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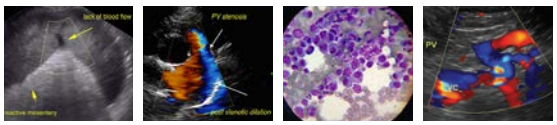


ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

PATIENT
Dakota Abreu

SPECIES
Canine

BREED
Heeler

SEX
Spayed Female

AGE
9 Years

WEIGHT
59 Pounds

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

IMAGING PERFORMED BY
Sara Hansen

HOSPITAL NAME
The Ark Vet Clinic

REFERRING VET
Dr. Sangl

INVOICE
38434

DATE
6/6/22

PRESENTING CLINICAL SIGNS

P has been lethargic for 1 week
Abnormal PE/Chem/CBC/UA Results: Macrocytic, hypochromic = red cell response. Anemia Heart Rate and Respiratory Rates HR:100 RR:25 MM <3 pale Blood Pressure Measurements NA Current Medications Claritin

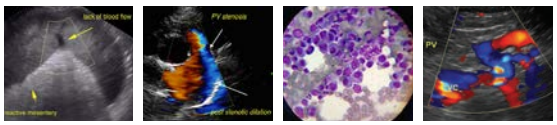
Hct 12.9, reticulocytes 34.6, white blood cell 13.5 w/normal diff. Platelets 176. Chem – ALP 1230, ALT 230, AST 60, GGT 1, TBili 0.1, sodium to potassium ratio 32, BUN 14, Crea 1.1, SDMA 23, T4 1.6.

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	5.2	<2.0	NM	1.6	28.9	59.4	0.40
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	157	1.9	1.4		4.4	4.5	

Cardiac Presentation

The echocardiogram in this patient demonstrated mild increased **left atrial** size based on 2 separate methods of LA measurement. The cranial and caudal **mitral** valve leaflets presented potential for subtle thickening with normal extension in systole, and union in diastole and overall normal kinesis. No evidence of valvular prolapse. Minor MR present on doppler. 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, evidenced 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 present 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). 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. No evidence of cardiac tumors.



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Urinary System

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 2.0 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.

The area of the aortic trifurcation was free of pathology.

No overt pathology in the area of the uterine remnant.

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 6.3 cm. The right kidney measured 6.4 cm.

Adrenal Glands

The adrenal glands were uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 2.0 cm length x 0.65 cm at the caudal pole. The right adrenal gland measured 2.3 cm length x 0.65 cm at the caudal pole.

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 presented enlarged in size. The parenchyma of the liver was subjectively normal in echogenicity compared to the spleen and renal cortices. The liver parenchyma was uniform with a mildly coarse echotexture. The capsule of the liver was symmetrically rounded to mildly swollen in margination. The hepatic and portal vasculature were normal in appearance without signs of congestion. The gallbladder was non-distended in size. Potential for very minor gallbladder wall edema, although not definitive. Moderate congealed yet non-organized, non-mineralized luminal debris present in the gallbladder. No evidence of peripheral gallbladder inflammation. The common bile duct was normal.

Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach contained mild focally shadowing ingesta along with mild luminal gas, 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.

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

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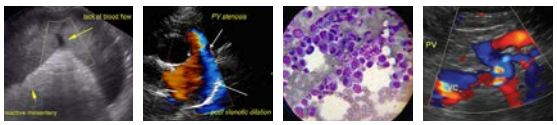

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Pancreas

The parenchyma of the left limb, body and right limb of the pancreas presented isoechoic to the adjacent omental fat. A normal curvilinear capsule contour of the pancreas was present. The visible pancreatic duct was normal. No signs of active inflammation or neoplastic disease was evident.

Free Abdomen

No omental masses, lymphadenopathy or peritoneal effusion.

