



PATIENT PRESENTING CLINICAL SIGNS

Gizzy Kelly History: "Gizzy" Carl Kelly (Dr. Kelly) 16-17 year old min pin Female, spayed Has Cushing's, concerned primarily about adrenals. Gave 0.3mg/kg butrophanol IM but still anxious and moving for scan

SPECIES

Canine

Urinary System

BREED

Miniature Pinscher

The **urinary bladder** is well distended. The wall is smooth and regular. Two very small mildly echogenic structures, 1.5 mm and 1.4 mm, with a slightly hyperechoic surface are observed in the region where the ureteral papillae are normally located. However, very subtle shadowing is observed in the oblique view; not in the longitudinal. There is no evidence of sediment, polyps or a mass. No abnormalities are present with the trigone or proximal urethra.

SEX

Spayed Female

Kidneys

AGE

16-17 years

The **left kidney** measures 4.23 cm. The capsule is smooth. The cortex is moderately hyperechoic. A mild loss of the normal definition of the cortico-medullary junction is present. Multiple anechoic to hypoechoic, well-defined structures are noted throughout the cortex. They are most consistent with benign cysts. Mineralizations of the diverticulae and pelvis are present, as well as small nephroliths. Pyelectasia (longitudinal view: 0.35 mm) is present. The surrounding mesentery is not hyperechoic.

WEIGHT

3.8 kg

The **right kidney** measures 4.10 cm. The capsule is mildly irregular. A mild loss of the normal definition of the cortico-medullary junction is present. Multiple anechoic to hypoechoic, well-defined structures are noted throughout the cortex. They are most consistent with benign cysts. Mineralizations of the diverticulae and pelvis are present, as well as small nephroliths. Pyelectasia (longitudinal view: 0.19 mm) is present. The surrounding mesentery is not hyperechoic.

INTERPRETED BY

Lisa Carioto, DVM,
DVSc, Diplomate
ACVIM

Aortic bifurcation/trifurcation

No abnormalities observed.

IMAGING PERFORMED BY

Loetitia Saint-Jacques, RVT

Adrenal Glands

HOSPITAL NAME

Roundhill AH

The **left adrenal gland** measures 1.07 cm at the cranial pole, 0.93 cm at the caudal pole. A well circumscribed nodule is noted at the cranial pole. It measures approximately 1.07 cm x 1.08 cm. The gland is mildly to moderately heterogeneous with both hypo and hyperechoic areas. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

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Dr. Kelly

Right adrenal gland: A well-circumscribed mass is observed, measuring 2.19 cm in diameter x 2.80 cm in length. The mass is relatively homogeneous with occasional hypo- and hyperechoic foci, suggestive of mineralization, fat or fibrosis. A hypoechoic nodule with a hyperechoic center is present within the center of the mass in one view. The mass is not well vascularized when evaluated with colour Doppler. No obvious signs of metastases or thrombi are noted in the surrounding vasculature.

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Spleen

6/21/22



PATIENT

Gizzy Kelly

The spleen is within normal limits in size, architecture, echotexture, and echogenicity. The capsule is smooth. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

SPECIES

Canine

Liver

Mild hepatomegaly is suspected, however, this is better characterized at the time of the ultrasound or with radiographs. The liver's borders are smooth, but are very mildly rounded. It is diffusely hyperechoic. A subtle, coarse or granular echotexture is observed. A few hypoechoic nodules of variable size are visualized. Target lesions are not noted. No abnormalities are observed with the hepatic vessels. The mesentery surrounding the liver is mildly to moderately hyperechoic.

BREED

Miniature Pinscher

SEX

Spayed Female

The **gallbladder** (GB) is moderately to severely distended with a large amount of free floating, gravity-dependent and inspissated echogenic material (sludge), some of which has formed nodules. A portion of the hyperechoic material "scintillates" and casts shadows, therefore early cholelithiasis cannot be excluded. Strands of mucus attaching the wall and the inspissated bile are visualized in a transverse view, yielding a kiwi-like appearance. The parenchyma surrounding the cystic duct is hyperechoic. The portions of the cystic and/or common bile ducts observed are not dilated or tortuous, i.e. there are no obvious signs of an obstruction.

AGE

16-17 years

WEIGHT

3.8 kg

Gastrointestinal

The gastric wall is within normal limits in thickness and the wall layers are well defined. However, fogging of the mucosa and moderate stippling of the muscularis are noted. The muscularis is more prominent than usual. No obvious abnormalities are observed with its peristalsis.

INTERPRETED BY

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ACVIM

A large amount of ingesta and fluid are present within the lumen of the small intestines. The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved.

