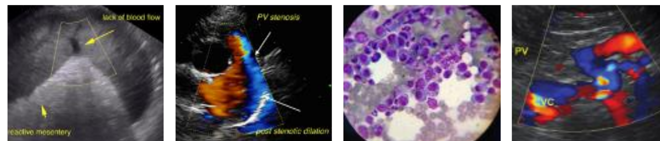
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™



SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Apple Vargas

SPECIES

Canine

BREED

Maltese

SEX

Intact Male

AGE

5 Years

WEIGHT

8.3 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

IMAGING PERFORMED BY

Kelly Vazquez

HOSPITAL NAME

Animal General on Hudson

REFERRING VET

Dr. William Freedman

INVOICE

15946

DATE

6/8/22

PRESENTING CLINICAL SIGNS

History: Enlarged prostate, weak, decreased appetite. Owner reports patient is urinating. Current meds: IVFs, Baytril, Ampicillin, and Cerenia.

Abnormal PE/Chem/CBC/UA Results: BUN 199; 60 post fluids, creat. 7; 1.7 post fluids, monocytes 11.75, WBC 19.27, HCT 32.

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urogenital System

Urinary bladder

The urinary bladder is well distended. The wall is smooth and regular. No abnormalities are present with the trigone. A small amount of free floating and gravity dependent sediment is present along the ventral wall and collecting at the trigone. High index of suspicion of a cystolith and at least two others in early development, also along the ventral wall (based on very subtle acoustic shadowing). There is no evidence of polyps or a mass. The ureteral papillae are not visualized.

Prostate

The prostate (2.22 cm) is very mildly heterogenous with hypoechoic regions dispersed throughout. The proximal urethra extending into the prostatic is dilated, measuring up to 4.7 mm.

Testicles

Subjectively, the testicles are normal in size for a dog of Apple's stature. Both are symmetrical, have smooth, curvilinear contours and are homogenous in echotexture. Blood flow is within normal limits bilaterally.

The **left** testicle measures 1.50 cm. A subcapsular, hyperechoic, well-circumscribed nodule (0.18 cm in diameter x 0.23 cm in length) is present at the dorsal aspect. It does not affect the integrity of the curvilinear structure of the testicle. A lipogranuloma is suspected. Neoplasia is not suspected.

The **right** testicle measures 1.60 cm.

Kidneys

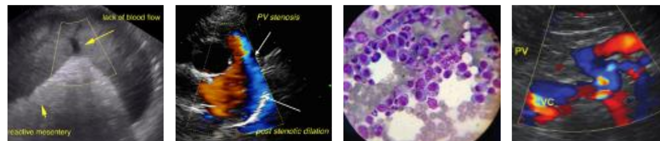
Both kidneys are within the normal reference range for a dog of Apple's stature.

The **left** kidney measures 3.74 cm. The capsule is smooth. No obvious abnormalities are observed with the cortex. Significant pyelectasia (longitudinal view: 1.01 cm) is present. The parenchyma surrounding the pelvis is hyperechoic. There are no signs of nephroliths as an underlying cause for the pyelectasia. There are no obvious signs of hydroureter or ureteritis. The urine within the pelvis is anechoic. Subjectively, blood flow is increased. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 4.32 cm. The capsule is smooth. No obvious abnormalities are observed with the cortex. Significant pyelectasia (longitudinal view: 1.00 cm) is present. There are no obvious signs of hydroureter or ureteritis. The parenchyma surrounding the pelvis is hyperechoic. Nephroliths are not visualized, i.e. a physical obstruction is not observed. The urine within the pelvis is anechoic. Subjectively, blood flow is normal to mildly increased. The surrounding mesentery is not hyperechoic.

Aortic bifurcation/trifurcation

No abnormalities observed.



