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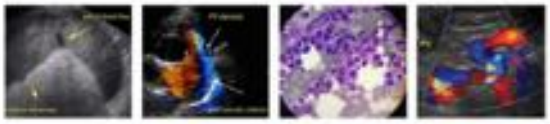

IMAGING PERFORMED BY
pawsonography@gmail.com 530-706-8340

**PATIENT**

Harlee Hargenrater

**SPECIES**

Canine

**BREED**

Cocker/Maltese/Pom /Chihuahua

**SEX**

Spayed Female

**AGE**

14 years

**WEIGHT**

7.5 kg

**INTERPRETED BY**

Andrea Nicastro, DVM, Diplomate ACVIM (Small Animal Internal Medicine)

**IMAGING PERFORMED BY**

Loetitia Saint-Jacques, RVT LVT

**HOSPITAL NAME**

Donner Truckee VH

**REFERRING VET**

Dr. Greg Hargenrater

**INVOICE**

11379

**DATE**

8.9.22

## PRESENTING CLINICAL SIGNS

History: Harlee is a 14yo FS small (7.5 kgs) mixed breed (Cocker Spaniel/Maltese/Pomeranian/Chihuahua on genetic testing) that has chronic hyporexia/dysrexia as her main clinical sign. Prior to developing dysrexia, she had a mild elevation of ALKP starting in 2018 and mild elevated UPC starting in 2019. In 11/2019, her appetite started to decline. This progressed to dysrexia, where she would only eat a certain diet for a few days, then appeared to develop an aversion to each diet subsequently. She would act hungry, smell the food, then walk away with a fearful look in her eyes, as if the food was tainted. During this span, she has never had any significant or persistent vomiting or diarrhea. No overt PU/PD. These signs have never responded to trials of Entyce, Cernia, or GI protectants (H2 blockers or PPIs). In 1/2020, she had an internal medicine consultation and work up. Her ultrasound showed hepatomegaly with mottling and mildly echogenic gallbladder wall with increased gall bladder material that has decreased mobility, mild bilateral degenerative renal changes, and suspected enteritis. She then had endoscopic GI biopsies, gall bladder aspirate for culture, head CT scan, and percutaneous liver biopsies. Endoscopic gross appearance was consistent with inflammation of the stomach and duodenum, but histopathology of these sites was unremarkable. Gall bladder culture was negative. Head CT scan was unremarkable. Liver histopathology was consistent with moderate vacuolar hepatopathy, mild to moderate portal hepatitis, and mild copper accumulation. She had decreased Cobalamin and increased Folate, so IBD was thought to be the main cause of her signs and hepatitis/PLN were thought to be secondary to the IBD. She also was negative for Cushing's disease on LDDST and had a negative fecal exam. She was started on Prednisolone 1 mg/kg/day with only partial response. Prednisolone was increased to 1.25 mg/kg/day with optimal response and minimal side effects. She was also started on Vitamin B12 injections (standard protocol). She had already been on Ursodiol, fish oil, Denamarin, and Adequan (severe left hip dysplasia and DJD) and these medications were continued. Since then, with multiple attempts to wean her off or Prednisolone, her dysrexia would return and Prednisolone was restarted with good response. She has been maintained on a mix of novel, low protein diet (Just Food for Dogs) and hydrolyzed, low protein diet (Royal Canin). She was switched to Budesonide in 7/2021 due to iatrogenic Cushing's disease signs with good response, but again, any attempt to wean her off of Budesonide led to return of her dysrexia. She was started on Benazepril 5 mg PO q 24 in 10/2021 for PLN. She has had a two UTI's over this span that have all been treated successfully based on post treatment recheck UMIC. In 3/2022, her recheck AUS reveled early partial gall bladder mucocele without regional inflammation, bilateral mild multifocal gastritis and enteritis, mild degenerative renal changes, and chronic pancreatitis. She has had elevated precision PSL in the past, but this was the first ultrasound that revealed pancreatic changes. She was placed on a 4-week course of Clavamox due to concurrent UTI with moderate improvement of her ALKP (1114) and GGT (N). Serial fast scans of her gall bladder q 1 mo revealed no progression of her partial mucocele. She was being weaned down on her Budesonide (yet another attempt) and CBC/chem/UA/UPC was done on 7/22/22: ALT=120, ALKP=2072, BUN=46, Crea=1.3, Phos=6.3, precision PSL=415, Plat=656,000, SDMA=20.4, and UPC=2.6. She has had elevated precision She started having dysrexia again, so her Budesonide was increased back up to 2 mg PO q 24 hrs with no improvement after a few days. She was then switched back to Prednisolone (1 mg/kg/day) for the first time in over 1 year. This was started 1 week ago with only mild improvement in appetite and continue dysrexia behavior (fearful response of offering food). In house labs run yesterday revealed BUN=47, Crea=1.7, ALKP>2000, GGT=22, and abnormal cPL.