Duodenum: Moderate fogging and stippling of the mucosa

IMAGING PERFORMED BY

Loetitia Saint-Jacques, RVT

Jejunum: Mild stippling of the mucosa, which is also more prominent than usual. The surrounding mesentery is moderately to markedly hyperechoic.

The mesentery surrounding the jejunum throughout the abdomen is moderately hyperechoic.

HOSPITAL NAME

Roundhill AH

Abnormally dilated loops of bowel are not observed.

The colonic wall is not thickened and mural detail is considered normal. Soft stools are present within the colon.

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Dr. Kelly

Pancreas

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The **right limb** is mildly enlarged and mildly hypoechoic. Its contours are slightly irregular. Hypoechoic nodules of variable size and pinpoint to punctate hyperechoic foci are scattered throughout the parenchyma. The former abnormalities are suggestive of active pancreatitis, while the latter are most likely due to age-related changes, such as nodular hyperplasia and fibrosis, respectively. Fibrosis may occur secondary to age, previous episodes of pancreatitis, mineralization, as well as amyloid deposition.

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The surrounding mesenteric fat is mildly to moderately hyperechoic. Overt signs of neoplasia are not noted.



PATIENT Similar findings are noted with the **left limb**.

Gizzy Kelly

Other

SPECIES

Lymph nodes

Canine

A portion of a mildly enlarged, hypoechoic hepatic lymph node is observed.

BREED

Miniature Pinscher

Abdominal effusion is not visualized.

SEX

Heart

Spayed Female

A brief video clip of the heart was submitted. Pericardial and pleural effusion are not identified. An obvious mass is not observed on evaluation of the cardiac chambers.

AGE

Mild myxomatous degeneration of the mitral valve is observed.

16-17 years

No obvious abnormalities are noted with contractility (measurements not performed).

WEIGHT

3.8 kg

ULTRASONOGRAPHIC FINDINGS

INTERPRETED BY

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- **Adrenal glands:** A mass of the **right** gland is present. Despite its size, there are no criteria of malignancy. Obvious metastases to the surrounding vasculature are not evident. Differential diagnoses for the mass include a benign adenoma (although less likely due to size) or adenocarcinoma. A pheochromocytoma is another differential diagnosis. Nodular hyperplasia and a lipoma may also be contributing to the changes observed, particularly the hypo and hyperechoic nodules within the centre of the mass. A **nodule** of the **left** gland is also observed. A benign nodule is suspected. Differential diagnoses are similar to those above. Another possibility is adrenal hyperplasia secondary to pituitary dependent hyperadrenocorticism, in addition to an adrenal mass.

IMAGING PERFORMED BY

Loetitia Saint-Jacques, RVT

- **Liver:** *Vacuolar and reactive hepatopathies* are suspected due to stress and an underlying systemic disease. *Age-related nodular hyperplasia* is also likely. Cholestasis and cholangitis/cholangiohepatitis may also be present based on the appearance of the gallbladder and surrounding hyperechoic mesentery. Target-like lesions are not observed, i.e. signs of neoplasia are not visualized.

HOSPITAL NAME

Roundhill AH

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- **Gallbladder:** A gallbladder mucocoele cannot be excluded, despite the absence of the classical sonographic appearance. Small choleliths are observed. Cholecystitis with a secondary bacterial infection may be present. Gallbladder sludge is often clinically insignificant, however, gastroesophageal reflux disease (GERD), can occur in some patients. 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.

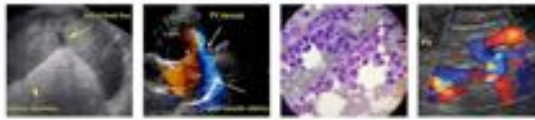
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- **Pancreas:** A smoldering pancreatitis is suspected. Age-related changes, such as nodular hyperplasia and fibrosis are suspected. Overt signs of neoplasia are not appreciated.

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- **Gastrointestinal tract:** Mild to moderate signs of diffuse inflammation of the gastrointestinal (GI) are observed. Inflammatory bowel disease is suspected. Infiltrative disease, such as lymphoma or other round cell tumour, is considered less likely, but cannot be excluded. Other differential diagnoses include dysbiosis.

SPECIES

Canine

- **Kidneys:** Age-related degeneration are observed, in addition to benign cysts. Small mineralizations and nephroliths are present without signs of an obstruction. Pyelectasia may occur secondary to polydipsia and polyuria (pu/pd), however, 0.35 cm is slightly elevated to be secondary to pu/pd, intravenous fluids, as well as pyelonephritis. Pyelonephritis cannot be excluded despite the absence of classical sonographic signs.

BREED

Miniature Pinscher

- **Mesentery:** Diffuse steatitis of the omentum is present, which is consistent with inflammation of the pancreas and/or GI tract.

