

**PATIENT**

Penny Davies

SPECIES

Canine

BREED

Mix

SEX

Spayed Female

AGE

14 years

WEIGHT

5.4 kg

INTERPRETED BYLisa Carioto, DVM,
DVSc, Diplomate
ACVIM**IMAGING PERFORMED BY**

Tom McNeil

HOSPITAL NAME

SVS Imaging CT

REFERRING VET

WVRC- Dr. Doucette

PRESENTING CLINICAL SIGNS

History: Vomiting and diarrhea even though received cerenia SC 12 hours ago. History of cushings disease and pancreatitis.

Abnormal PE/Chem/CBC/UA Results: Previous AUS (3/12) CONCLUSIONS: gallbladder wall thickening - cholecystitis, surrounding inflammatory disease (hepatitis), cystic hyperplasia, polyps, less likely neoplasia chronic renal changes splenic nodules - regenerative, EMH, nodular hyperplasia, less likely neoplastic change no evidence pancreatitis bilateral adrenomegaly - consistent with recent HAC diagnosis - no masses - Pituitary dependent

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**Urinary System**

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

The left kidney measures 4.0 cm (within normal limits). The capsule is smooth. However, the cortex is mildly hyperechoic. Its overall architecture, including the definition of the cortico-medullary junction, is well preserved for a dog of Penny's age. Mild diverticular mineralizations are observed, without signs of nephroliths or pyelectasia, in addition to mild accumulation of fat within the pelvis. The surrounding mesentery is not hyperechoic. A round, anechoic structure, consistent with a cyst, is observed in the cortex. It measures 0.95 cm. A minute amount of echogenic sediment is present within the cyst.

The right kidney measures 4.6 cm (within normal limits). The capsule is smooth. However, the cortex is mildly hyperechoic. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. Very mild diverticular mineralizations are observed, without signs of nephroliths or pyelectasia, in addition to mild accumulation of fat within the pelvis. The surrounding mesentery is not hyperechoic.

Adrenal Glands

A nodule is present at the caudal pole. The hyperechoic nodule within the pole measures 4.7 mm in diameter x 6.2 mm in length. It does not cast an acoustic shadow and is most likely due to fat, fibrosis or nodular regeneration. Neoplasia is considered highly unlikely. The caudal pole of the adrenal gland measures 0.76 cm, and the cranial pole measures 0.68 cm. It is 2.2 cm in the length. The nodule may be due an adenoma. There are no signs of metastases or thrombi in the phrenicoabdominal veins or the surrounding vasculature.

The right adrenal gland measures 0.50 cm at the cranial pole, 0.54 cm at the caudal pole and 1.71 cm in length. No abnormalities are noted with the gland's shape, overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

Spleen

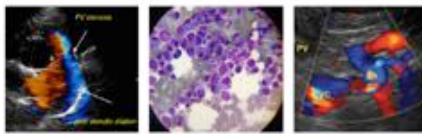
Presence of a heterogenous nodule at the head of the spleen. The nodule does not appear to disrupt the integrity of the capsule. The nodule measures 8.55 mm in diameter x 6.55 mm in length. It has both a homogenous and a cavitory portion and is avascular. It appears benign; nodular or lymphoid hyperplasia and extramedullary hematopoiesis are the most likely diagnoses.

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A hypoechoic nodule measuring 1.14 cm in diameter x 1.49 cm in length is observed towards the tail of the spleen. The nodule does not disrupt the integrity of the splenic capsule. It, too, appears benign; and the same differential diagnoses are applicable to this nodule as the one above.

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Subjectively, the spleen may be slightly enlarged for a dog of Penny's size, however, this is determined more easily at the time of the ultrasound. The capsule is smooth, and other than the two nodules, the overall echotexture and echogenicity are within normal limits. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

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Liver

There are no obvious signs of hepatomegaly and its borders are smooth and sharp. A hypoechoic nodule measuring 0.48 cm is observed. Another hypoechoic to mildly heterogenous nodule is noted in the right sagittal view and measures 1.47 cm in diameter x 2.06 cm in length. It has more of a mixed, echogenicity and echotexture, however, nodular hyperplasia is the primary differential diagnosis.

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The liver is mildly hyperechoic. This is a non-specific change, which may be suggestive of a vacuolar hepatopathy, which may occur due to hyperadrenocorticism and/or stress (chronic illness). Other differential diagnoses include cholestasis, cholangitis/cholangiohepatitis or immune-mediated hepatitis with a secondary bacterial infection.

