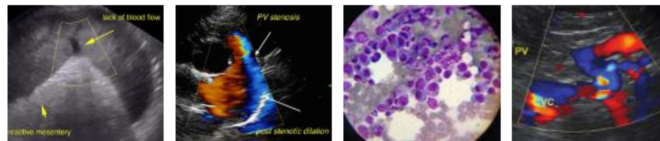
SonoPath
Clinical Sonography & Telecytology

EDUCATIONAL TELECONSULTATION SERVICES™



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

PATIENT
Harper Cunningham

SPECIES
Canine

BREED
Golden Doodle

SEX
Spayed Female

AGE
2 Years

WEIGHT
21 kg

INTERPRETED BY
R. McKenzie Daniel, DVM, DABVP (Canine and Feline)

IMAGING PERFORMED BY
Dr. Callihan

HOSPITAL NAME
Animal Emergency Care

REFERRING VET
Dr. Bailey

INVOICE
37509

DATE
5/7/22

PRESENTING CLINICAL SIGNS

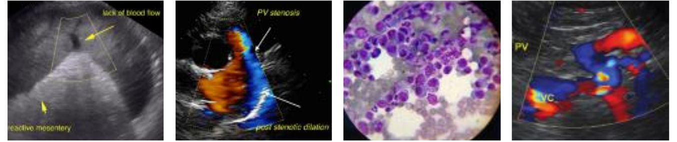
Transferred to BBVSH from rDVM 5/3 for pale gums and lethargy. Transferred to AEC for night. Na 138, K 4.9, DexSP started 0.25 cc. Back to BBVSH on 5/4 a.m. -- Zycortal started after ACTH back confirming Addisons . Zycortal 2.2 mg/kg SQ. Lytes normalized and discharged to home but not eating past couple days. History of: hypoadrenocorticism diagnosed on 5/4 Medications: Prednisone, Zycortal, Cerenia, Sucralfate, Omeprazole S
Abnormal PE/Chem/CBC/UA Results: Foul yellowish diarrhea, no vomiting reported; - PCV/TP = 30%/5.4 - i-Stat red = Na 142, K 4.3, Cl 109 - A-fast = Free fluid - Owner okays ultrasound with Dr. Callihan - Placed IVC - Coags = PT 126, PTT 16 - Discussed with owner abdominocentesis showed pink tinged clear fluid TP 1.5 g/dL-- R/O right sided heart failure, PLE, PLN - No protein in urine - Bloodwork = WBC 23,900, neutrophilia 17,700, non-regenerative anemia, ALT 368, Alb low normal at 2.5 (prior to starting fluids) - Chest rads = +/- right sided enlargement? (subtle if present)

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT		1.8	NM	1.0	28.3	58.6	0.23
CANINE CARDIAC PARAMETERS	**HR (BPM)**	**AV VMAX (m/s)**	**PV MAX (m/s)**	**BODY WEIGHT (kg)**	**LA 2D short axis Base view (cm)**	**LVIDd Avg; 2D and m-mode short axis (cm)**	**LVIDs Avg; 2D and m-mode short axis (cm)**
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
PATIENT	NM	1.5	0.9		3.6	3.6	

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 separate methods of LA evaluation. The cranial and caudal **mitral** valve leaflets presented normal linear structure, extension in systole, and union in diastole with normal kinesis. The **left ventricle** presented thicknesses with linear contour and was not dilated nor restricted. The **myocardium** presented normal echogenicity without subjective evidence of significant fibrotic or ischemic disease. **Contractility** of the ventricular walls was mildly subnormal, yet likely adequate, as evidence by the fractional shortening measurement and subjective evaluation of the different regions of the myocardium. The **left ventricular outflow** tract demonstrated normal laminar flow and subjective structural integrity. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinesis. Minor TR on doppler. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonary outflow** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). Trace pulmonic valve insufficiency on doppler. No visible **pericardial** or free pleura fluid was noted. The cranial **mediastinum and pericardial and extra-cardiac regions** were free of masses in the visible window.



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Urinary System

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 3.0 cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no uroliths or sediment. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes were noted.

Normal size and margination were present in the kidneys. A normal 1:3 cortex / medulla ratio and normal corticomedullary definition were maintained. The echogenicity of the cortex was similar to or slightly less than normal liver parenchyma while the medulla echogenicity was hypoechoic to the cortex with no evidence of pelvic dilation. The left kidney measured 5.8 cm. The right kidney measured 6.0 cm.

The area of the aortic trifurcation was free of pathology.

Adrenal Glands

The left adrenal gland was mildly subnormal in size, consistent with history of hypoadrenocorticism, measuring 0.32 cm at the caudal pole.

