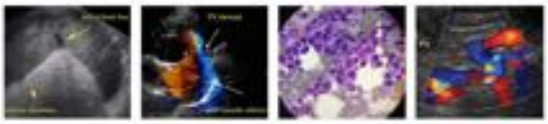

PATIENT

Lucy Barba

SPECIES

Canine

BREED

Dachshund Mix

SEX

Spayed female

AGE

10 years

WEIGHT

16.4 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY

Loetitia Saint-Jacques, RVT

HOSPITAL NAME

MountainView AH

REFERRING VET

Dr. Kalivoda

INVOICE

32057

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7/29/22

PRESENTING CLINICAL SIGNS

History: sedation: dex/torb- ~o presented p for ae, o is very concerned about gi issues has a very bloated belly (2 mo duration) and is very food motivated (always has been) is acting OK otherwise, O reports bad breath and belches
Abnormal PE/Chem/CBC/UA Results: Cl hi@ 107 ALKP hi@ 818 UPC hi @0.9~ RAD report: Peritoneal and retroperitoneal detail are normal. The stomach is mildly distended with granular and mineral opaque material. Multiple loops of small intestine contain granular soft tissue and mineral opaque material. The small intestines are normal in size and distribution. A moderate amount of fecal material is present in the colon. The liver and spleen are normal in size. The renal silhouette and urinary bladder are normal. Remaining visible abdominal structures are normal. Conclusions: Gastric and small intestinal undigested food versus foreign material. There are no signs of mechanical obstruction however partial obstruction cannot be completely ruled out. There are no signs of peritoneal effusion.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The **urinary bladder** is well distended. The wall is smooth and regular. No abnormalities are present with the trigone or proximal urethra. A moderate amount of free floating sediment is present, however, there is no evidence of cystoliths, polyps or a mass.

Kidneys

The **left** kidney measures 4.88 cm. The capsule is smooth. A mild loss of the normal definition of the cortico-medullary junction is present. Diffuse cortical mineralizations are observed, in addition to mineralizations of the diverticulae and pelvis. There are no signs of nephroliths or pyelectasia. Blood flow is within normal limits. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 4.94 cm. The capsule is smooth. A mild loss of the normal definition of the cortico-medullary junction is present. Diffuse cortical mineralizations are observed, in addition to mineralizations of the diverticulae and pelvis. There are no signs of nephroliths or pyelectasia. Blood flow is within normal limits. The surrounding mesentery is not hyperechoic.

Aortic bifurcation/trifurcation No abnormalities observed.

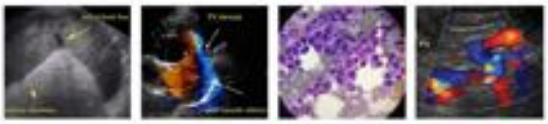
Adrenal Glands

The **left** adrenal gland measures 0.55 cm at the cranial pole, 0.58 cm at the caudal pole. 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 0.39 cm at the cranial pole, 0.54 cm at the caudal pole and 1.84 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.

Spleen

The spleen is within normal limits in size, architecture, echotexture, and echogenicity. The capsule is smooth. A very small anechoic to hypoechoic (0.19 cm) and a hypoechoic nodule are noted. The latter is subcapsular, however, it does not affect its integrity. Mild perivascular cuffing, consistent with



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myelolipomas is observed; these are not considered clinically significant. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

Liver

There are no obvious signs of hepatomegaly and its borders are smooth and sharp. The liver's echotexture is homogeneous and it is within normal limits in echogenicity. No abnormalities are observed with the hepatic vessels. Multiple hypoechoic nodules are observed scattered throughout the parenchyma (0.86 cm).

The **gallbladder** (GB) is mildly to moderately distended with a moderate to large amount of free floating, gravity-dependent and inspissated echogenic material (sludge). The sludge varies in echogenicity. The severely hyperechoic sludge does not cause acoustic shadowing. The GB wall is within normal limits in thickness and echogenicity. The sludge is present at the neck and entrance of the cystic duct. The cystic and common bile ducts are not fully visualized, however, there are no signs of an obstruction. The parenchyma surrounding the GB is very mildly hyperechoic surrounding the cystic duct.