SEX

Spayed Female

- **Urinary bladder:** The two hyperechoic areas may be cystoliths in early formation, however, their appearance is suggestive of the ureteral papillae, which may be mildly mineralized secondary to age-related changes. Additional views are required to achieve a definitive diagnosis. If cystoliths in early formation are present, they are small enough to pass without causing an obstruction.

AGE

16-17 years

- Mild myxomatous degeneration of the mitral valve

WEIGHT

3.8 kg

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A urine culture and sensitivity to exclude pyelonephritis

INTERPRETED BY

Lisa Carioto, DVM,
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ACVIM

If negative, a urine protein: creatinine ratio

Arterial blood pressure

Low dose dexamethasone suppression test

IMAGING PERFORMED BY

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+/- Evaluation of urine for metanephrines to exclude a pheochromocytoma.

Fasting triglycerides are suggested to exclude hypertriglyceridemia as a predisposing cause of gallbladder sludge.

HOSPITAL NAME

Roundhill AH

Obtaining a history regarding signs of GERD is suggested. Treatment with an anti-acid, proton pump inhibitor (0.7-1 mg/kg PO q12h) for 2 weeks may be pursued.

Dietary trial (veterinary prescription low fat, hypoallergenic, hydrolyzed or novel protein) due to history of pancreatitis, for example, Purina HA, is suggested if hypertriglyceridemia is identified.

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Small, frequent meals

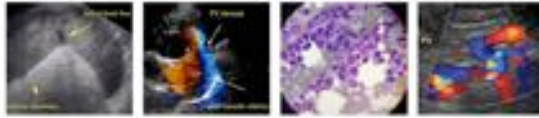
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If ursodeoxycholic acid (Ursodiol) will be administered, it should be introduced at a very low dose, and slowly up-titrate to decrease the risk of GI side effects. For example, 3 mg/kg PO once a day for 5-7 days, then 5 mg/kg PO once a day for 5-7 days, then 7.5 mg/kg PO once a day for 5-7 days, then 10 mg/kg PO once a day for 5-7 days. The dose should be divided BID and given with a meal to decrease the risk of nausea, cramps, vomiting and diarrhea. This medication should not be introduced at the same time as other drugs.

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An echocardiogram may be considered in the future to assess the myxomatous degeneration of the mitral valve.