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A moderate amount of echogenic material is visualized within the gallbladder. The biliary system is otherwise within normal limits. The presence of echogenic material/debris (sludge) in the gall bladder may be clinically insignificant, however, changes suggestive of thick strings of mucus are also present. A mucocele in its very early stages of development cannot be excluded. Other differential diagnoses include cholestasis. Cholecystitis must also be considered, although the sonographic signs are not highly supportive of such a diagnosis. There are no signs of an obstruction.

INTERPRETED BYLisa Carioto, DVM,
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ACVIM**Gastrointestinal**

The stomach is filled with ingesta, thereby preventing an in-depth evaluation. Although there are no overt abnormalities observed, delayed gastric emptying cannot be excluded if Penny was fasted. If the she was fasted, a re-evaluation may be considered after an 18 -24 hour fast.

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Tom McNeil

The gastric wall is normal in thickness. The pylorus is 0.25 cm. Although there is no loss of definition of the normal architecture of the wall layers, the muscularis appears thickened. No obvious abnormalities are observed with its peristalsis. A mass effect, measuring 0.63 cm in diameter x 0.84 cm in length is observed at the level of the pylorus. A mass cannot be excluded, however, it is well-defined and a polyp is the more likely diagnosis.

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

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The colonic wall is not thickened and mural detail is considered normal. soft stools are present in the colon. There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction.

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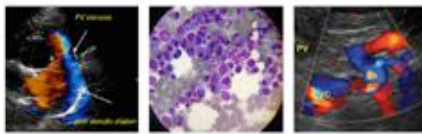
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Pancreas

Both the left and right limbs of the pancreas have a mildly coarse echotexture. These changes are most likely due to nodular hyperplasia and multifocal areas of fibrosis. The changes are considered age

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related and possibly secondary to previous episodes of pancreatitis, respectively. There are no signs of active pancreatitis.

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Other:

Lymph nodes: No abnormalities are observed.

Abdominal effusion is not visualized.

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ULTRASONOGRAPHIC FINDINGS**SEX**

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Although the presence of gall bladder sludge is most likely clinically insignificant, dogs with hyperadrenocorticism are more predisposed to developing mucocoeles. Also, some dogs do show clinical signs of gastroesophageal reflux disease as a result of the sludge, therefore, obtaining a history regarding signs of GERD from the client is suggested.

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Mild degenerative changes of both kidneys, which are suggestive of age related degeneration. Renal cysts tend to be benign. Penny's cyst in her left kidney has a very small amount of echogenic material within it. Although this may be clinically insignificant, an infection or possible abscess cannot be excluded. A re-evaluation of the cyst is suggested in 4-6 weeks to ensure its appearance remains stable.

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Both limbs of the pancreas show signs suggestive of age-related changes, for example, nodular regeneration and fibrosis. There are no signs of active pancreatitis or neoplasia.

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Differential diagnoses for the mass effect at the level of the pylorus include a polyp, as well as hypertrophied mucosa. Neoplasia is considered less likely, but cannot be excluded. There are no signs of accompanying inflammation. A biopsy of the structure would be required to obtain a definitive diagnosis. Penny may also be suffering from inflammatory bowel disease.

Hyperplasia or an adenoma of the left adrenal gland, with mineralization and/or fat deposition is suspected. There are no signs of neoplasia.

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Differential diagnoses for the two splenic nodules include nodular or lymphoid hyperplasia and extramedullary hematopoiesis. A malignant mass is highly unlikely.

High index of suspicion of a vacuolar hepatopathy and possible cholestasis. Cholangitis/cholangiohepatitis with a secondary bacterial infection cannot be excluded. An immune-mediated hepatitis is considered much less likely.

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**REFERRING VET**

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An ACTH stimulation test is *strongly recommended* to exclude the possibility of trilostane induce hypoadrenocorticism. Note, one could start with a pre-pill cortisol as this may be diagnostic.

Obtaining further history regarding signs of GERD and projectile vomiting is suggested.

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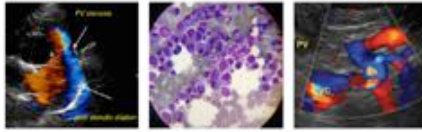
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A urinalysis and urine culture are suggested, in addition to an arterial blood pressure.

Deworming with a broad spectrum dewormer, such as fenbendazole, is recommended, even if Teddy does not go outdoors.

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A veterinary prescription brand hypoallergenic diet, whether hydrolyzed or novel protein, should be fed. Multiple diets may be required, including only canned food, as some individuals cannot digest dry. The kibble may be soaked if an all canned diet is cost prohibitive,

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If there is no response to deworming and diet trials, endoscopy and biopsies of the upper and lower GI tract are recommended. Another option, although much more invasive, would be to perform an exploratory laparotomy.

