



**PATIENT**

Xena Apostolico

**PRESENTING CLINICAL SIGNS**

Chronic pancreatitis or ???  
Abnormal PE/Chem/CBC/UA Results: PSL 484, CPL positive

**SPECIES**

Canine

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

**BREED**

Sheherd X

The urinary bladder is adequately distended with anechoic contents. The wall is smooth and regular. No abnormalities are noted with the trigone or proximal urethra, and there is no evidence of sediment, cystoliths, polyps or a mass.

**Kidneys**

**SEX**

Spayed Female

The **left** kidney measures 7.19 cm. The capsule is smooth and its overall architecture, including the definition of the cortico-medullary junction, are preserved. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. An accumulation of intrapelvic fat is noted. Blood flow is within normal limits. The surrounding mesentery is not hyperechoic.

**AGE**

7 Years

The **right** kidney measures 6.59 cm. The capsule is smooth. A very mild loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. An accumulation of intrapelvic fat is noted.

**WEIGHT**

95 Pounds

**Aortic bifurcation/trifurcation**

No abnormalities observed.

**Adrenal Glands**

**INTERPRETED BY**

Lisa Carioto, DVM,  
DVSc, Diplomate  
ACVIM

The **left** adrenal gland measures 0.55 cm at the cranial pole, 0.69 cm at the caudal pole and 2.76 cm in length. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 1.27 cm at the cranial pole, 0.54 cm at the caudal pole and 2.57 cm in length. The cranial pole is enlarged and the gland is in the form of a "club". A mass is not observed. No abnormalities are noted with the gland's overall echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

**IMAGING PERFORMED BY**

Jessica Miller

**Spleen**

**HOSPITAL NAME**

All Creatures Great &  
Small - Denville

Mild splenomegaly without abnormalities in architecture and echogenicity. The capsule is smooth. The echotexture appears slightly miliary in certain views, which may be due to the artefact. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

**REFERRING VET**

Dr. Mitrovic

**Liver**

There are no obvious signs of hepatomegaly and its borders are smooth and sharp. The liver's echotexture is mildly coarse and granular, but homogeneous. It is within normal limits in echogenicity. Subcostally, multiple pinpoint to punctate hyperechoic foci are present dispersed throughout the parenchyma; these are suggestive of mineralization, fat, and/or fibrosis. There are no signs of neoplasia. No abnormalities are observed with the hepatic vessels visualized. The mesentery medial to the liver is mildly to moderately hyperechoic.

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The gallbladder (GB) wall is within normal limits in thickness and echogenicity. A small amount of echogenic material is present within the GB. An in-depth evaluation of the biliary system is difficult to



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perform due to gas in the surrounding stomach, however, the portions of the cystic and/or common bile ducts observed are not dilated or tortuous, i.e. there are no signs of an obstruction.

**Gastrointestinal**

**SPECIES**

Canine

The gastric wall is within normal limits in thickness and the wall layers are well defined. No obvious abnormalities are observed with its peristalsis.

The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved. Abnormally dilated loops of bowel are not observed.

**BREED**

Sheherd X

Gas is present in the transverse colon.

The colonic wall is not thickened and mural detail is considered normal.

**SEX**

Spayed Female

**Pancreas**

The left and right limbs are very mildly heterogeneous with hypoechoic nodules of variable size, which are suggestive of nodular hyperplasia. There is no evidence of hyperechogenicity of the surrounding mesentery, i.e., signs of active pancreatitis are not present.

**AGE**

7 Years

The body is mildly hypoechoic and certain areas are slightly coarse in echotexture. The surrounding mesentery is mildly hyperechoic. The changes noted with the body are suggestive of mild, smoldering of active pancreatitis, however, signs of neoplasia are not appreciated.

**WEIGHT**

95 Pounds

**Other**

**Lymph nodes**

No abnormalities are observed

**Abdominal effusion** is not visualized.

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**ULTRASONOGRAPHIC FINDINGS**

**IMAGING PERFORMED BY**

Jessica Miller

- A **mild, smoldering, active pancreatitis** is suspected, however, fibrosis due to age-related changes and previous episodes of pancreatitis also appear to be present. The changes appear to be localized to the body of the pancreas. The right and left limbs are relatively homogeneous.
- **Mild splenomegaly.** The echotexture appears slightly **miliary** in certain views, which may be due to the artefact. however, other differential diagnoses include extramedullary hematopoiesis, splenitis, for example, antigenic stimulation and secondary inflammation due immune mediated inflammation, including infectious diseases. Hypersplenism and reactive hyperplasia are also possible. Neoplasia, such as lymphoma, or other round cell tumour, is considered less likely, but cannot be excluded. A fine needle aspirate is required to obtain a definitive diagnosis. Splenomegaly is often observed in German shepherd and German shepherd mix breed dogs. The cause of splenomegaly in this breed is not known, but is not considered clinically significant.