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Adrenal Glands

The **left** adrenal gland measures 0.61 cm at the cranial pole, 0.57 cm at the caudal pole and 1.33 cm in length. The cranial pole is at the high end of the normal reference range for a dog of Apple's stature, however, 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 0.43 cm at the cranial pole, 0.35 cm at the caudal pole and 1.32 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 decreased in size, which is suggestive of hypovolemia. It is within normal limits in architecture, echotexture, and echogenicity. The capsule is smooth. 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. Focal lesions are not observed and no abnormalities are observed with the hepatic vessels.

The gallbladder (GB) is moderately distended with a large amount of free floating and gravity-dependent echogenic material. The GB measures 2.62 cm in diameter x 4.25 cm in length. The GB wall is within normal limits in thickness and echogenicity. 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. The parenchyma surrounding the GB is not hyperechoic.

Gastrointestinal

A small amount of ingesta, fluid and gas are present in the lumen of the stomach. Although the gastric wall is within normal limits in thickness and the wall layers are well defined, the mucosa, submucosa and muscularis layers are more prominent than normal. 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. Subjectively, mild stippling of the duodenum is present. Abnormally dilated loops of bowel are not observed.

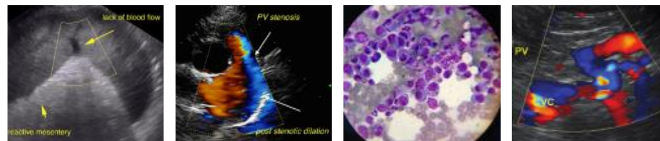
The colonic wall is not thickened and mural detail is considered normal. Stools are formed within the colon.

Pancreas

No overt abnormalities are observed with the architecture, contours, echogenicity or echotexture of the pancreas. There is no evidence of hyperechogenicity of the surrounding mesentery, i.e., signs of active pancreatitis are not present.

Other

Lymph nodes



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Enlarged, moderately hypoechoic lymph nodes are present dorsal to the urinary bladder. They are most likely the sublumbar lymph nodes. The larger of the two has irregular contours and is elongated, measuring 0.62 cm in diameter x 1.42 cm in length. The second lymph node measures 0.48 cm in diameter x 0.86 cm, but has smoother curvilinear borders and is round and "plump", rather than elongated.

Abdominal effusion is not visualized.

ULTRASONOGRAPHIC FINDINGS

- **Urogenital system:** Presence of at least one cystolith, and at least two others in early development, as well as free-floating gravity, dependent and aggregated sediment within the lumen of the **urinary bladder**. High index of suspicion of subclinical *mild benign prostatic hyperplasia* as some of the changes noted with the prostate. However, *suppurative prostatitis*, and *pyelonephritis* are suspected as the cause of his clinical signs of weakness, lethargy, azotemia (acute renal injury) and secondary pyelectasia, as well as the rapid improvement in renal parameters to the administration of intravenous fluids. Pyelectasia may also occur secondary to polydipsia and polyuria and intravenous fluid therapy. Note, the severity of the pyelectasia is greater than what is normally seen with pu/pd alone. The volume and rapidity of IV fluids administered have to be confirmed, i.e. is the pyelectasia iatrogenic or part of the disease process. The *subjective* findings of possible increased blood flow to the **kidneys** may be due to acute renal injury (i.e. hypertension) and/or pain. There are no obvious signs of a physical obstruction (hydroureter or ureteritis) to explain the pyelectasia. Neoplasia is not observed.

- **Testicles**: A benign lipogranuloma is suspected in the **left** testicle. The testicles are otherwise symmetrical and homogeneous and do not show signs of inflammation to explain the scrotal swelling observed on physical exam.

- **Lymph nodes**: Mild lymphadenomegaly of the sub lumbar lymph nodes; suggestive of reactive hyperplasia. Criteria of malignancy are not observed.

- **Spleen**: It appears smaller than normal, i.e., hypovolemia is suspected.