Gastrointestinal

No obvious abnormalities are visualized with the lower esophageal sphincter.

A large amount of gas is present within the pylorus. Fluid and gas are present in the lumen of the fundus. Fogging and stippling of the muscularis are present and the submucosa is prominent to thickened. The gastric wall, however, is within normal limits in thickness and the wall layers remain well defined. Mild stasis is noted.

Duodenum: Mildly thickened (0.59 cm). The definition of the wall layers is preserved, however, fogging and stippling of the mucosa are present.

Jejunum: wall thickness is within normal limits and the definition of the wall layers is preserved. A few segments show a prominent submucosa and mild fogging of the mucosa. Echogenic and granular ingesta and fluid are present within the lumen of the small intestines.

The ileo-cecal-colic junction: NAF

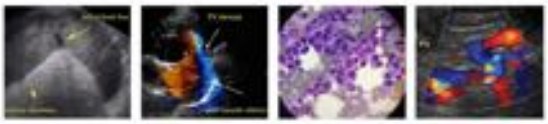
A few segments of the colonic wall are thickened. Although mural detail is conserved, the submucosa is more prominent and thicker than usual. Gas and formed stools are present in the colon.

Pancreas

The pancreas has a mildly coarse echotexture. It consists of hypoechoic nodules of variable size and pinpoint to punctate hyperechoic foci scattered throughout the parenchyma. These changes are suggestive of nodular hyperplasia and fibrosis, respectively. Fibrosis may be an age-related change, secondary to previous episodes of pancreatitis, mineralization and amyloid deposition. Signs of neoplasia are not appreciated.

Other

Lymph nodes No abnormalities are observed



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Abdominal effusion is not visualized.

Heart (left side only)

No obvious abnormalities are observed with contractility. The posterior leaflet of the mitral valve may be becoming slightly thickened. No pleural or pericardial effusion or pulmonary edema.

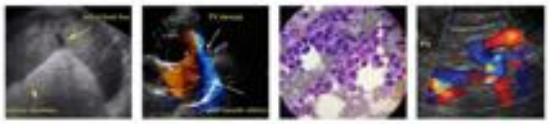
ULTRASONOGRAPHIC FINDINGS

- **Liver:** Age-related nodular hyperplasia is suspected as a cause of the hypoechoic nodules. Target-like lesions are not observed.
- **Gallbladder**: Gallbladder sludge is often clinically insignificant, however, in Lucy's situation, she is demonstrating clinical signs of gastroesophageal reflux disease (GERD), e.g., burping, halitosis. Intermittent episodes of cholecystitis with a secondary infection due to ascending bacteria from the GI tract. A biliary obstruction is not evident. Obtaining an in-depth history regarding signs of GERD from the client is suggested. Treatment with an anti-acid or proton pump inhibitor and ursodeoxycholic acid may be required.
- **Gastrointestinal (GI) tract:** The subtle changes are somewhat subjective and may not be clinically significant, however, they be associated with GI inflammation in some patients, which is suspected in Lucy based on her history. A chronic enteropathy is likely (food or fat intolerance, inflammatory bowel disease, dysbiosis, inadequate amounts of dietary fibre, etc.).
- **Pancreas:** Age-related changes and fibrosis are noted. Signs of neoplasia and active pancreatitis are not appreciated.
- **Kidneys:** Mineralization may be due to early degenerative changes, however, diet and/or breed related factors may be contributing to their formation. Other subtle age-related degenerative changes are noted.
- **Spleen:** A very small anechoic to hypoechoic nodule and a hypoechoic nodule, most likely due to nodular or lymphoid hyperplasia or extramedullary hematopoiesis. Obvious signs of neoplasia are not noted.
- **Urinary bladder**: The free floating sediment within the lumen of the urinary bladder is most likely composed of mucus, crystalline material and exfoliated cells. The debris is likely clinically insignificant given the lack of inflammatory changes to the bladder wall, however, findings should be correlated with clinical signs and a urinalysis.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The following are suggested/recommended:

- Evaluation of Lucy's diet is suggested, e.g., exclude raw meat diets. Determine if she is suffering from GI signs based on the loose fecal matter in the descending colon.
- Obtain a history regarding signs of GERD
- 10-14 day trial with famotidine or omeprazole (0.7-1 mg/kg PO **q12h**)