Abnormal PE/Chem/CBC/UA Results: Update since Saturday is that she is now nearly completely anorexic, and we are considering a PEG tube but want to make sure the gall bladder does not need to come out. I am nearly certain that is not what is causing this problem. She has had some mild diarrhea and vomited last night and this morning, but that is attributable to all the different foods we are attempting to feed her

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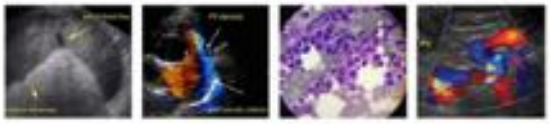

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## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The **urinary bladder** is moderately distended with anechoic urine. A 0.34 cm irregularity is observed in the ventral apical wall. The remaining bladder wall is normal in thickness with a smooth mucosal surface. No cystic calculi are observed. The cystourethral junction and the visible portion of the proximal urethra are normal.

The **left kidney** is normal size (3.92 cm in length); normal shape, with smooth peripheral contours. The cortex is variably thickened, mildly hyperechoic, with a few small cortical cysts. There is moderate loss of corticomedullary distinction. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The **right kidney** is normal size (4.66 cm in length); normal shape, with smooth peripheral contours. The cortex is variably thickened and mildly hyperechoic. Several, small cortical cysts is seen. There is moderate loss of corticomedullary distinction. Trace pyelectasia is present. There is no evidence of nephroliths, infarcts or hydroureter.

### *Adrenal Glands*

The **left adrenal gland** is normal size (0.39 cm at cranial pole) (0.50 cm at caudal pole); normal shape; homogenous parenchyma. The glandular echogenicity and detail are unremarkable. Capsule, cortex, and medullary definition are normal. The phrenicoabdominal vein and surrounding vasculature are normal.

The **right adrenal gland** is borderline enlarged (0.47 cm at cranial pole) (0.61 cm at caudal pole); normal shape; homogenous parenchyma. The glandular echogenicity and detail are unremarkable. Capsule, cortex, and medullary definition are normal. The phrenicoabdominal vein and surrounding vasculature are normal.

### *Spleen*

The **spleen** is normal in size (1.28 cm in width at the level of the hilus) with a normal capsular contour. There is appropriate echogenicity and echotexture. A few, small, ill-defined myelolipomas are observed in the region of the hilus. Splenic vasculature is normal.

### *Liver*

The **liver** is subjectively prominent in size with slightly irregular peripheral contours. The parenchyma is hypoechoic relative to the spleen and diffusely heterogenous, with numerous, coalescing nodules throughout the organ, the largest measuring 1.91 cm in length. Hepatic vasculature and intrahepatic biliary tracts are of normal volume with no evidence of congestion

The **gall bladder** lumen is moderately distended. The wall is thin and smooth. A moderate to large amount of aggregated, echogenic suspended sludge in a stellate pattern is observed within the lumen. The cystic and common bile ducts are normal/not seen.

### *Gastrointestinal*

The **gastric lumen** is minimally distended with ingesta and soft, shadowing material. The gastric wall and pylorus are normal in thickness with a normal layering pattern. The pyloric outflow tract is patent. The small intestinal lumen is not dilated. The small intestinal wall thickness is normal with a normal layering pattern and appropriate mural detail. Discreet masses are not identified. The ileocecocolic junction and colonic wall are normal. There is no evidence of an obstructive pattern.

### *Pancreas*

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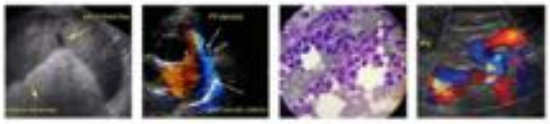

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The right limb of the **pancreas** is visible with normal curvilinear peripheral contours. The parenchyma is largely isoechoic relative to surrounding omental fat and slightly mottled in appearance. The pancreatic duct is visible but not overtly dilated. There is no evidence of peripancreatic inflammation or effusion.

