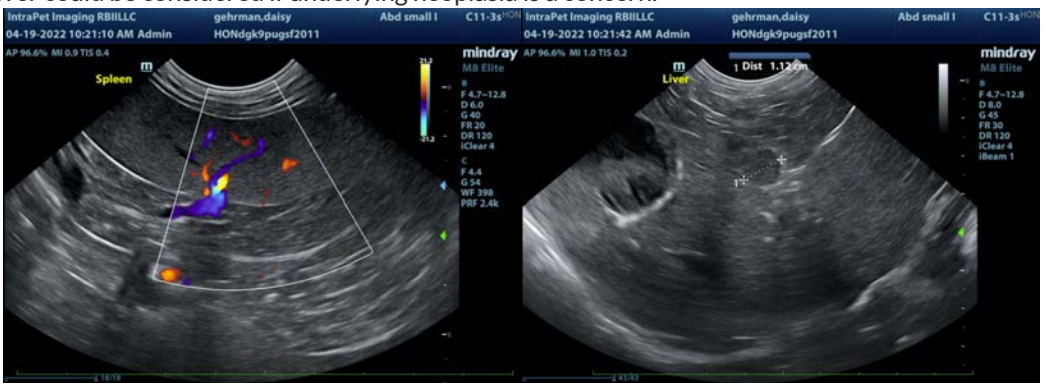
- Some aggressive adrenal tumors can grow quickly and there is risk for acute hemorrhage from vascular invasion.

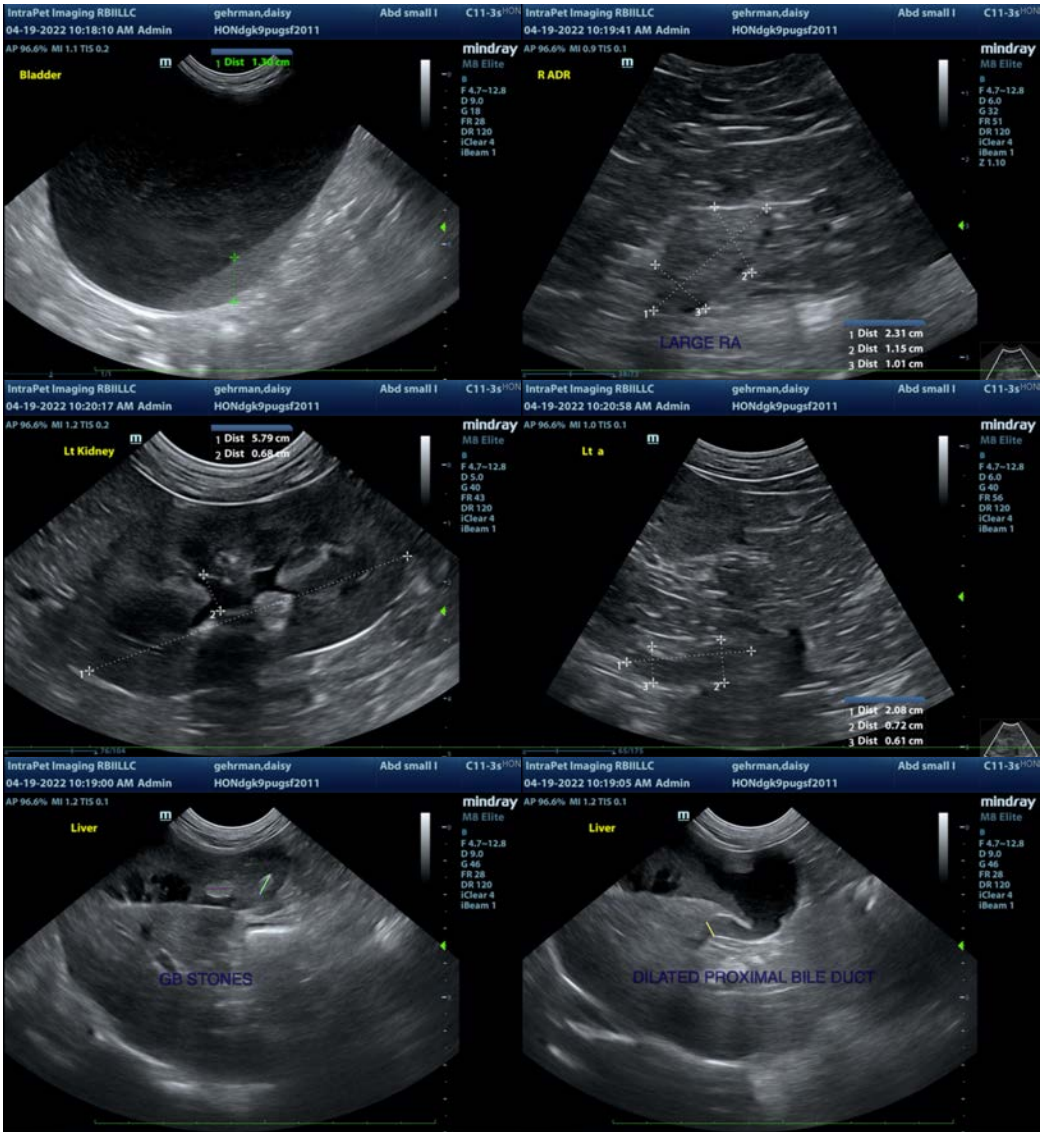
Consider three view thoracic radiographs to rule out concurrent thoracic disease/involvement.

There is a large amount of dependent debris in the urinary bladder. This combined with the bilateral pyelectasia is concerning for possible pyelonephritis. Recommend urinalysis and culture and a prolonged course of antibiotics if an infection is confirmed.

The gallbladder is large with some early organization of the bile within. Additionally, there are some gallstones and mild dilation of the common bile duct. Recommend starting Ursodiol and continued monitoring of liver enzyme and the gallbladder for the possibility of progression to a surgical lesion.

I suspect the changes observed in the liver are associated with a vacuolar hepatopathy. A fine needle aspirate of the liver could be considered if underlying neoplasia is a concern.





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.

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