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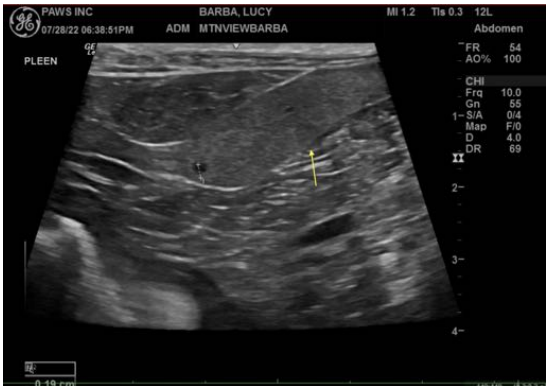
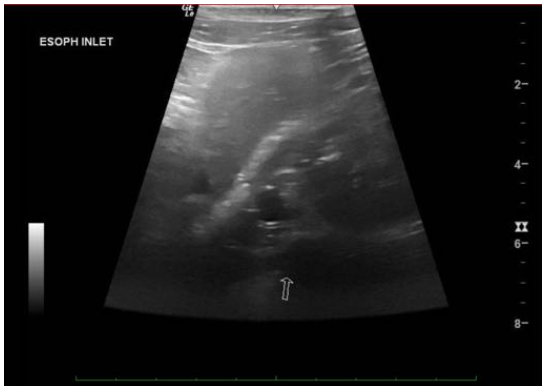
- ursodeoxycholic acid (Ursodiol): It should not be started concurrently with the other medications. Furthermore, it should be administered judiciously, at a very low dose, and slowly up-titrated to decrease the risk of GI side effects. For example, 3 mg/kg PO once a day for 5-7 days, then 5 mg/kg PO 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. She may not be able to tolerate the 15 mg/kg/day dose. The dose should be *divided* BID and given with a meal to decrease the risk of nausea, cramps, vomiting and diarrhea.
- Recheck ultrasound 3-4 months following initiation of medication to assess response to therapy.
- Urinalysis, +/- culture and sensitivity
- *A baseline cortisol; hypoadrenocorticism cannot be excluded despite the adrenal glands within the normal reference range (non-specific clinical signs).
- Evaluation of (minimum 12 hours) fasting triglycerides to exclude hyperlipidemia as a contributing cause of gallbladder sludge
- +/- TLI, serum cobalamin, and folate to assess for underlying maldigestion and malabsorption disease.
- Deworm, (e.g., fenbendazole), even if receiving monthly heartworm prevention.
- Diet trial (veterinary prescription *low fat*, hypoallergenic, hydrolyzed diet), e.g., Purina HA
- Small, frequent meals, including a small snack prior to going to bed
- Analgesia trial for visceral pain (gabapentin)
- Differential diagnoses include cholecystitis and a secondary ascending bacterial infection. Although indiscriminate use of antibiotics is not recommended, consider broad-spectrum antibiotic with reassessment of liver enzymes, including GGT, in a few weeks, while *still receiving* the antibiotics. If an improvement is observed, continue antibiotic for *an additional* two to four weeks.
- Endoscopy and biopsies of the upper <u>and</u> lower GI tract may be eventually be required, if no response to deworming, diet trials and other suggestions, above





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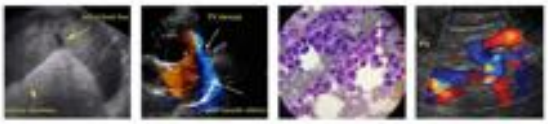

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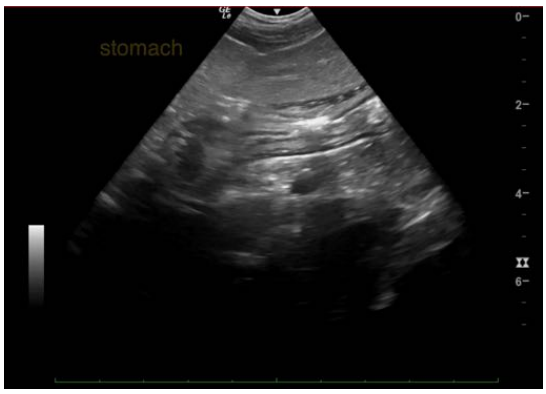

