



PATIENT

Luna Koehne

SPECIES

Canine

BREED

Morkie

SEX

FS

AGE

10 years

WEIGHT

16 lbs.

INTERPRETED BY

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

IMAGING PERFORMED BY

Jessica Miller

HOSPITAL NAME

Marsh AH

REFERRING VET

Dr. Milwicki

INVOICE

14389

DATE

7/26/22

PRESENTING CLINICAL SIGNS

Elevated liver enzymes. Current meds: Hepaticlear and Dasuquin

Abnormal PE/Chem/CBC/UA Results: ALT 121, ALKP 1035, BUN/Creat 30, K 5.6, Na/K 26, Chole 406, Trig 691, PLT 627 UA: trace protein SG: 1.039

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

CANINE	MR	TR	LA/AO	LA/AO	FS	EF	EPSS
CARDIAC PARAMETERS	VMAX (m/s)	VMAX (m/s)	(Boon method)	(Heart Base; Swe)	(%)	(%)	(cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.3	28-40	40-100	<0.6
PATIENT	5.3		1.1	1.2	42.3	75.5	0.15
CANINE	HR	AV	PV	BODY WEIGHT	LA	LVIDd	LVIDs
CARDIAC PARAMETERS	(BPM)	VMAX (m/s)	MAX (m/s)	(kg)	2D short axis Base view (cm)	Avg; 2D and m-mode short axis (cm)	Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6				
PATIENT	133	1.2	1.1		2.7	2.5	

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 different LA measurement methods. Chamber volumes and echogenicity were normal. The cranial and caudal **mitral** valve leaflets presented vegetative mild thickening consistent with mild endocardiosis. Doppler indicated measurable mild eccentric insufficiency. 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 or chamber overload. **Tricuspid** valvular assessment demonstrated adequate linear morphology. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonic** 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. No echographically detectable evidence of infiltrative disease was visible. The cranial **mediastinum and pericardial regions** were free of masses in the visible window.



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Urinary System

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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 was noted.

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The area of the aortic trifurcation was free of pathology.

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Normal size and margination were present in the kidneys. A normal 1:3 cortex / medulla ratio was maintained. The medulla and cortices were uniform in texture with some increased echogenicity and mild loss of corticomedullary symmetry and definition expected for the age of the patient. No evidence of pelvic dilation was present. The left kidney measured 4.5 cm in length. The right kidney measured 4.9 cm in length.

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Adrenal Glands

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The bilateral adrenal glands were normal in size. Mild parenchyma heterogeneity and mild capsule asymmetry was present without suspicion for overt neoplasia. No evidence of adrenal tumors was noted. The left adrenal gland measured 2.2 cm length x 0.78 cm width at the caudal pole. The right adrenal gland measured 2.5 cm length x 0.58 cm width at the caudal pole.

INTERPRETED BY

Spleen

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(Canine and Feline)

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.

IMAGING PERFORMED BY

Liver/ Gallbladder

Jessica Miller

The liver exhibited generalized enlargement with the ventral liver extending caudally past the level of the gastric axis. Generalized nonhomogeneous to mildly irregular hepatic parenchyma exhibiting moderate coarse echotexture and evidence of parenchymal remodeling was present. Generalized subtle hypoechoic nodular changes were noted with solitary mildly expansive nonhomogeneous macronodule to small mass present in the mid ventral liver measuring approximately 3.4 cm in diameter. The macronodule to small mass appeared to symmetrically distort the adjacent hepatic capsule. The gallbladder was non distended in size with mild, primarily dependent to mildly hyperechoic biliary sludge. No evidence of gallbladder or peripheral gallbladder inflammatory criteria was noted.

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Gastrointestinal

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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.

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



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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.

Free Abdomen

No overt lymphadenopathy or peritoneal effusion was present.

