

PATIENT PRESENTING CLINICAL SIGNS

Max Schwartz

Max is presented today for an abdominal ultrasound for pancreatitis. He has been having on and off diarrhea for about 6 weeks. Lisa was out of town when he had a bout of diarrhea - gave him chicken and rice. Happened again once she was back in town. Within the last day or so, he began to vomit - leftover food and bile. He has been having diarrhea as well - had one solid bowel movement yesterday then progressed into diarrhea. No blood or mucus in the stool. He didn't want to eat at all yesterday. No different treats or table scraps that know of. He was seen at Loveland Regional yesterday where he was diagnosed with pancreatitis, mildly elevated liver values (ALT, ALKP, GGT), elevated triglycerides/cholesterol. No difference since receiving the cerenia and fluids last night. He was referred for an abdominal ultrasound.

SPECIES

Canine

BREED

Spaniel X

SEX

Neutered Male

Abnormal PE/Chem/CBC/UA Results: PLI: ~600 ALT: 159 ALKP: 489 GGT: 22 Mg: 4.1 Cholesterol: 473 Triglycerides: 5035

AGE

11

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

WEIGHT

27

The urinary bladder is moderately distended with anechoic urine. The Bladder wall largely appears normal with no significant thickening or irregularity. The trigone region and the ureteral papillae appear normal. There is a small mineralization measuring approximately 0.42 cm in diameter visualized associated with the pre-prostatic urethra/prostate. No evidence of an obstruction is visualized.

INTERPRETED BY

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

The prostate is normal in size (0.89 cm) and shape for this neutered male dog. The parenchyma is homogenous and the external margins are smooth. There is a mineralization measuring 0.42 cm visualized in the pre-prostatic or prostatic urethra.

IMAGING PERFORMED BY

Dr. Ellen Puthoff

The left kidney has a normal shape and size (5.75 cm) with non-obstructive nephroliths and a large cyst in the caudal pole measuring 2.24 cm x 3.06 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, infarcts or hydroureter. Renal vasculature is normal.

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The right kidney has a normal shape and size (5.46 cm) with numerous non-obstructive nephroliths, the largest of which measures 0.48 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, infarcts or hydroureter. Renal vasculature is normal.

REFERRING VET

Dr. Ellen Puthoff

Adrenal Glands

The region of left adrenal (Cranial to left renal artery) is unremarkable but the adrenal is not distinctly visualized. No evidence of a mass effect is visualized.

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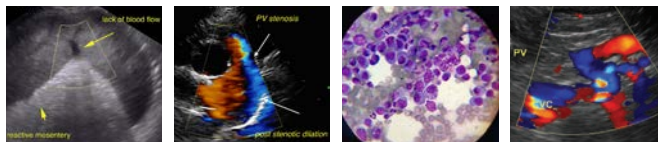
The region of the right adrenal (between right cranial kidney and vena cava) is unremarkable, but the adrenal is not distinctly visualized. No evidence of a mass effect is visualized.

DATE

8/24/23

Spleen

The spleen is large and irregular. The spleen echotexture is heterogenous and mottled. The blood flow through the hilus and splenic parenchyma appears normal. There are numerous hypoechoic nodules



PATIENT

Max Schwartz

visualized within the parenchyma. One such nodule measures at 0.34 cm, another measures 0.63 cm, and 0.84 cm.

Liver

SPECIES

Canine

The liver is large in size, and normal in echogenicity with rounded margins. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. The caudal aspect of the liver has more significant mottling and rounded margins. There is a hypoechoic nodule in this region measuring 2.15 cm x 1.05 cm.

BREED

Spaniel X

The gallbladder is large. The wall of the gall bladder is not thickened and has a smooth mucosal surface. There is minimal intraluminal debris. The bile duct appears somewhat prominent and tortuous, measuring 0.31 cm. It is lost to evaluation more distally. A partial extrahepatic obstruction is suspected secondary to the pancreatic inflammation visualized.

SEX

Neutered Male

Gastrointestinal

AGE

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The stomach contains mild/moderate shadowing ingesta. 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.

WEIGHT

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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 measures 0.40 cm. Jejunum wall measures 0.32 cm. Visualized peristalsis appears appropriate. The duodenum appears somewhat thickened and corrugated where it is associated with the inflamed pancreas.

INTERPRETED BY

Kathleen Sennello DVM,
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(Small Animal Internal
Medicine)

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.

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Pancreas

The pancreas is large and hypoechoic to surrounding mesentery. No distinct nodules are visualized associated with the pancreas, but there are several slightly irregular areas that are very hypoechoic, which could be consistent with very hypoechoic tissue, free fluid, or early abscess/cyst formation. Color flow in this region may be helpful to differentiate. There is evidence of severe regional mesenteric inflammation in both limbs of the pancreas. Consistent with moderate to severe pancreatitis.

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Free Abdomen

There is a scant to small amount of free fluid. No lymphadenopathy. The omentum is severely hyperechoic in the cranial abdomen in the region of the pancreas.