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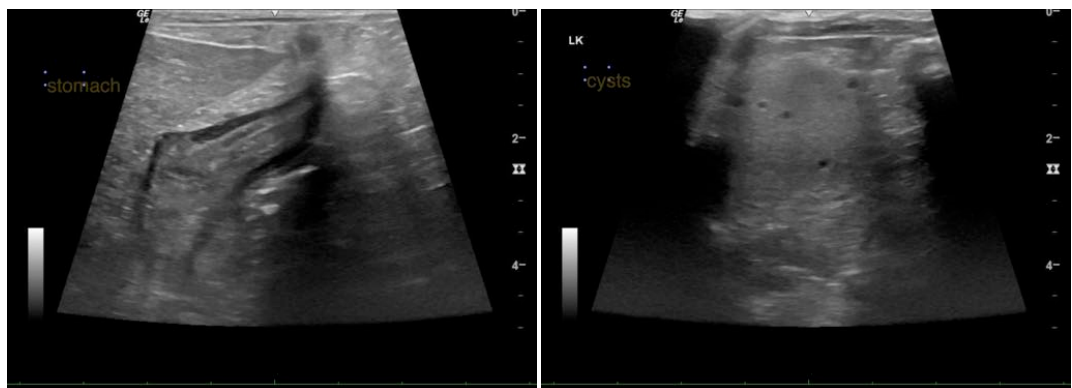
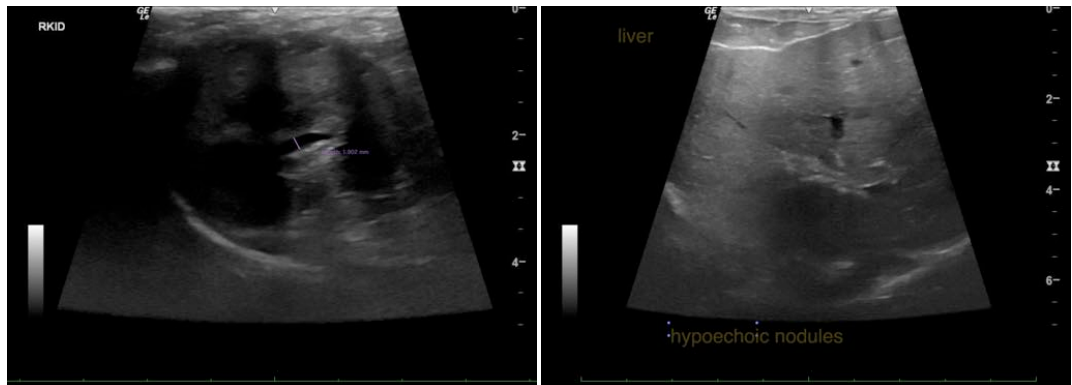
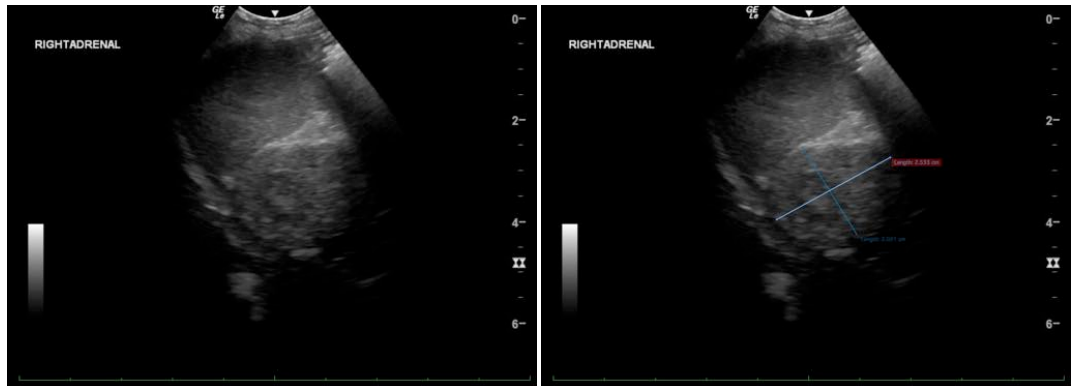
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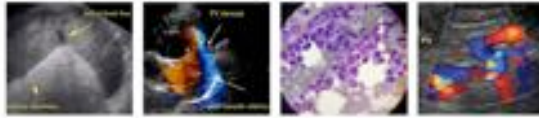
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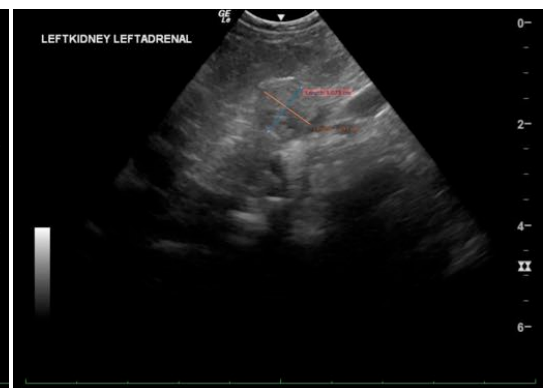
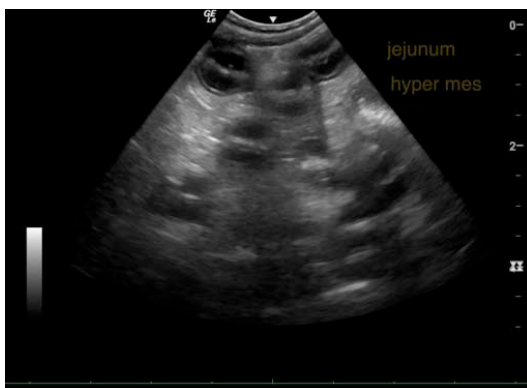
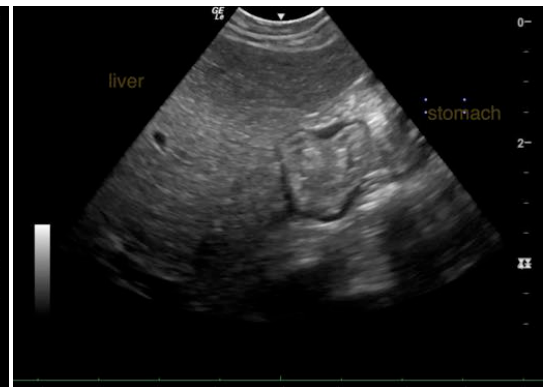
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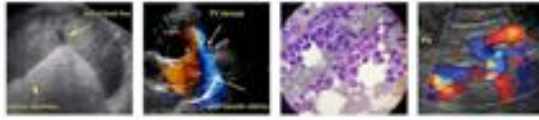
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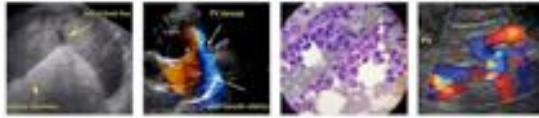


The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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