The right adrenal gland was not definitively visualized.

Spleen

The spleen exhibited a finely textured and homogenous parenchyma which was hyperechoic to the liver and renal cortical parenchyma. The capsule was smooth and regular without apparent expansion. The splenic vasculature at the hilus was normal in volume with no evidence of congestion or thrombosis. Acute to chronic inflammatory, neoplastic, or benign parenchyma changes were not noted.

Liver

The liver exhibited subjective mild enlargement with maintained symmetrical to mildly rounded hepatic contour. Uniform parenchyma exhibiting subtle generalized increased parenchyma echogenicity. The hepatic vascular volume appeared to be overtly normal without evidence of hepatic congestion. The caudal vena cava at the level of the liver and diaphragm exhibited normal volume, measuring 0.86 cm in width. The gallbladder was non-distended in size with thin walls and primarily anechoic luminal content. The cystic and common bile ducts were normal.

Gastrointestinal

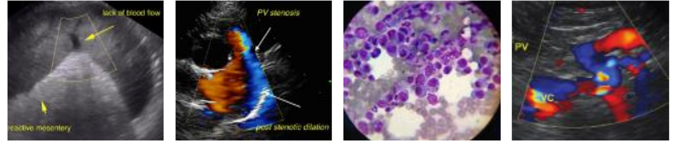
The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach contained mild to moderate nonshadowing ingesta most consistent with post prandial presentation without signs of ileus, obstruction or foreign material.

The small intestine presented intact wall layering with 1:3 muscularis/mucosa ratio. The lumen of the small intestine was empty with no signs of ileus, obstruction or foreign material. Duodenum wall measured 0.37 cm. Jejunum wall measured 0.28 cm.

Normal visible colon wall layers were present with apparent formed feces in lumen.

Pancreas

The pancreas was normal in size and contour with isoechoic to heterogeneous parenchyma compared to adjacent omentum. No signs of active inflammation or neoplasia. Subtle hypoechoic pancreatic striations noted.



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Other

No overt pathology in the area of the uterine remnant.

Moderate volume subjective anechoic free fluid and mild generalized reactive mesentery noted. No overt lymphadenopathy.

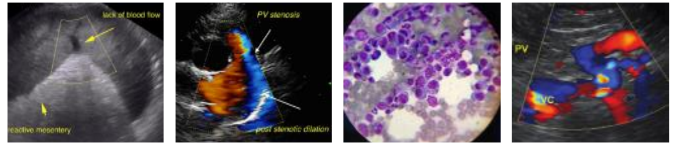
ULTRASONOGRAPHIC FINDINGS

- Normal echocardiogram with mild LV hypocontractility – patient or breed variant, systemic/metabolic disease without evidence of DCM criteria.
- Minor TR and trace pulmonic valve insufficiency – no evidence of clinical pulmonary hypertension.
- Mild to moderate anechoic peritoneal free fluid
- Hepatopathy exhibiting subtle uniform increased parenchyma echogenicity – reactive hepatitis (infectious/immune mediate +/- toxin) or other hepatopathy. No overt evidence of hepatic congestion.
- Overtly normal gastrointestinal tract with gastric ingesta – post-prandial versus possible gastric hypomotility if documented NPO.
- Heterogeneous to mildly prominent right pancreas – suspect edema with potential for mild inflammation.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Without evidence of significant cardiomyopathy, significant hepatic changes or hepatic congestion, evidence of gastrointestinal disease, lymphadenopathy, significant pancreatitis, and with reported albumin level of 2.5, the etiology of the peritoneal effusion is unclear at this stage. The possibility of emerging PLE cannot be excluded, although the presentation of the gastrointestinal tract was not classic for PLE. Mild pancreatic inflammation cannot be excluded, yet sonographically, the degree of pancreatic inflammation, if present, was not overtly consistent with severe pancreatitis that would result in secondary effusion.

Effusion analysis +/- culture and sensitivity, if inflammatory cells are present, could be considered. Continued monitoring of albumin levels is recommended. Given normal coags, hepatic FNA using 25-gauge needle for screening cytology is warranted, although Prednisolone may suppress cytology.



