


**PATIENT PRESENTING CLINICAL SIGNS**

Bummer Merola Grade I/VI systolic murmur, elevated liver enzymes. Meds: Denamarin  
 Abnormal PE/Chem/CBC/UA Results: Ast 75 (66 H), ALT 471 (118H), ALKP 6601 (131 H), PSL 268 (140H)

**SPECIES**

Canine

**ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN**
**BREED**

Mix

**SEX**

Spayed Female

**AGE**

10 Years

**WEIGHT**

68.9 Pounds

**INTERPRETED BY**

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

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	5.5		1.2	1.2	38.3	70	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	BELOW	BELOW	BELOW	BELOW
PATIENT	NM	1.5	1.1		4.7	4.7	

**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 mild thickening consistent with mild endocardiosis. No evidence of valvular prolapse. Doppler indicated measurable mild centralized 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.

**Urinary System**

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 4.0 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.

**IMAGING PERFORMED BY**

Shari Reffi, CVT

**HOSPITAL NAME**

Newton Vet Hospital

**REFERRING VET**

Dr. Wyman-Greenwald

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**DATE**

4/25/23



**PATIENT**

The area of the aortic trifurcation was free of pathology.

Bummer Merola

Normal size and margination was 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 to moderate loss of corticomedullary symmetry and definition expected for the age of the patient. No evidence of pelvic dilation was present. The left kidney measured 6.1 cm. The right kidney measured 6.8 cm.

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**Adrenal Glands**

Mix

The adrenal glands were uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 0.60 cm at the cranial pole and 0.83 cm at the caudal pole. The right adrenal gland measured 0.82 cm at the cranial pole and 0.75 cm at the caudal pole.

**SEX**

Spayed Female

**Spleen**

**AGE**

10 Years

The spleen was normal in size and contour with subtle parenchymal heterogeneity. A solitary, non-disruptive splenic cyst versus well demarcated hypoechoic nodule noted in the mid lateral spleen measuring 0.68 cm in diameter. No splenic masses. 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.

**WEIGHT**

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**Liver**

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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 with moderate non-dependent, mildly inspissated yet non-organized gallbladder sludge. No evidence of gallbladder or peripheral gallbladder inflammatory criteria. The cystic and common bile ducts were normal.

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**Gastrointestinal**

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The stomach presented intact wall layering with a normal wall layer ratio. Mild non-specific shadowing gastric ingesta present with no 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.

**REFERRING VET**

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

**Pancreas**

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

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**ULTRASONOGRAPHIC FINDINGS**

- Structurally/functionally normal heart with mild centralized MR
- Hepatopathy – subjectively benign.
- Moderate mildly inspissated yet non-organized gallbladder debris – not consistent with overt mucocele criteria, potential early/emerging mucocele possible.
- Bilateral chronic renal changes.



**PATIENT**

Bummer Merola

- Small splenic cyst versus nodule – subjectively benign.
- Minor pancreatic remodeling, no sonographic evidence of active pancreatitis.

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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The cause of the murmur is subjective. Mild degenerative valvular changes with secondary centralized MR. No evidence of additional clinical issues such as HCM criteria, LV systolic dysfunction, left or right heart chamber enlargement, other valvular insufficiencies, or evidence of clinical pulmonary hypertension. In a non-clinical patient with mild MR and without evident of chamber enlargement, no indication for cardiac medications. Conservative monitoring of the murmur is recommended. Recheck echocardiogram suggested in 8-12 months, sooner if clinically indicated.

The liver was non-specific yet sonographically consistent with benign hepatopathy, vacuolar hepatopathy, inflammatory/immune mediated disease, hyperplasia, hematopoiesis, or non-obstructive cholestasis. Infiltrative neoplasia is considered unlikely.

Assuming normal clotting status, hepatic FNA cytology could be considered for further clarification, primarily to assess for inflammatory criteria. Low-grade to chronic pancreatitis may be suspected if clinical signs consistent with pancreatitis or previous pancreatic inflammatory episodes. Hepatic core surgical biopsies likely required for definitive diagnosis. No overt suspicion of primary adrenal disease, given lack of reported clinical signs (i.e., PU/PD, polyphagia, etc.), and overtly normal adrenal presentation.