ULTRASONOGRAPHIC FINDINGS

- Mild LV hypocontractility
- Mild LA enlargement
- Minor MR/TR
- Hepatopathy
- Moderate congealed yet non-organized gallbladder debris – possible cholecystitis (non-mucocele).
- Overtly normal gastrointestinal tract with mild focally shadowing gastric ingesta
- Sonographically unremarkable spleen

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cardiac presentation was non-specific, yet not overtly consistent with DCM criteria. The mild LV hypocontractility may be secondary to systemic disease or possible athletic state. Given the lack of left or right atrial enlargement, the mild MR and TR appear to be of minimal hemodynamic effect. The potential for very early cardiac infiltrative disease cannot be definitively excluded, yet thought less likely. No overt indication for cardiac medications, given this presentation, yet sonographic monitoring is recommended. Recheck echocardiogram suggested in 4-6 weeks, sooner if clinical signs consistent with heart disease arise.

The overall liver was non-specific with potential considerations including metabolic, vacuolar, reactive, or inflammatory hepatopathy. Infiltrative neoplasia considered a less likely differential diagnosis based on sonographic appearance, yet cannot be definitively excluded. If normal clotting status, ultrasound guided hepatic FNA using 25-gauge needle warranted for screening cytology. In conjunction with the provided radiographs, the gastric ingesta is suspected to be retained food with gastric foreign material considered less likely. Monitoring for evidence of gastric emptying and appetite suggested. CBC pathology review suggested, if not done. Further workup for the anemia, based on the clinical impression of the patient, such as infectious disease serology, could be considered. Empirically, some or all of the following protocol is suggested.

IMHA/Infectious Anemia/Thrombocytopenia/Evans Syndrome
(*Note: ensure no underlying neoplasia as IMHA/Evans syndrome can occur as paraneoplastic manifestation especially in lymphoma/round cell neoplasia***)**

Anemia +/- thrombocytopenia with spherocytes/autoagglutination in dogs and hyperbilirubinemia, bilirubinuria. (*NOTE: cats do not get spherocytes in IMHA*)
Consider Onion/Garlic derivative ingestion if Heinz bodies present.

Prednisone (K9) Prednisolone (Feline): 2 mg/kg Sid/Bid initially x 3 weeks then attempt taper
Aspirin 0.5 mg/kg Sid owing to hypercoagulable state

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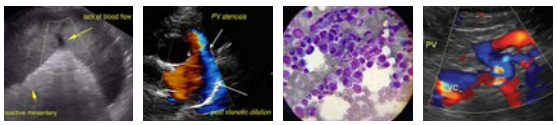