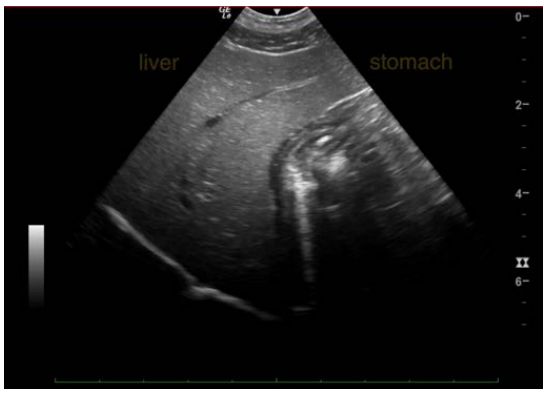

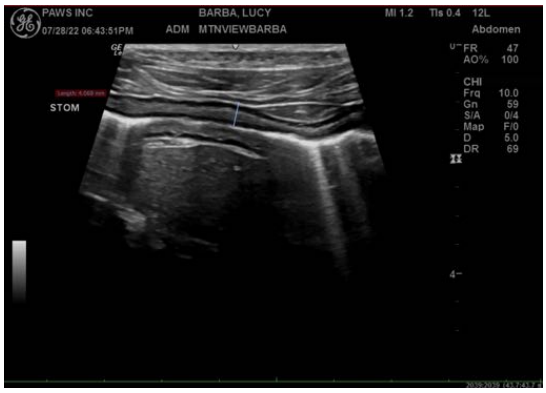

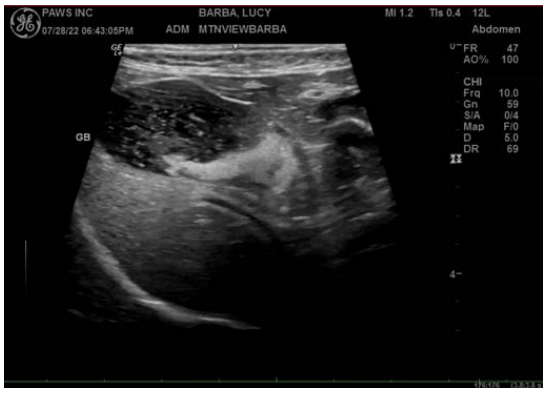

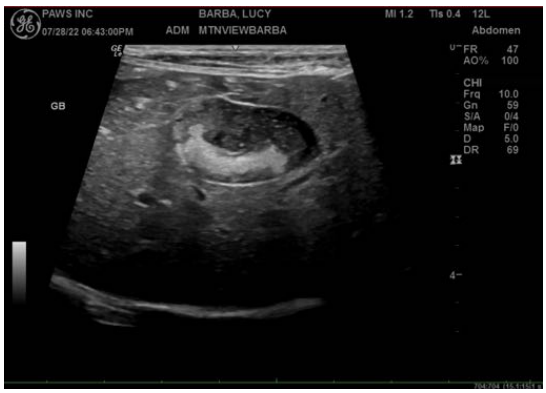

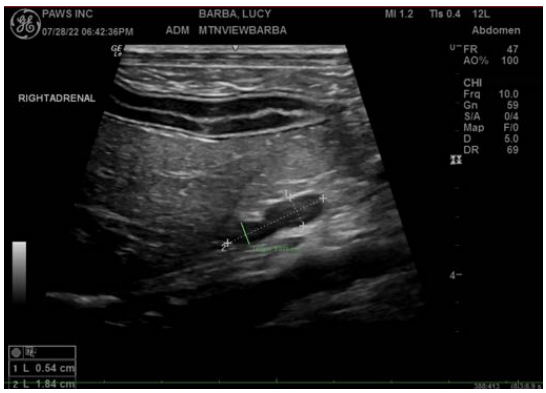

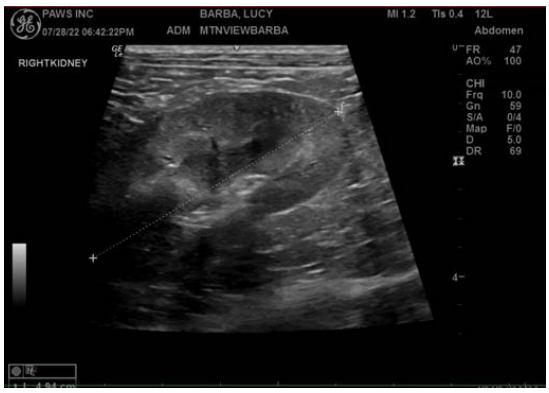