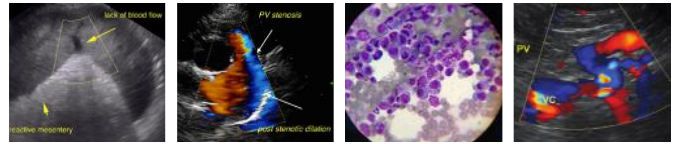
- **Gallbladder**: Gallbladder sludge is often clinically insignificant, however, gastroesophageal reflux disease (GERD), can occur in some patients. Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor or ursodeoxycholic acid may be required.

- **Gastrointestinal:** The findings of the mildly prominent gastric wall layers and mild stippling of the duodenum are somewhat subjective. Although these findings may not be clinically significant, they have been associated with GI inflammation, therefore, an underlying chronic enteropathy, for example, inflammatory bowel disease, cannot be excluded. Evaluation of Apple's diet, history of GERD, pica, vomiting and diarrhea, etc. is suggested.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The following are suggested/recommended

- Arterial blood pressure measurement to exclude systemic hypertension



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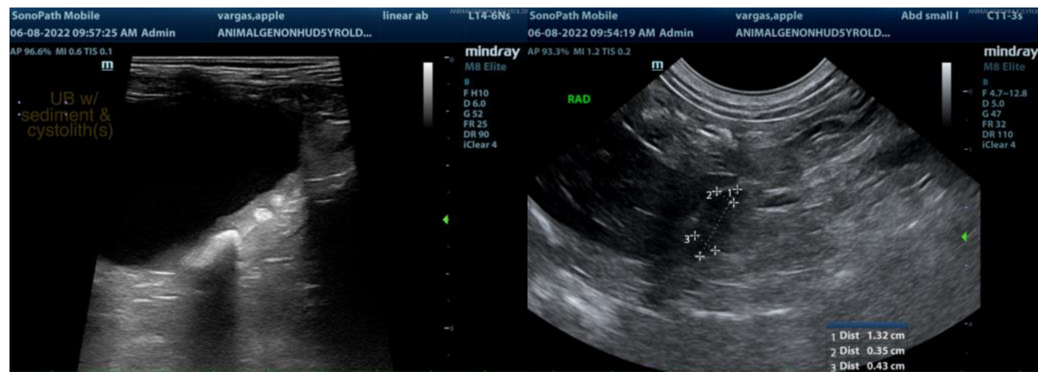
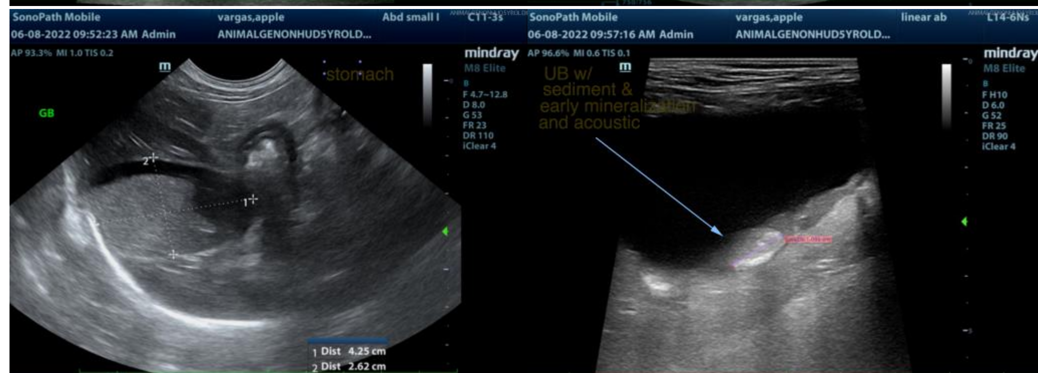
- Analgesia (opioids intravenously), +/- gabapentin orally for a few days to weeks, depending on response to therapy
- Urine culture is pending
- Continue antibiotics pending the urine culture.
- SNAP 4Dx, *Leptospira* spp. PCR (performed on urine and serum prior to antibiotics) to exclude infectious diseases that may cause acute renal injury.
- Evaluation of Apple's travel history for possible infectious diseases
- Ensure Apple has not been used as a stud in the past (infection with *Brucella*)
- Continue monitoring the scrotum for decreased blood flow, signs of trauma or testicular torsion, although no obvious sonographic signs were observed.
- Evaluation of history for signs of GERD, as well as diet. A possible dissolution diet may be considered.
- If mucus and/or sediment is/are passed, samples may be sent for evaluation to determine if a dissolution diet is indicated (with or without antibiotics).