***Free Abdomen***

There is no evidence of free fluid. A 1.04 cm lymph **node** is observed at the aortic trifurcation.

***Other***

A **brief echocardiogram** reveals no evidence of pericardial effusion.

## ULTRASONOGRAPHIC FINDINGS

### Primary Findings

- Gall bladder changes are consistent with a fully formed mucocele.
- The hepatic parenchymal changes are nonspecific and could be secondary to a benign process (i.e., diffuse regenerative nodular hyperplasia, +/- concurrent vacuolar hepatopathy). Infiltrative neoplasia is also a differential. An inflammatory process is also possible but considered less likely given the disproportionate elevation of the ALP.

### Secondary Findings

- Bilateral, chronic, age-related renal changes with cortical cysts.
- The focal irregularity in the urinary bladder wall may represent an area of inflammation, granuloma, or less likely, an emerging tumor.
- The pancreatic changes are most consistent with age-related parenchymal remodeling, potentially secondary to a prior inflammatory episode, early fibrosis or chronic pancreatitis.
- The shadowing material within the gastric lumen may represent ingesta and/or foreign material. It appears nonobstructive at this time.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Given the clinical history and sonographic changes, a cholecystectomy and liver biopsy should be considered. If pursued, acquisition of additional hepatic tissue samples for potential copper quantitation should be considered. Repeat GI biopsies should also be considered, as some pathology can be missed with endoscopic biopsies.

Also consider a fecal evaluation for ova and Giardia as well as empirical treatment for small intestinal bacterial overgrowth, with a full-week course of Tylosin.

Given the clinical history of renal disease, also consider a baseline blood pressure measurement.

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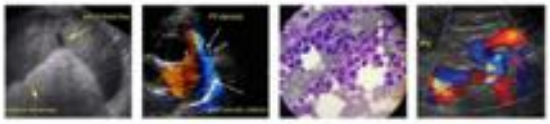

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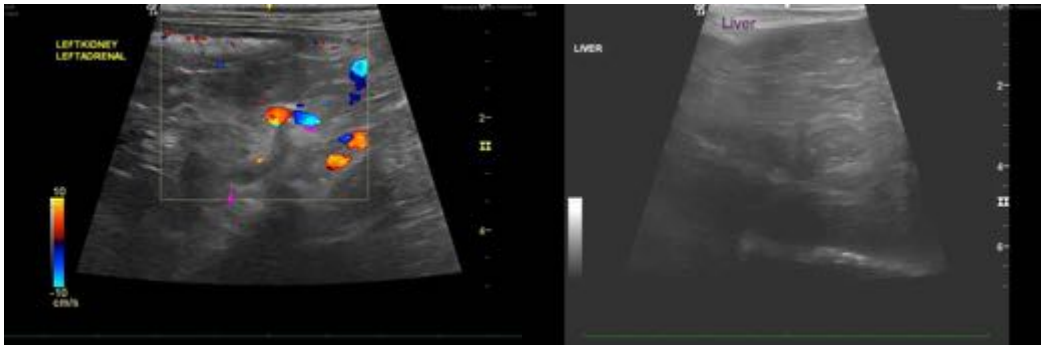


