



PATIENT PRESENTING CLINICAL SIGNS

Minnie Ferris History: severe hepatopathy, possible seizures

SPECIES ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

Canine

BREED

Pug

SEX

Spayed Female

AGE

6 Years

WEIGHT

27.5 Lbs.

INTERPRETED BY

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

IMAGING PERFORMED BY

Jenn

HOSPITAL NAME

Rockaway AH

REFERRING VET

Dr. Maniar

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13935

DATE

2/15/22

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	--	--	NM	1.33	47.2	82.1	0.25
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				
PATIENT	NM	1.4	0.85	--	2.6	2.84	--

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 adequate and in normal range for this patient 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. 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.

Urinary System

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of – cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no sediment or calculi. 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 was 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



PATIENT

evidence of pelvic dilation. The left kidney measured 4.3 cm in length. The right kidney measured 4.2 cm in length.

Minnie Ferris

Adrenal Glands

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The left adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 2.2 cm in length x 0.35 cm width at the caudal pole.

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The right adrenal gland was mildly prominent in size, exhibiting asymmetrical contour with non-homogeneous to indistinctly nodular parenchyma. An example of a subtle echogenic nodule in the cranial right adrenal gland measured 0.65 cm in diameter. The overall right adrenal gland measured 2.0 cm in length x 0.69 cm at the caudal pole in width and 1.2 cm at the cranial pole in width.

Pug

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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.

Spayed Female

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Liver

The liver presented normal in size. The hepatic parenchyma revealed diffuse reduced echogenicity compared to the spleen and renal cortical parenchyma with a mild coarse echotexture. Increased portal vein prominence was evident. The capsule of the liver was normal in margination. Distinct masses or nodules were not evident. The hepatic and portal vasculature were normal in appearance.

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The gallbladder was non distended in size with mild, inspissated, non-mineralized, primarily dependent gallbladder debris in the lumen. The cystic duct and common bile ducts were normal without evidence of dilation.

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Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach was empty with no signs of ileus, obstruction or foreign material.

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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.

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

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Pancreas

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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.

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Free Abdomen

No omental masses, lymphadenopathy or effusion was present.

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ULTRASONOGRAPHIC FINDINGS

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- Normal echocardiogram

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- Hepatopathy- subjectively acute
- Mild gallbladder debris (non-mucocele)
- Nonspecific, prominent to nodular right adrenal gland. Functional versus nonfunctional subtle adenomatous change, hyperplasia, potential for emerging neoplasia cannot be excluded.

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The appearance of the liver is consistent with acute hepatopathy with considerations, including reactive hepatopathy, suspect acute hepatitis (viral, bacterial, leptospirosis, toxin or other) with occult neoplasia considered a less likely differential diagnosis. Further assessment may include, assuming normal clotting status, hepatic FNA for screening cytology and leptospirosis titers/PCR, if clinically indicated. Overall, normal hepatic volume and without evidence of renal or cystic calculi suggests unlikely potential for a portosystemic shunt. Hospitalization with acute hepatitis protocol with (as needed) gastrointestinal support and hepatoprotectants may be considered. If seizure activity is noted, fasting and postprandial bile acids may be considered. Assessment and monitoring of blood pressure for evidence of hypertension as well as sonographic monitoring of the right adrenal gland for evidence of progressive enlargement or parenchyma changes recommended.

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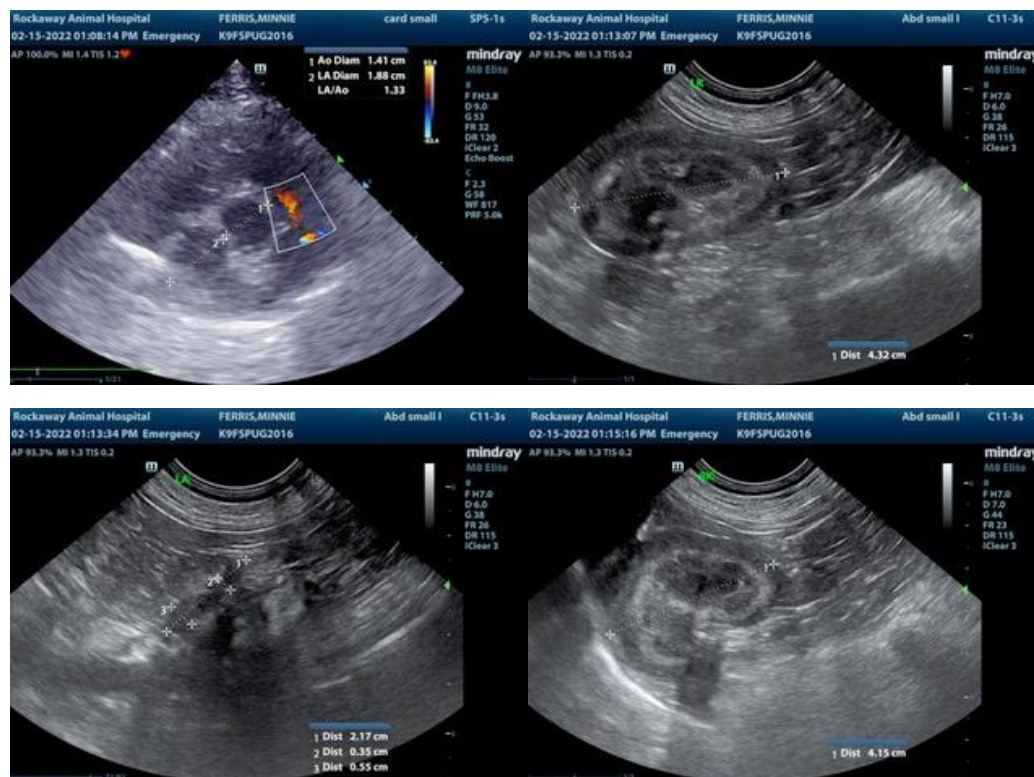
Dr. Maniar