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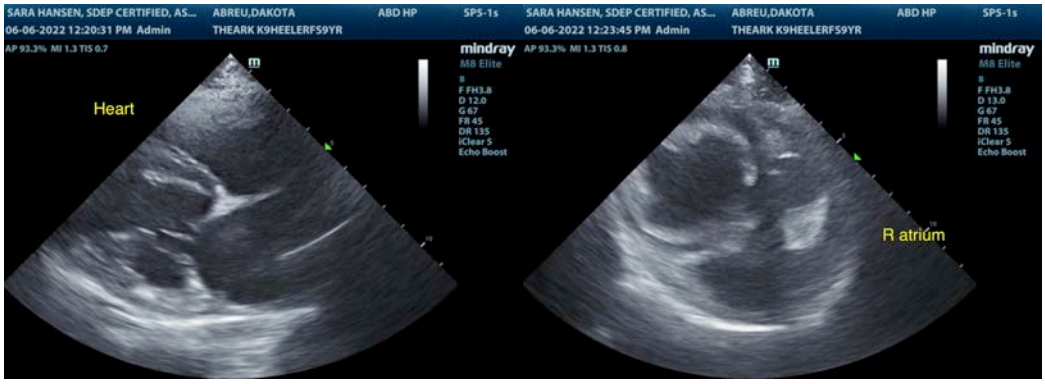
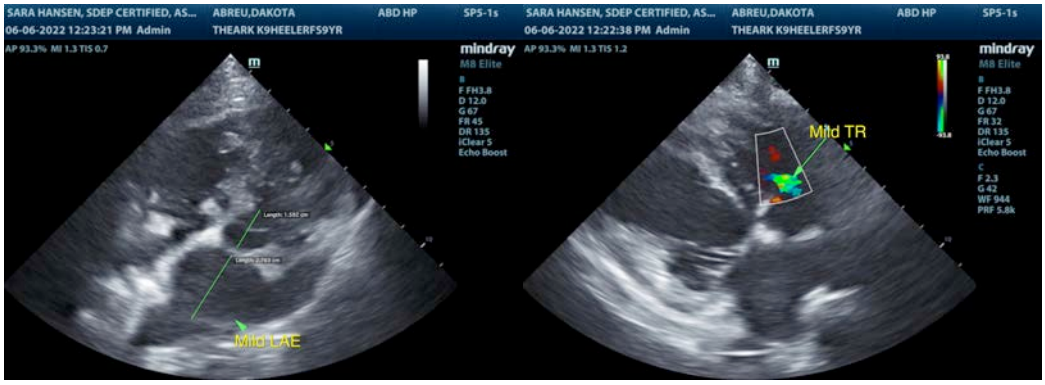
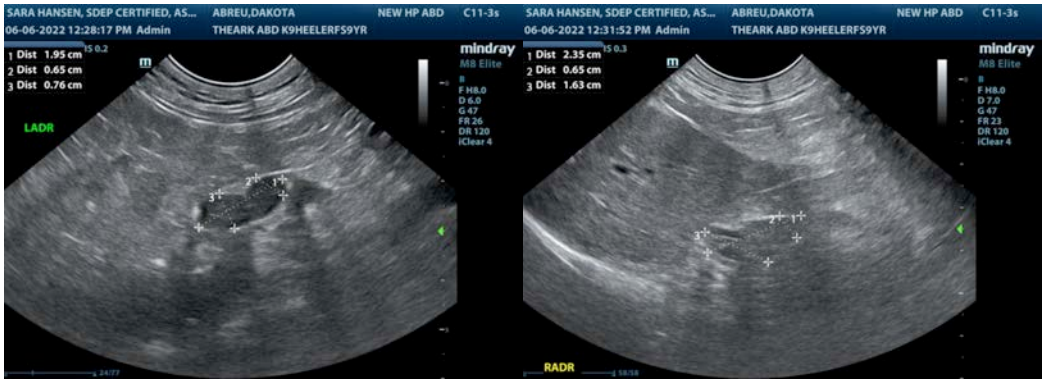
Sucralfate 0.5-1 g po tid dogs, 0.5 g bid cats in slurry
Doxycycline if infectious suspected clinically or based on CBC path review:
Dogs, Cats: 10 mg/kg p.o. q24h with food or water bolus in cats

Long-term management dogs: Azothiaprine 2 mg/kg Sid or Cyclosporine 10mg/kg po sid bid







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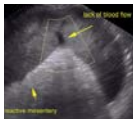
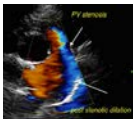
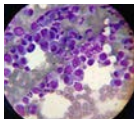
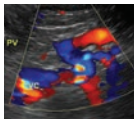

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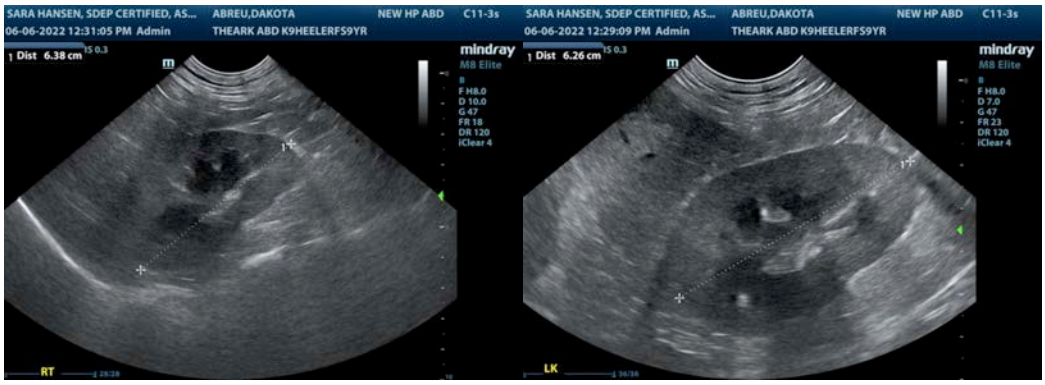