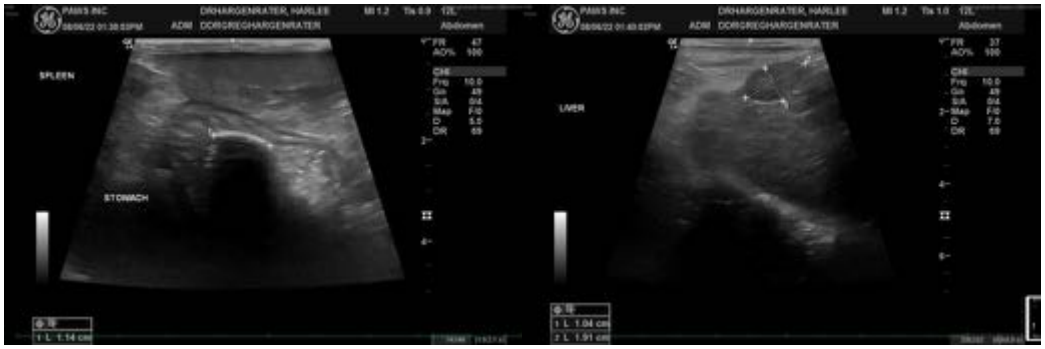


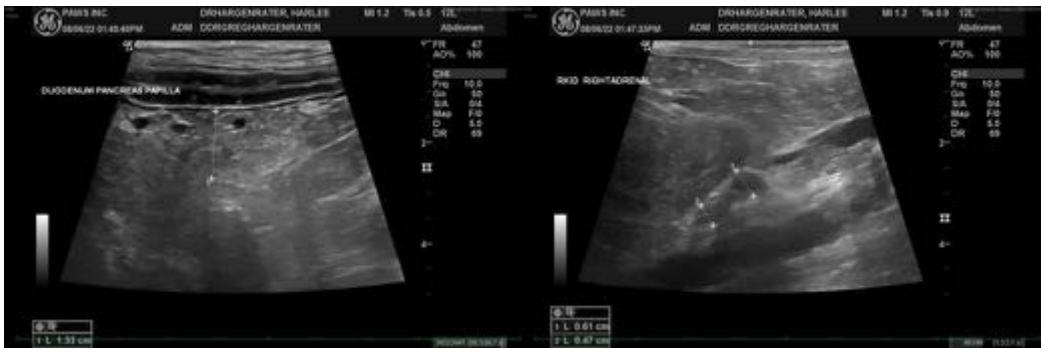


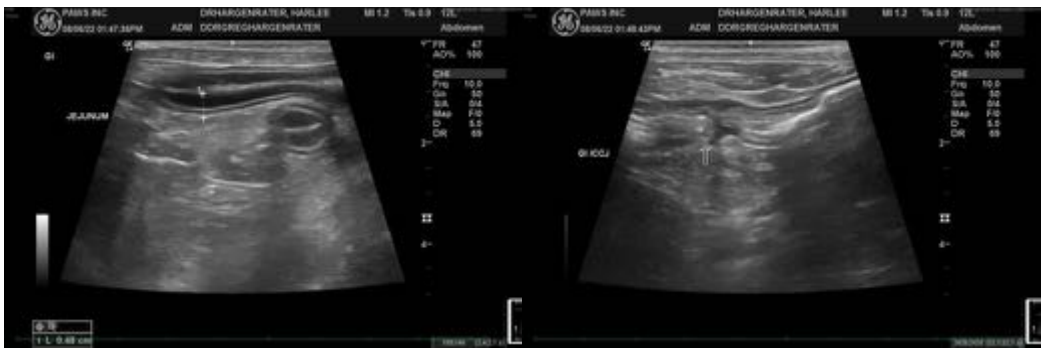

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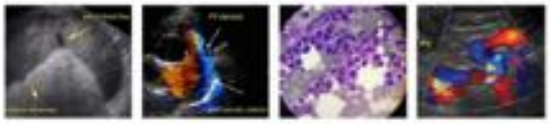

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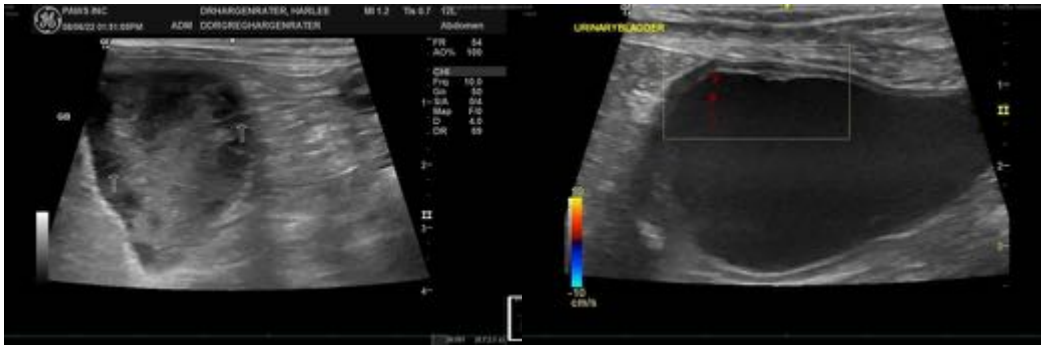

**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

**Andrea Nicastro**, MPH, DVM, Diplomate DACVIM (Small Animal Internal Medicine)
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