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Clinical Sonography & Telecytology
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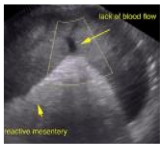
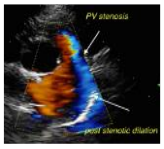
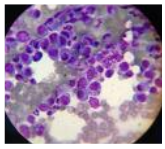
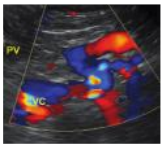




SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Skipper Higgins

SPECIES

Canine

BREED

Welsh Terrier

SEX

FS

AGE

10 years

WEIGHT

20 lbs.

INTERPRETED BY

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

IMAGING PERFORMED BY

Val Shumskaya

HOSPITAL NAME

Marsh Hospital

REFERRING VET

Dr. Milwicki

INVOICE

17210

DATE

6/29/23

PRESENTING CLINICAL SIGNS

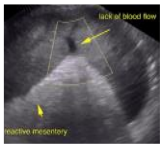
Elevated Liver enzymes, O feels dog is PU/PD, vomits possibly once a week.
Abnormal PE/Chem/CBC/UA Results: RBC 8.77, Hematocrit 57.5, Hemoglobin 21.6, Reticulocytes 132, Anion Gap 29, ALP 637, Bili 0.2, Chol 638, Lipase 484, Creatine Kinase 278, Total t4 0.9

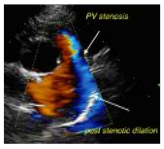
ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

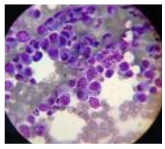
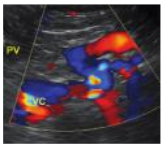
CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.3	28-40	40-100	<0.6
PATIENT		<2.0	1.1	1.2	33	77	0.1
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**PV MAX** (m/s)	**BODY WEIGHT** (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	135	1.8	1.4		2.5	2.2	

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. No overt significant MR was noted 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 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 revealed mild thickening with mild 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). 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, and cystourethral junction 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.

No evidence of pathology in the area of the aortic trifurcation.

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 5.0 cm in length.

Adrenal Glands

The left adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 1.2 cm length x 0.36 cm width at the caudal pole. A nonhomogeneous to hyperechoic, non-mineralized nodule was present in the mid to cranial right adrenal gland with mild associated right adrenal capsule distortion. The nodule did not exhibit signs of mineralization, parenchymal escape, or vascular invasion. The nodule measured 1.5 cm x 1.3 cm. The overall right adrenal gland measured 2.3 cm length x 0.43 cm width at the caudal pole.

Spleen

The spleen was normal in size and contour with a primarily finely textured and homogenous parenchyma. A solitary, nondisruptive, well-demarcated, uniform hypoechoic nodule was present in the lateral spleen measuring 0.79 cm in diameter.

Liver/ Gallbladder

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. Mid-liver, subtly hypoechoic homogeneous intraparenchymal nodule was present measuring 2.2 cm in diameter. 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 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 was empty 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.

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

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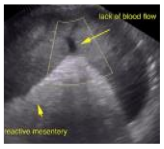

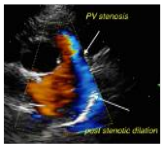

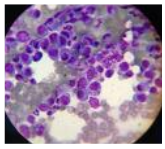
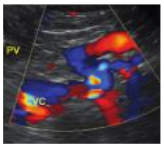

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Pancreas

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

- Normal echocardiogram
- Mild TR - no evidence of clinical pulmonary hypertension
- Solitary, nonspecific splenic nodule - tend to trend benign with focal hyperplasia, hematopoiesis, small granuloma, focal splenitis, or similar suspected with potential for emerging nodular splenic neoplasia considered less likely yet cannot be excluded
- Vacuolar hepatopathy pattern with subtle intraparenchymal nodule - subjectively benign, nodule suggestive of hyperplasia, hematopoiesis, or similar with infiltrative hepatic neoplasia considered less likely
- Mild chronic renal changes
- Right adrenal nodule - functional vs. nonfunctional adenoma, benign hyperplasia, emerging neoplasia such as pheochromocytoma are all potentials
- Minor pancreatic remodeling
- Sonographically unremarkable gastrointestinal tract

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Correlation of the splenic nodule and liver with pending cytology is suggested.

Full adrenal workup, given the right adrenal nodule, hepatic appearance, and potential PU/PD, is warranted. Screening blood pressure to assess for evidence of hypertension which may allude to a potential emerging right adrenal pheochromocytoma is suggested. If hypertension is present, urine catecholamine levels may be considered. Ideally, sonographic monitoring of the right adrenal nodule for evidence of progression with initial recheck in 6 weeks is suggested.