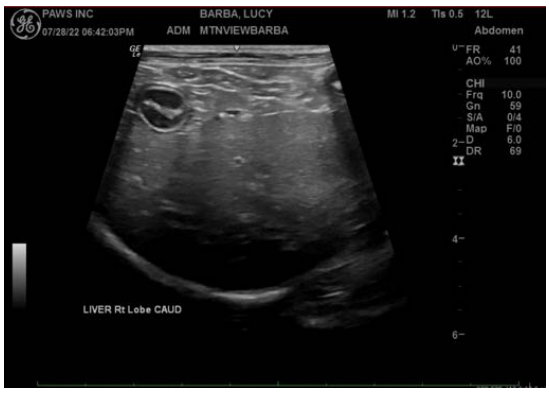

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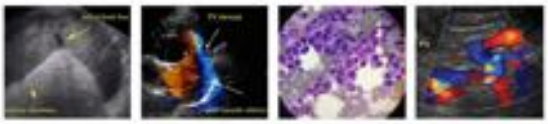

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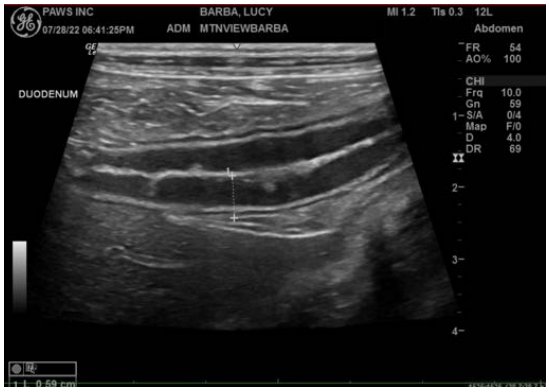