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- The pinpoint to punctate hyperechoic foci dispersed throughout the **hepatic** parenchyma are suggestive of mineralization, fat, and/or fibrosis. There are no signs of neoplasia. The hyperechoic mesentery medial to the liver is suggestive of localized inflammation, which may occur secondary to pancreatitis. A *reactive hepatopathy* may be present secondary to smoldering pancreatitis.

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- The presence of **sludge in the gallbladder** is often clinically insignificant, however, some dogs may show clinical signs of gastroesophageal reflux disease (GERD), therefore, obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor or ursodeoxycholic acid may be required depending on the patient's history.

**SPECIES**

Canine

- The enlarged cranial pole of the right adrenal gland may be due to adrenal hyperplasia secondary to stress (chronic illness) or development of a benign adenoma. Hyperadrenocorticism (HAC) is considered less likely based on the absence of clinical signs, however, one cannot exclude the possibility of HAC in its early development. Sonographic results should be correlated with clinical signs, i.e., further diagnostics are not necessary if a patient is not demonstrating clinical signs of HAC.

**BREED**

Sheherd X

**SEX**

Spayed Female

- **Mild renal changes** are present, which are suggestive of age related degeneration.

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

**AGE**

7 Years

The following are suggested

- Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor or ursodeoxycholic acid may be required depending on the patient's history.
- If signs of GERD, 10-14 day trial with famotidine or omeprazole (0.7-1 mg/kg PO q12h)
- Serum cobalamin, folate, TLI to exclude dysbiosis and underlying EPI due to smoldering and previous episodes pancreatitis.

**WEIGHT**

95 Pounds

- Some dogs with chronic pancreatitis suffer from inflammatory bowel disease (IBD) and may benefit from a hypoallergenic diet that is low in fat. Diet trial (veterinary prescription low fat, hypoallergenic, hydrolyzed or novel protein) due to history of pancreatitis, for example, Purina HA. Royal Canin Hypo HP possible, but is higher in fat. Low fat, hypoallergenic diets also available through Rayne. Note, dogs with IBD and other causes of GI inflammation may have a false positive SNAP cPL.

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ACVIM

- A fine needle aspirate of the spleen is required to obtain a definitive diagnosis, however, a SNAP 4Dx is suggested to exclude an infectious cause of splenitis or hypersplenism. Extramedullary hematopoiesis is highly possible as a cause of the splenic echotexture.