ULTRASONOGRAPHIC FINDINGS

- Chronic mitral valve disease (ACVIM B1)
- Hepatopathy exhibiting generalized nonhomogeneous to irregular parenchyma, solitary mildly expansive nonhomogeneous ventral intraparenchymal macronodule/small mass
- Mild gallbladder debris (non-mucocele)
- Mild chronic renal changes
- Minor pancreatic remodeling - likely age-related pancreatic changes and incidental

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The hemodynamic effects of the mitral valve insufficiency appear to be low to mild at this time, given the lack of left atrium enlargement or increased left ventricle volume. No indication for cardiac medications at this stage. Recheck echocardiogram is suggested in 6-12 months to assess for progression, sooner if clinical signs arise.

The overall appearance of the liver including the ventral macronodule to small mass was nonspecific with considerations including chronic vacuolar hepatopathy, inflammatory/immune-mediated disease, nodular hyperplasia, hematopoiesis, and granuloma, while the potential for neoplastic criteria cannot be excluded. Correlation with pending hepatic FNA is recommended.

Adrenal testing could be considered in this patient if clinical signs consistent with adrenal hyperfunction i.e., PU/PD, Polyphagia, etc., are present. However, no overt evidence of adrenal enlargement or pathology was noted.

Hepatosupportive medications including Denamarin and Ursodiol may prove beneficial. Further renal staging to include urine C/S and protein: creatinine ratio on sterile urine sample may be considered.