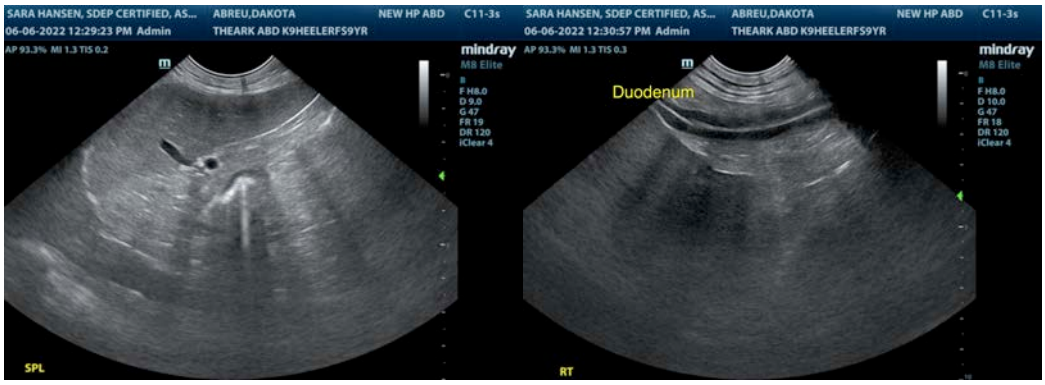

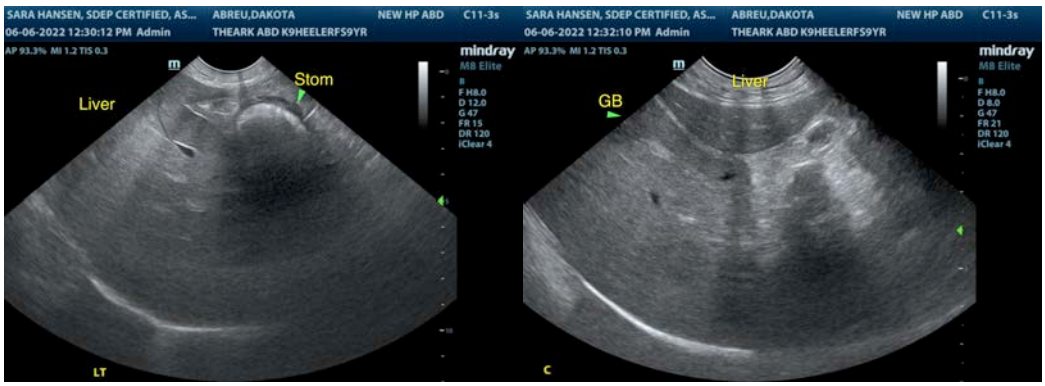

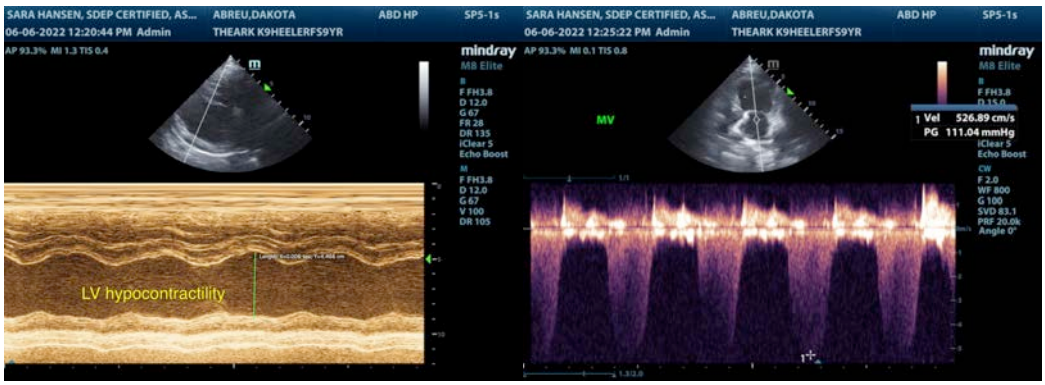

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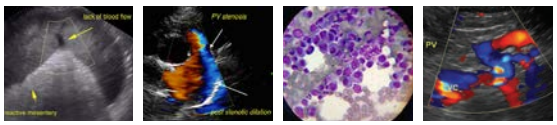

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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

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