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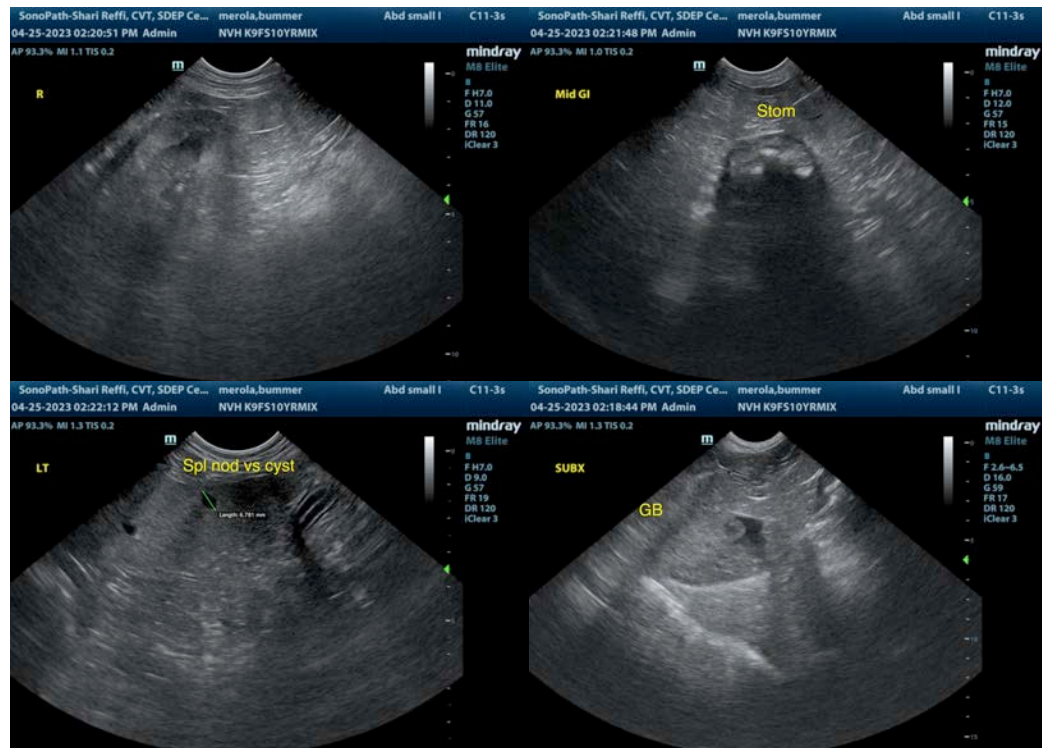
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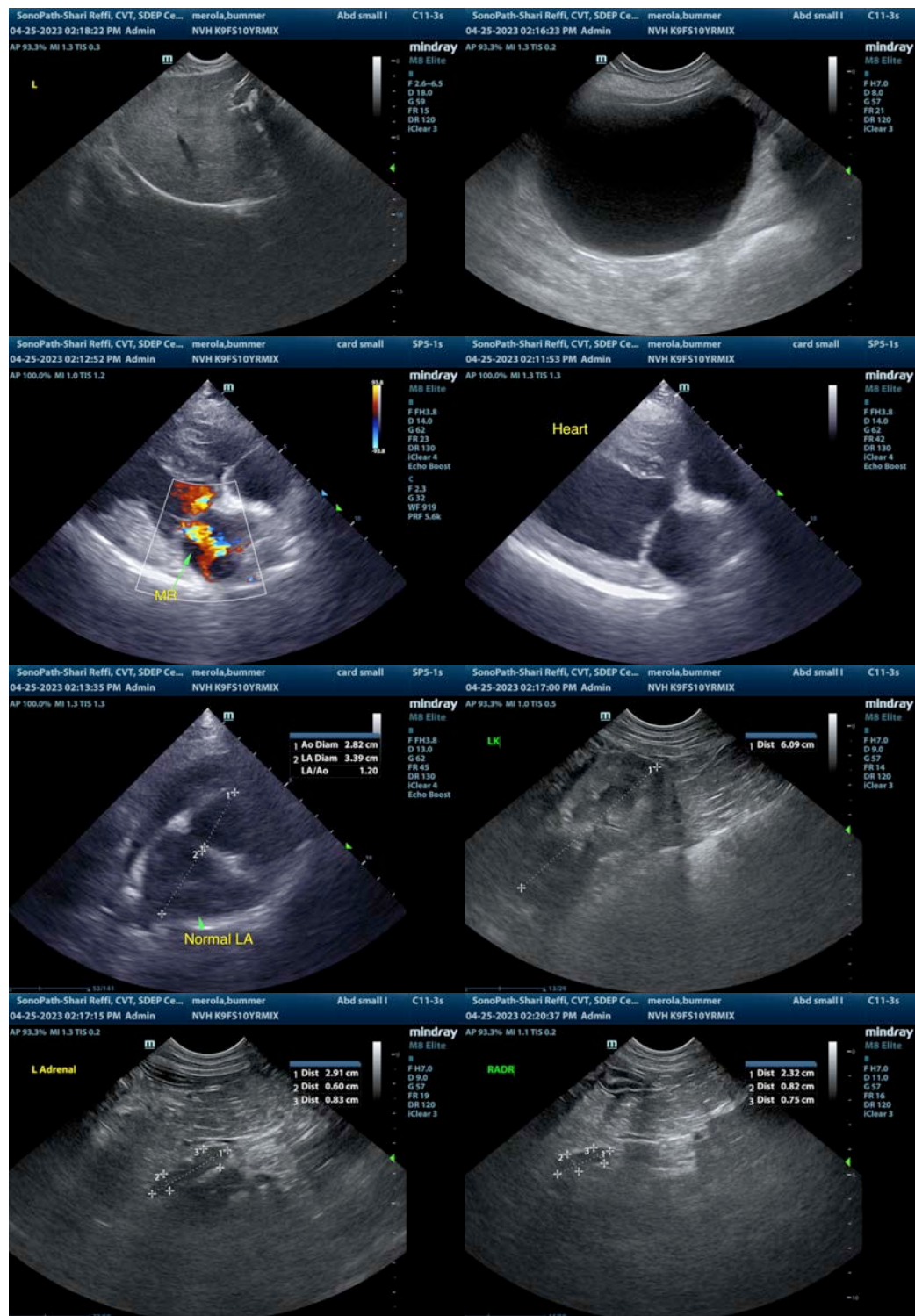
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**PATIENT**

Bummer Merola

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.

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Canine

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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info@SonoPath.com

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