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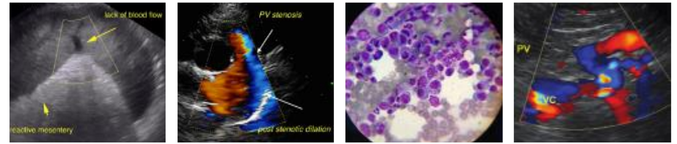

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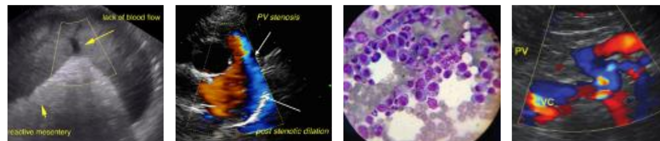

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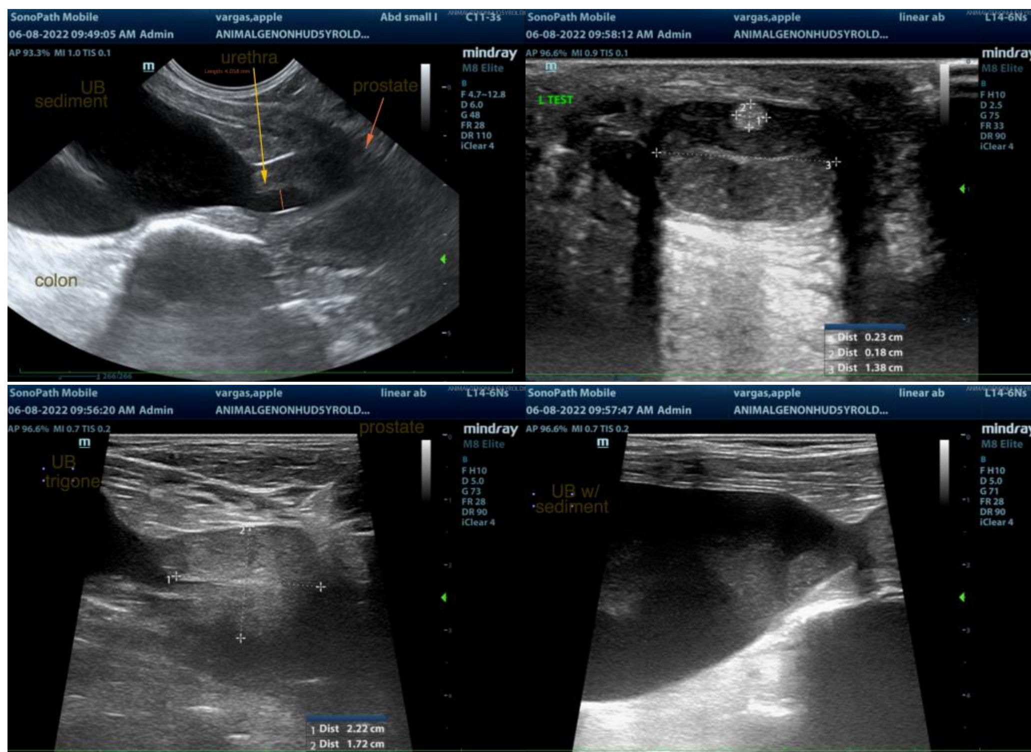

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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

Lisa.Carioto@sonopath.com