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Cholestasis, cholangitis/cholangiohepatitis cannot be excluded, in addition to secondary ascending bacterial infections, which are common. Although indiscriminate use of antibiotics is not normally recommended, one could start treatment with a broad-spectrum antibiotic and reassess liver enzyme activities, including a GGT, in a few weeks. Cefovecin (Convenia) may be tried to avoid GI side effects. If there is no improvement, a decision to pursue further diagnostics, for example, a FNA of the liver.

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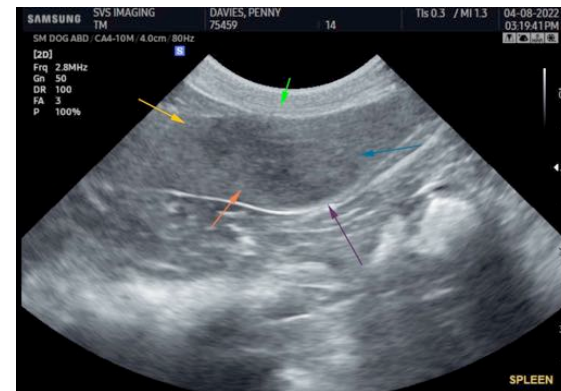
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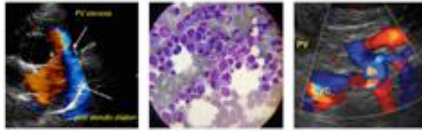
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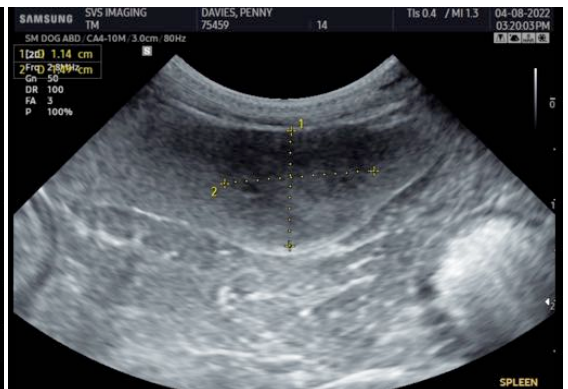
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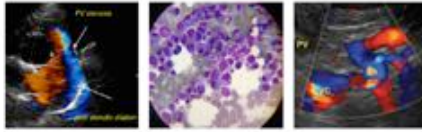
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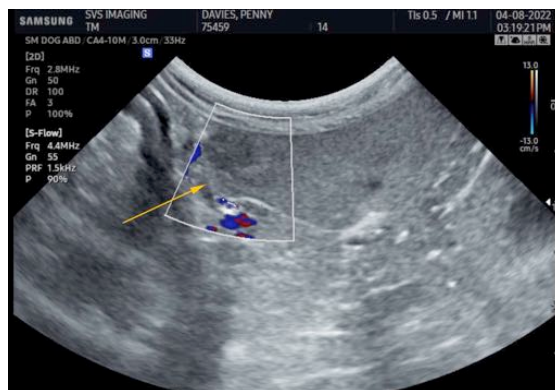
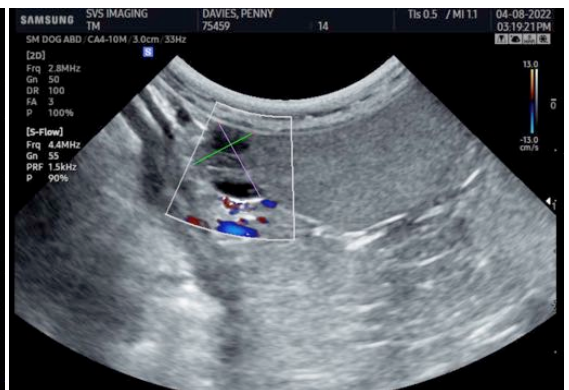
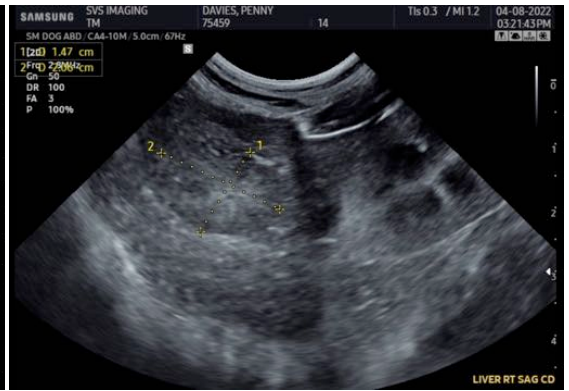
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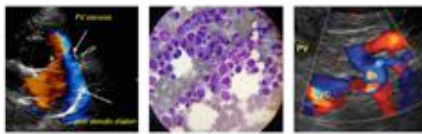
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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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