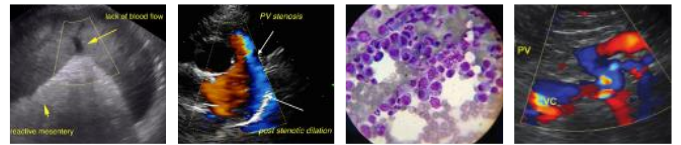
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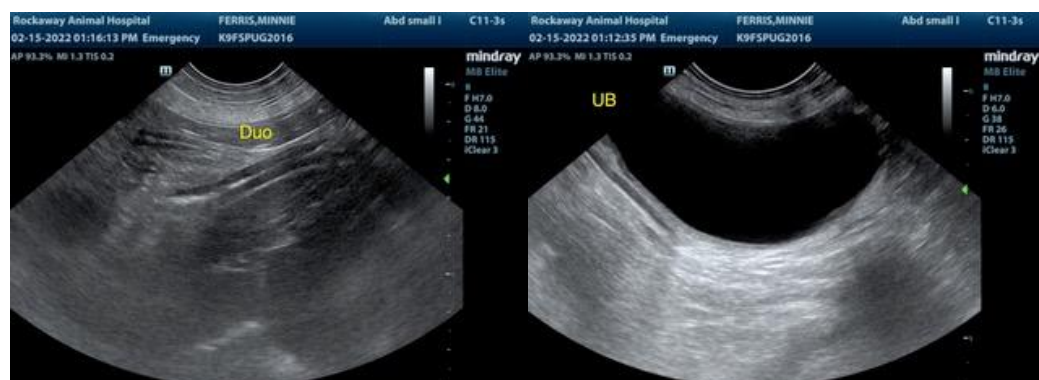
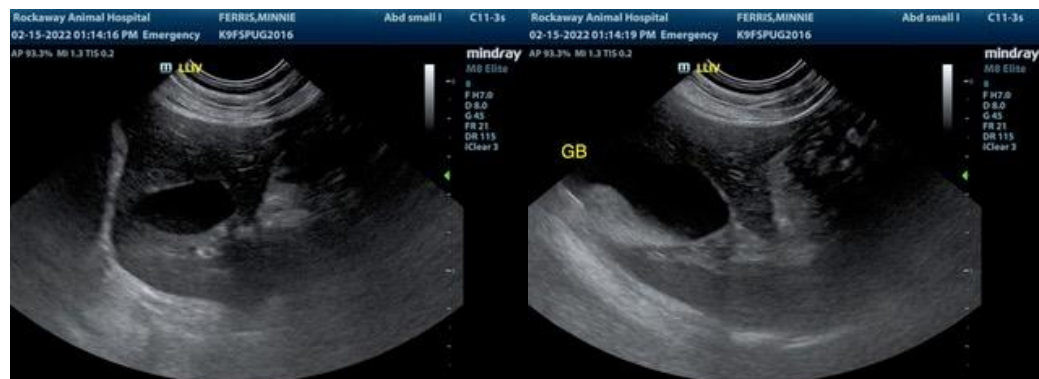
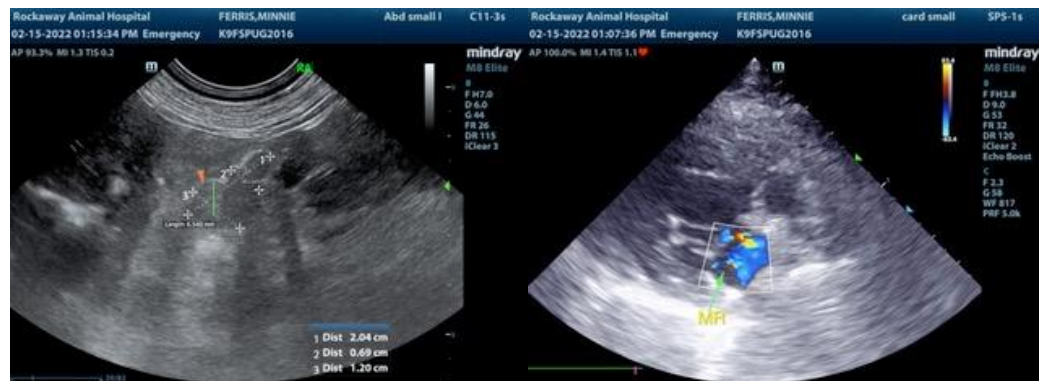
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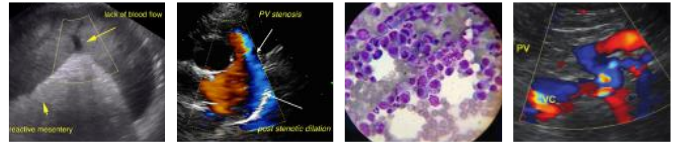
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The information and recommendations provided are based on the images presented by the



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Minnie Ferris

referring veterinarian. 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.

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