**IMAGING PERFORMED BY**

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**AGE**

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**WEIGHT**

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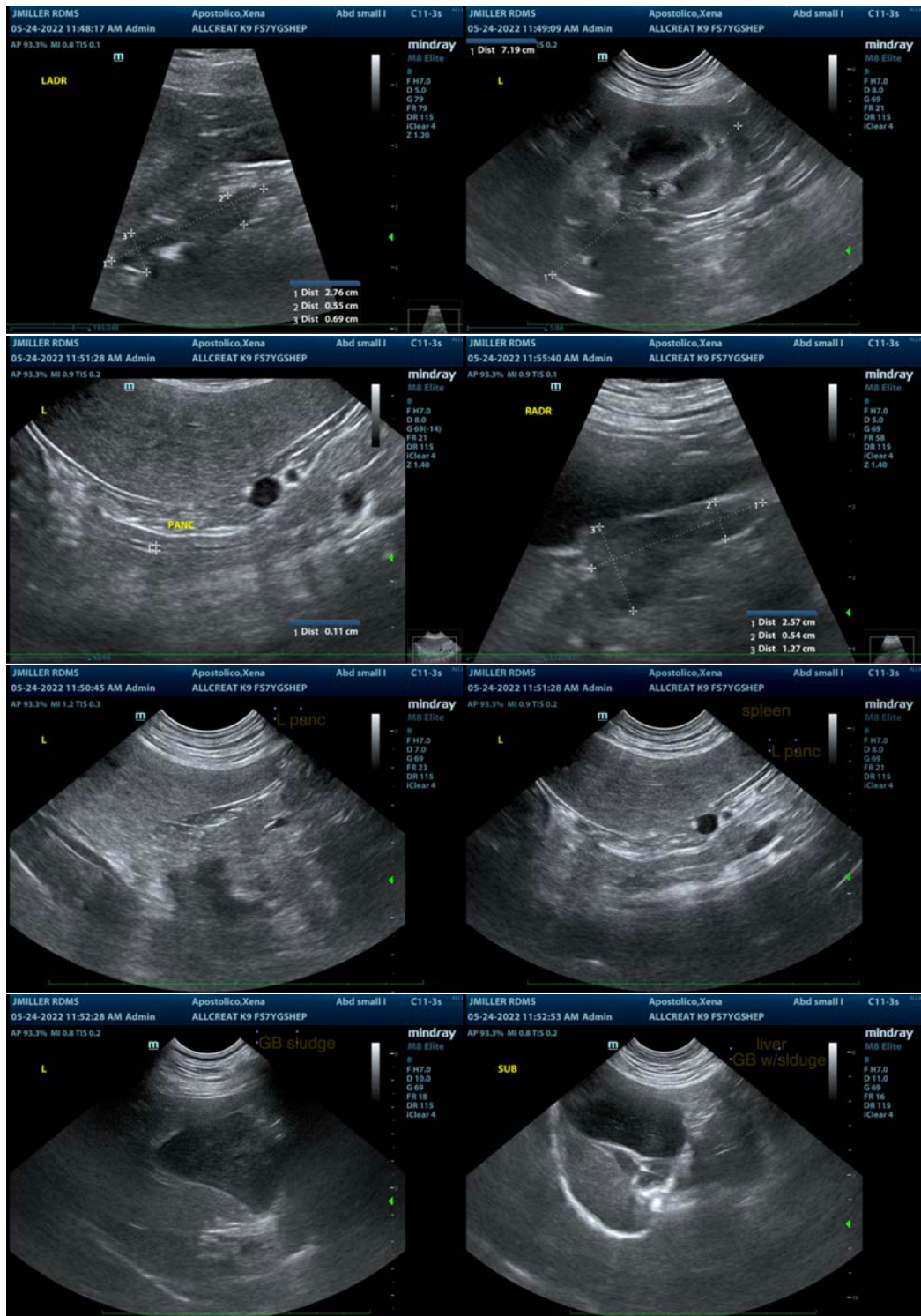
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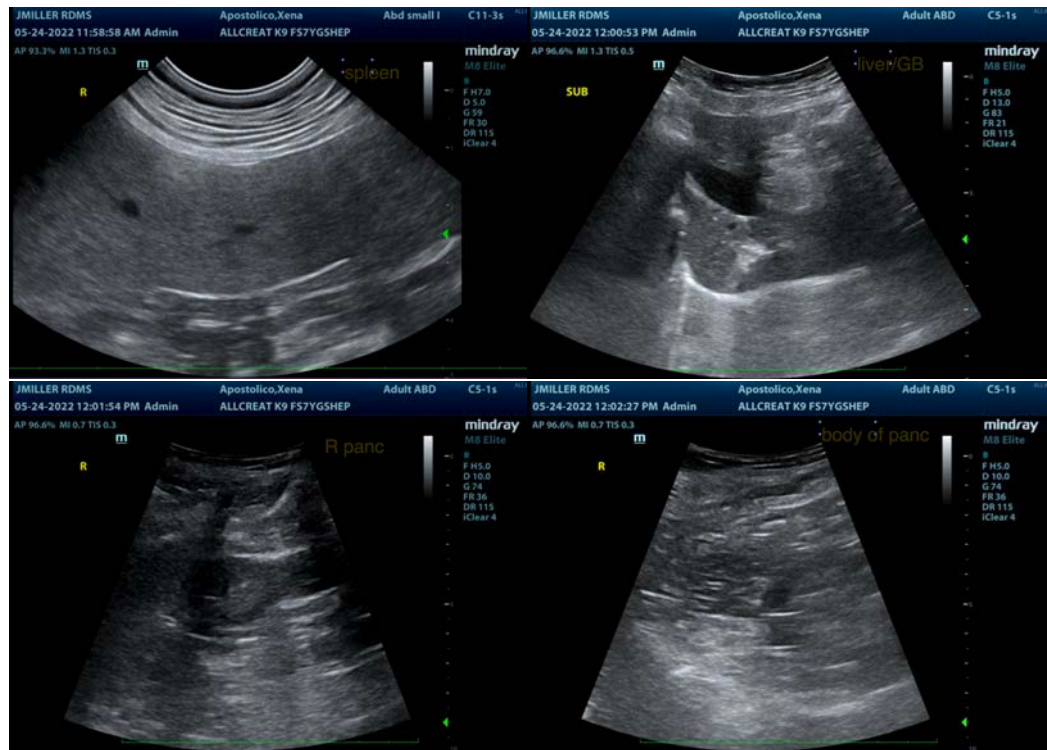
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

**Lisa Carioto, DVM, DVSc, Diplomate ACVIM**

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