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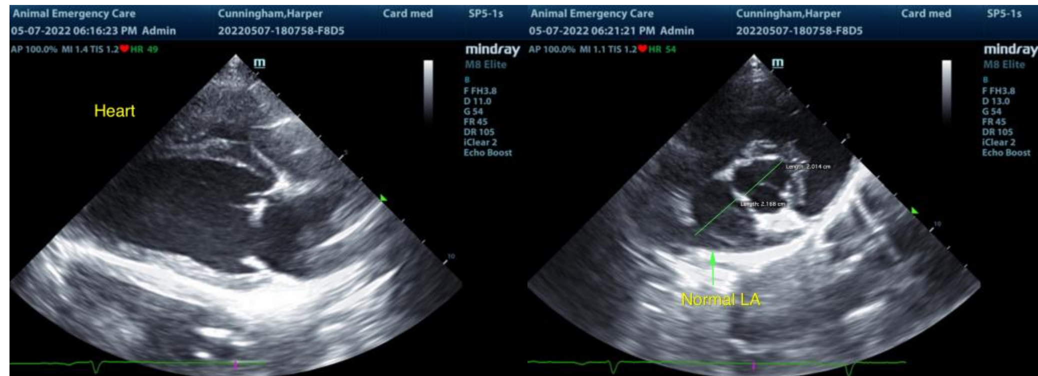