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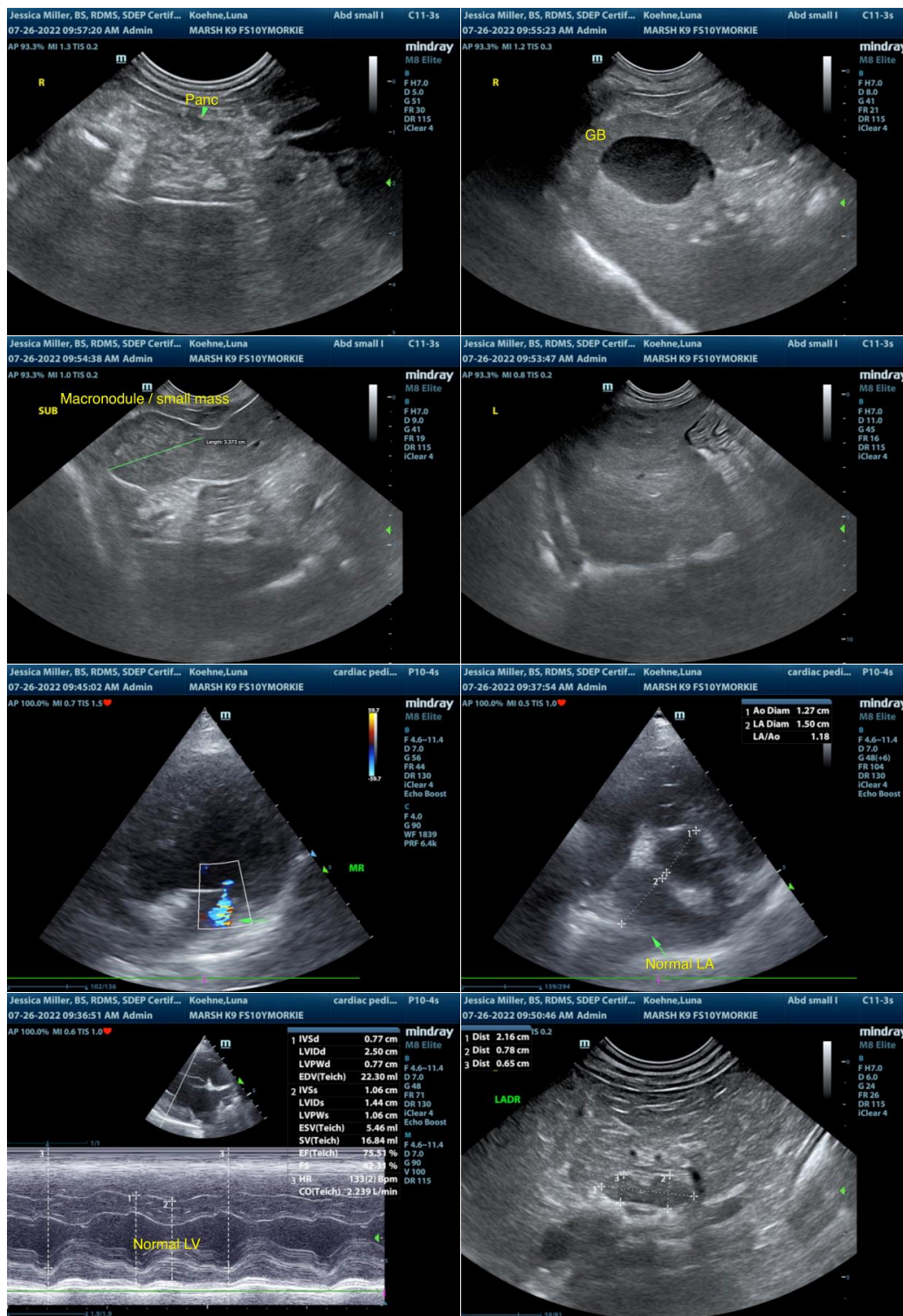
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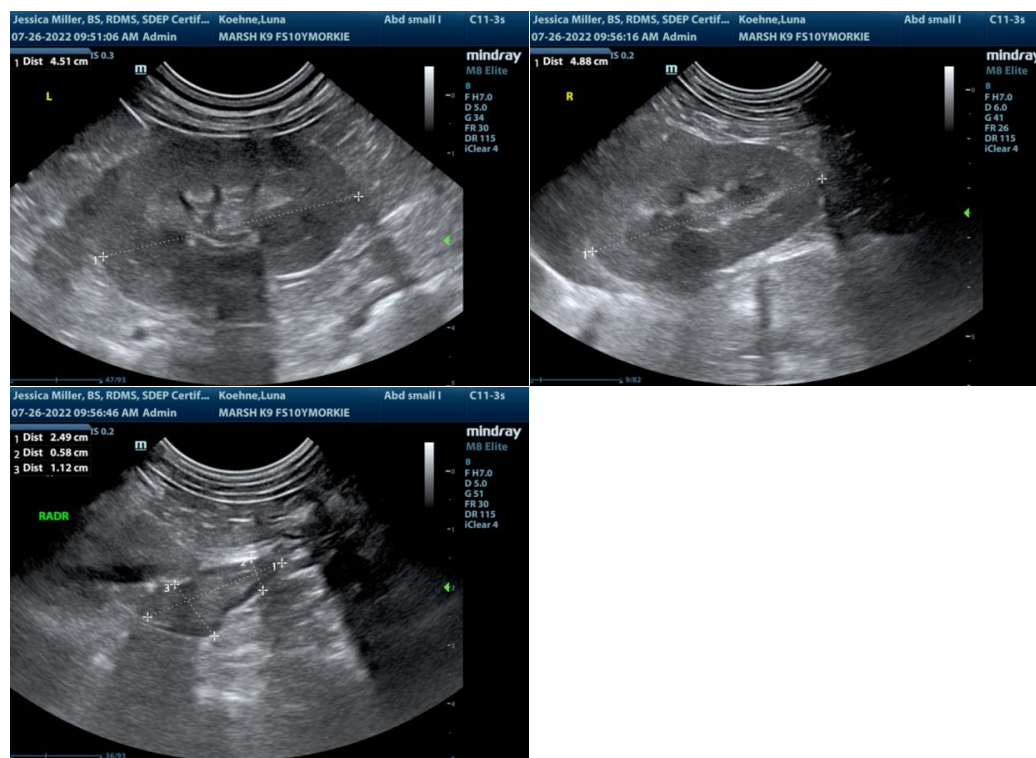
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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