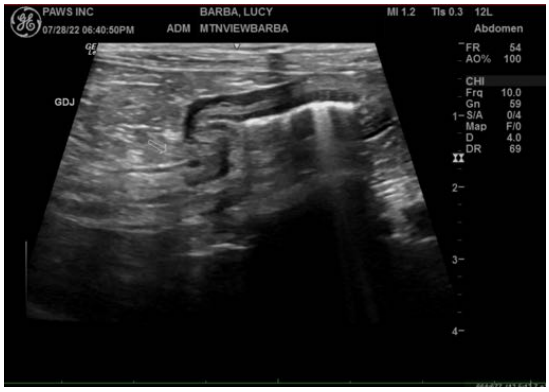

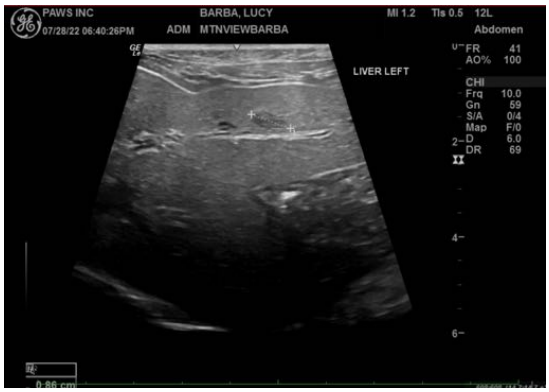

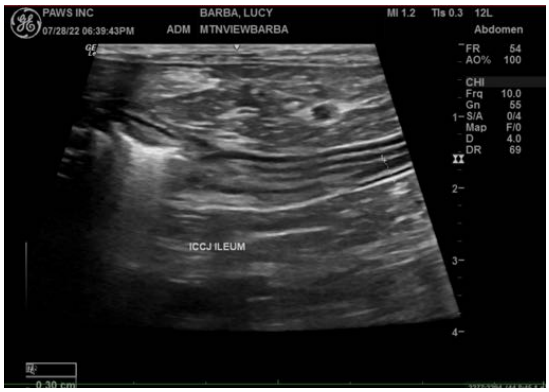

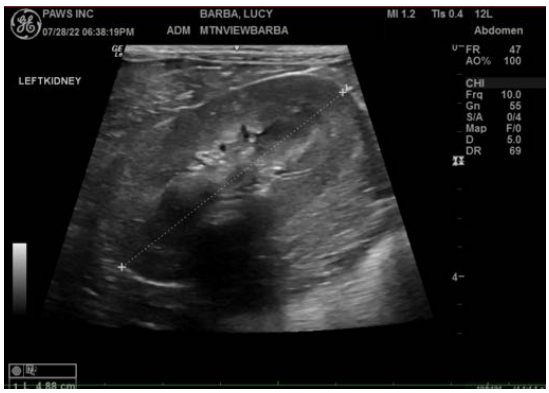

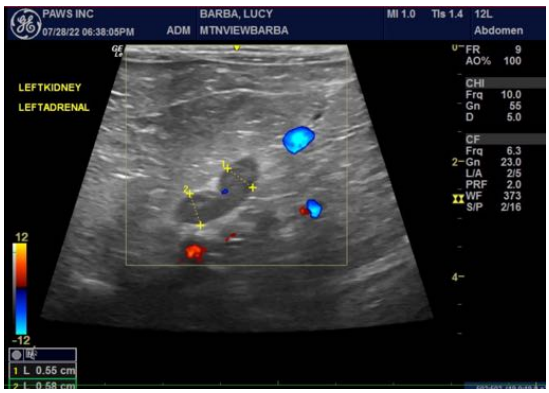

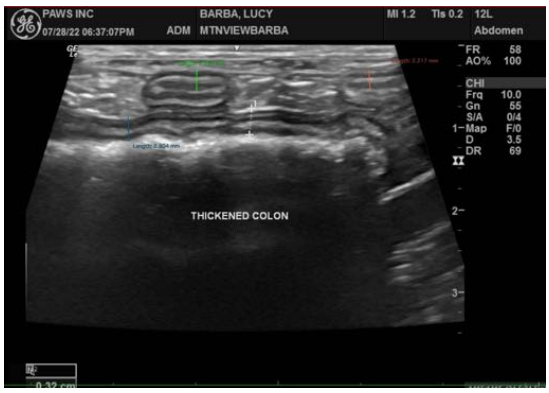

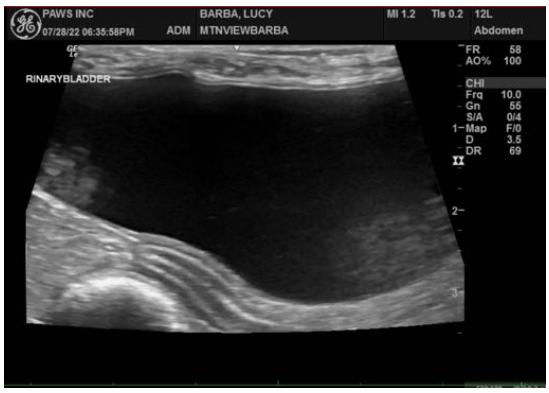

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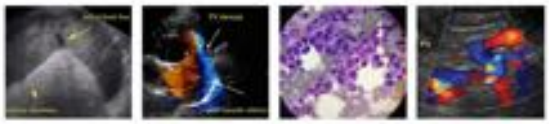

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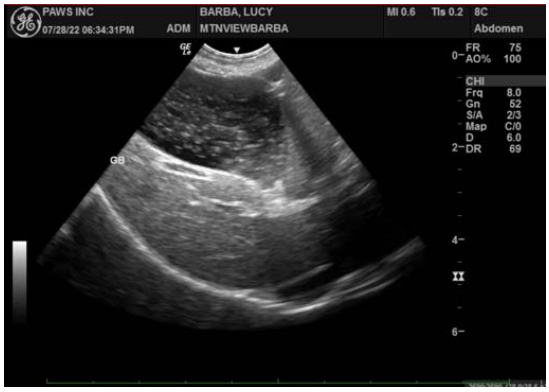

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Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

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