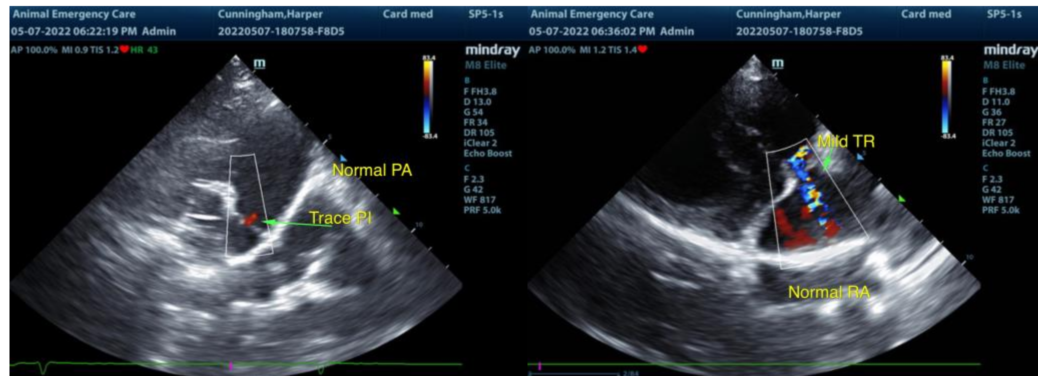

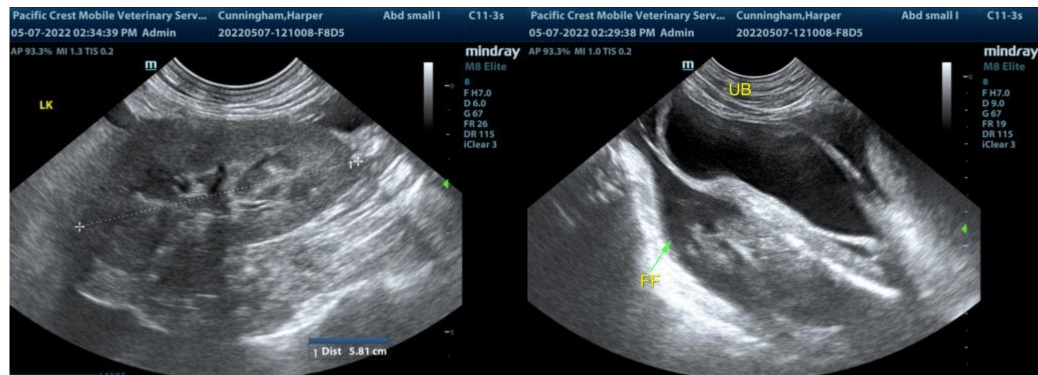

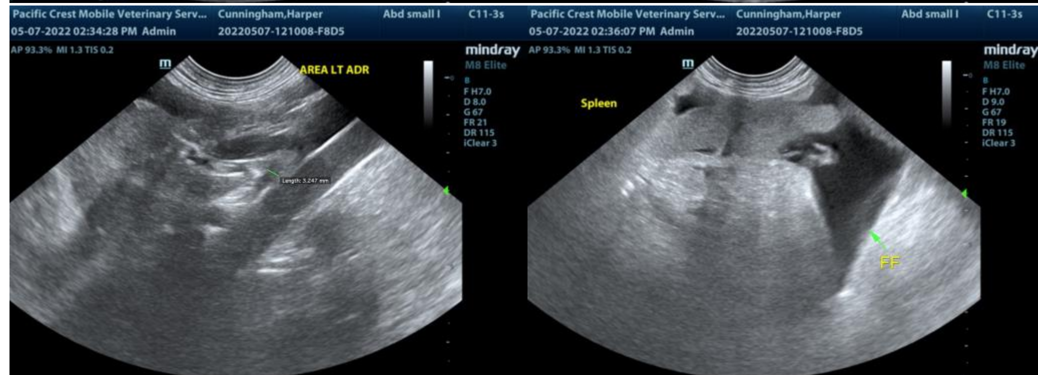

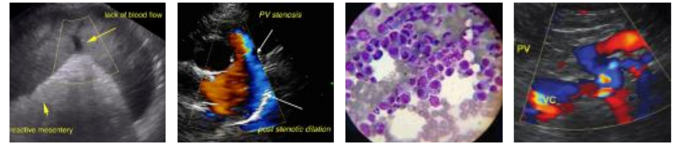

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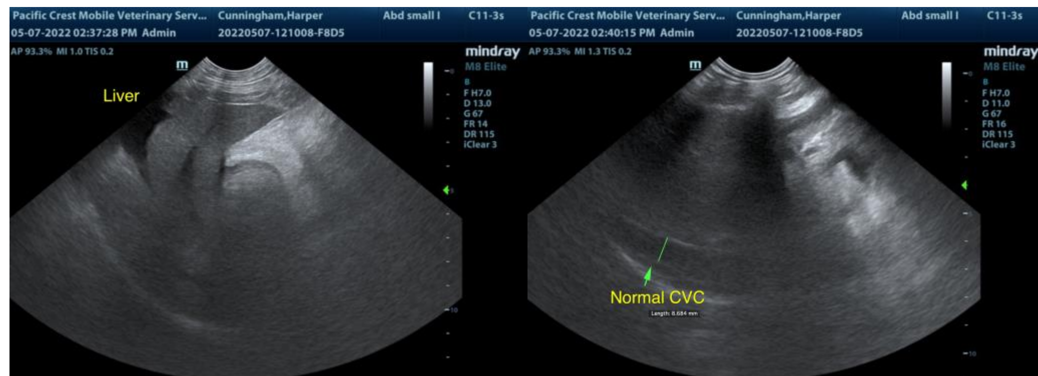

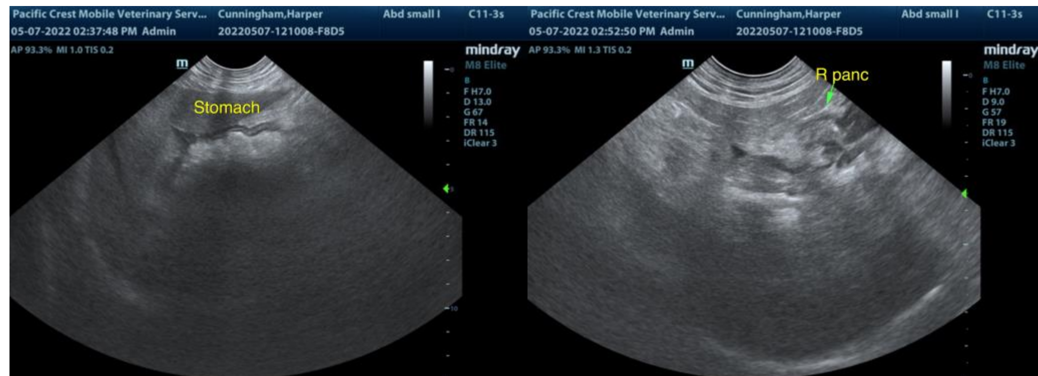

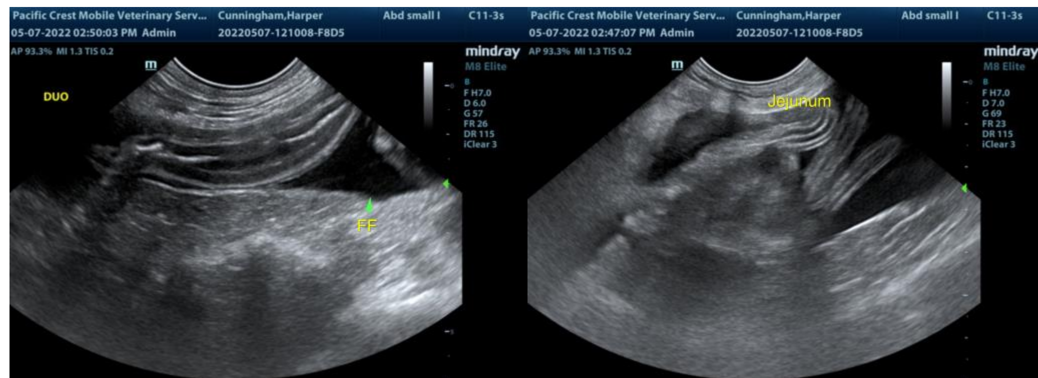

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

R. McKenzie Daniel, DVM, DABVP (Canine / Feline Practice)

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