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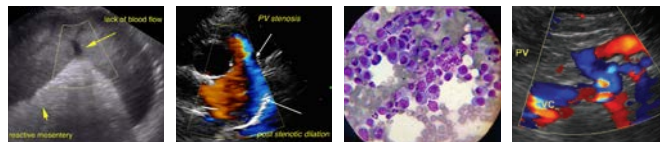
- Shadowing hyperechoic structure visualized in the pre-prostatic/prostatic urethra – Findings are most consistent with a stone.

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ULTRASONOGRAPHIC FINDINGS

- Bilateral non-obstructive nephroliths with a large left-sided renal cyst – The hyperechoic mineralized foci observed at the corticomedullary junction of the left/right kidney are consistent with small, non-obstructive nephroliths.



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- Large, irregular, mottled spleen with hypoechoic nodules – Differentials include lymphoid hyperplasia, extramedullary hematopoiesis, infiltrative neoplasia, inflammation, other. Cytology or histopathology would be necessary to get a definitive diagnosis.

SPECIES

Canine

- Large, irregular, hypoechoic pancreas with surrounding severe hyperechoic mesentery and suspected pockets of free fluid – Findings are consistent with moderate to severe pancreatitis and possible peripancreatic fluid/early abscess formation.

BREED

Spaniel X

- Large, heterogeneous liver with rounded margins and a hypoechoic nodule – 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 nature of the irregular area of liver and the hypoechoic nodule is uncertain. This could represent a benign or neoplastic lesion.

SEX

Neutered Male

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- Distended gallbladder and bile duct – Findings are suggestive of an extrahepatic biliary obstruction secondary to pancreatitis.

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- Thickened, corrugated duodenum – Findings are most consistent with focal enteritis secondary to pancreatic inflammation.

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- Severely hyperechoic mesentery with small amount of free fluid – Findings are most consistent with a reactive peritonitis.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The pancreas appears large and hypoechoic, surrounded by hyperechoic mesentery and some free fluid. These findings are consistent with moderate to severe pancreatitis. Additionally, there are some hypoechoic regions that could represent very hypoechoic pancreas or pockets of fluid/abscesses. Consider color flow in these areas and continued monitoring. If fluid filled structures are suspected, drainage could be considered. Recommend aggressive medical management for pancreatitis (fluid, nausea medications, pain medications +/- plasma).

IMAGING PERFORMED BY

Dr. Ellen Puthoff

The gallbladder and bile duct both appear dilated with minimal intraluminal material. I suspect this is due to an extrahepatic biliary obstruction caused by the inflamed pancreas.

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The liver is rounded, irregular, and heterogeneous. There is a focal area of irregularity with a hypoechoic nodule. Consider reevaluation of this region once the pancreatic inflammation has improved. A fine needle aspirate of this area is likely warranted.

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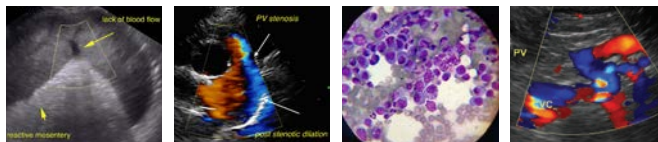
The spleen appears diffusely mottled with hypoechoic nodules. Recommend a fine needle aspirate of the spleen once the pancreatic inflammation has improved.

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Recommend urinalysis and culture and correlate findings with abdominal radiographs. If confirmed, consider passing a urethral catheter to see if the mineralization can be retropulsed back into the urinary bladder.

Recommend three view thoracic radiographs to evaluate for possible concurrent thoracic disease/involvement.



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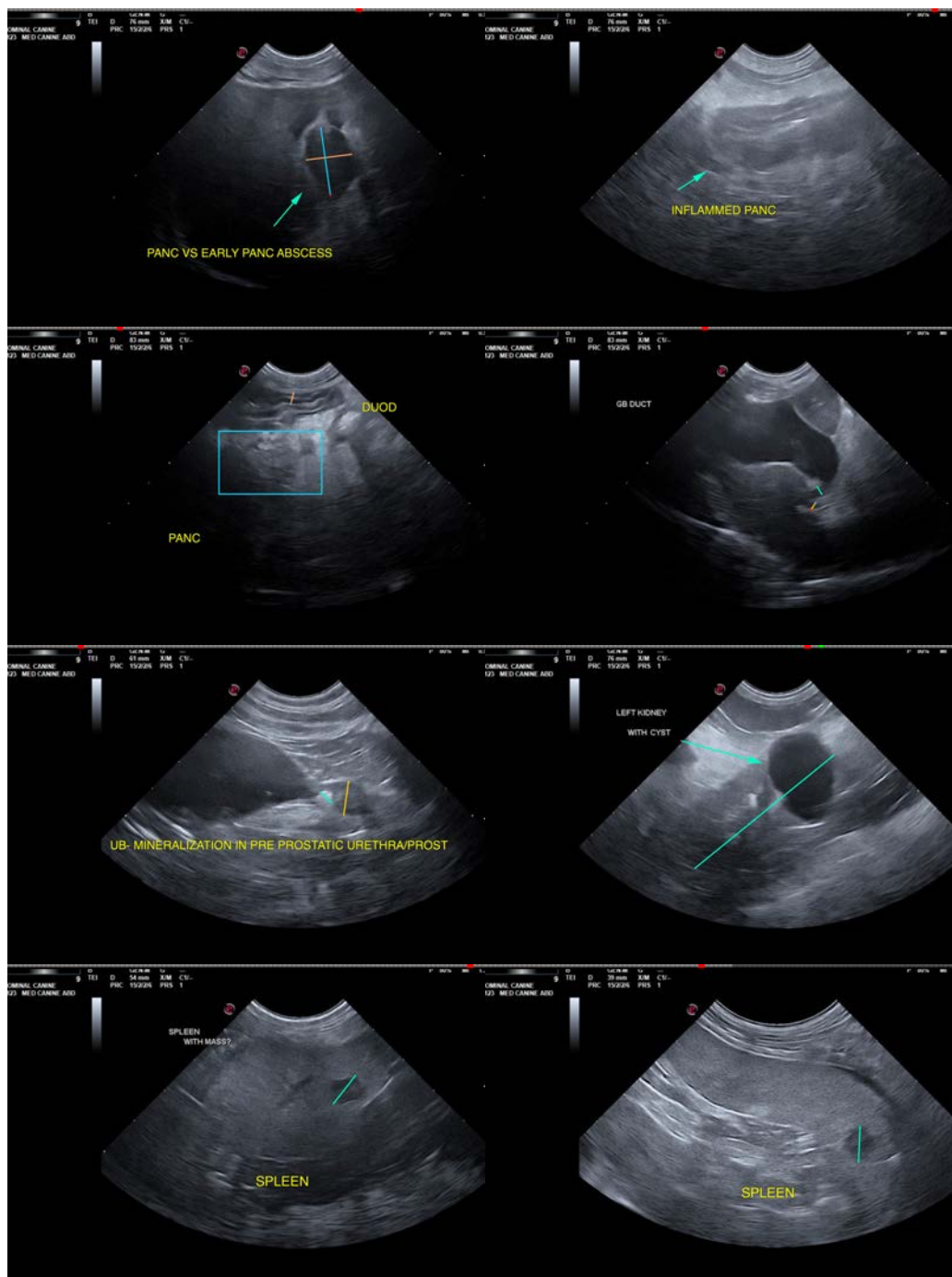
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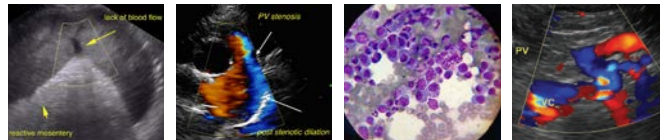
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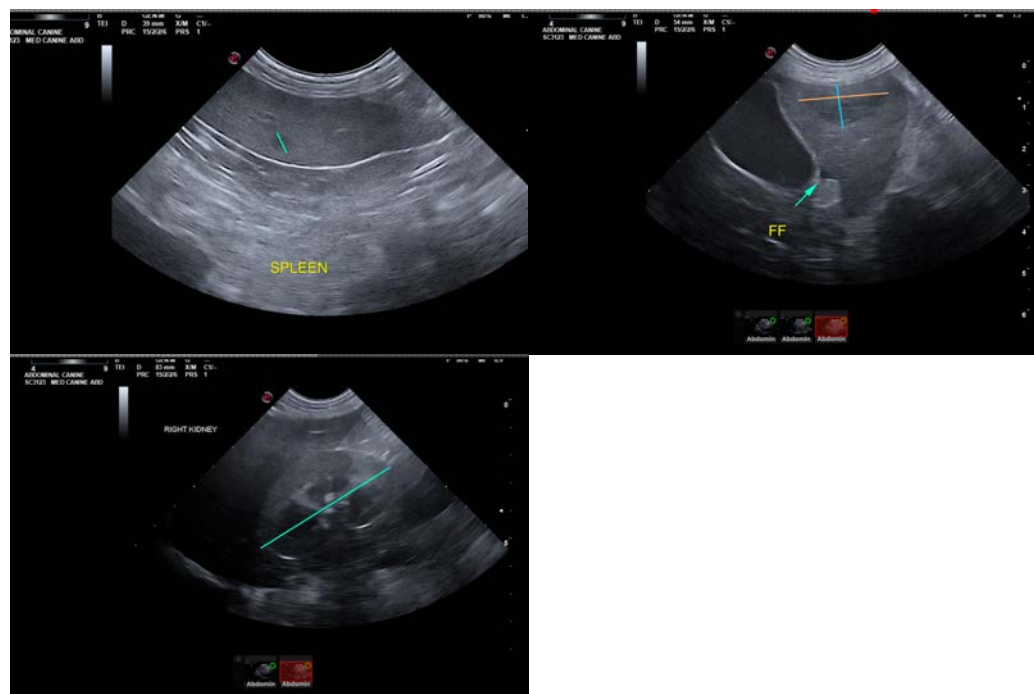
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

IMAGING PERFORMED BY

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