Hepatosupportive medications including Denamarin and Ursodiol may prove beneficial.

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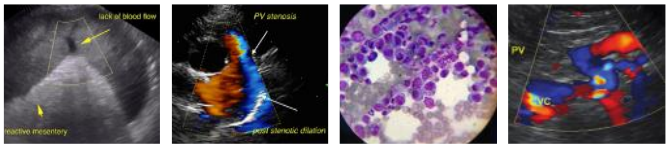

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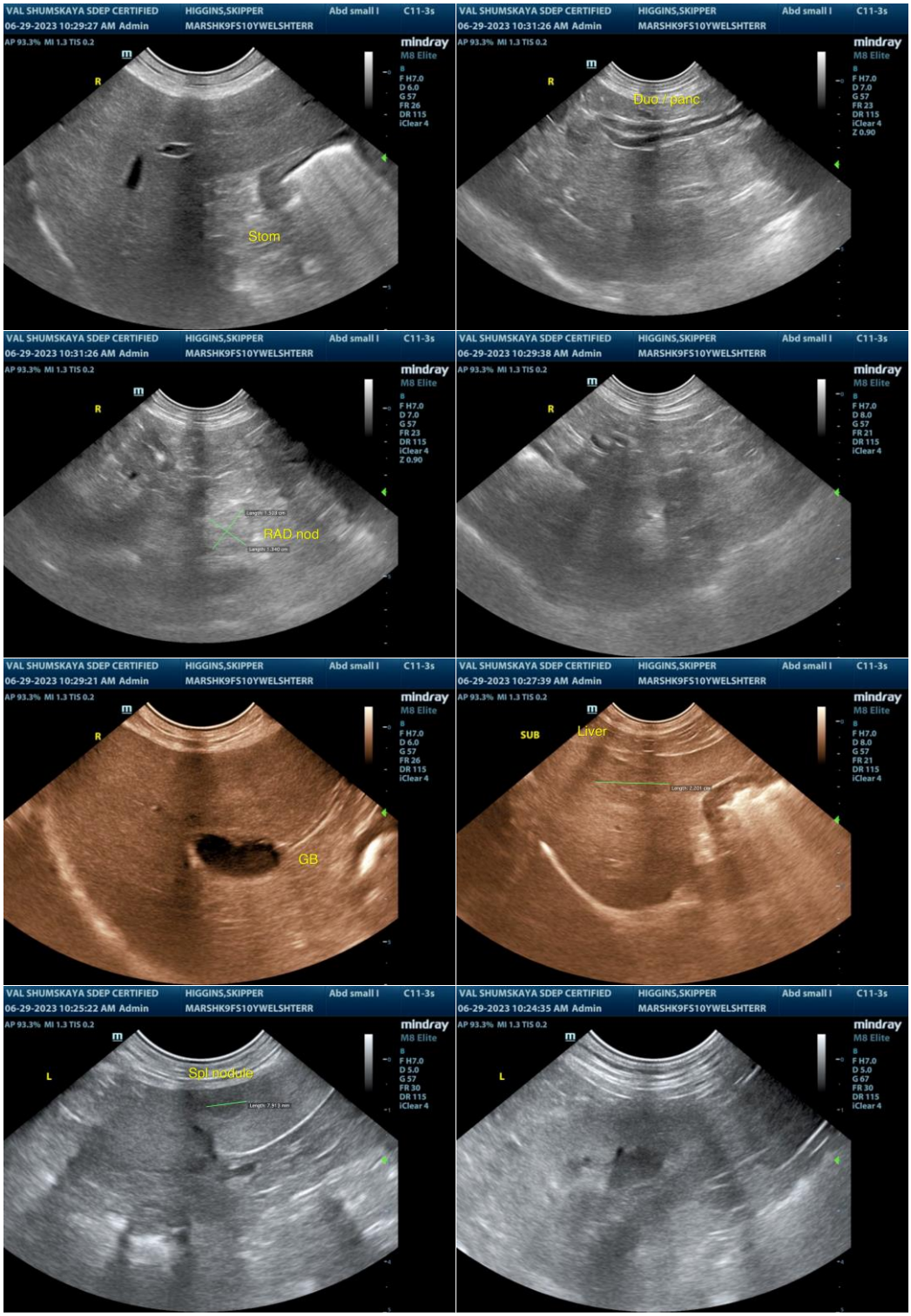

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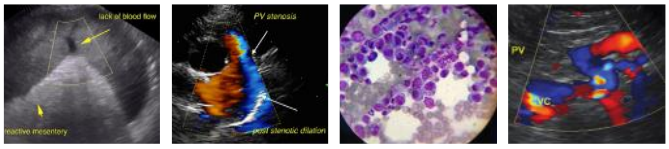

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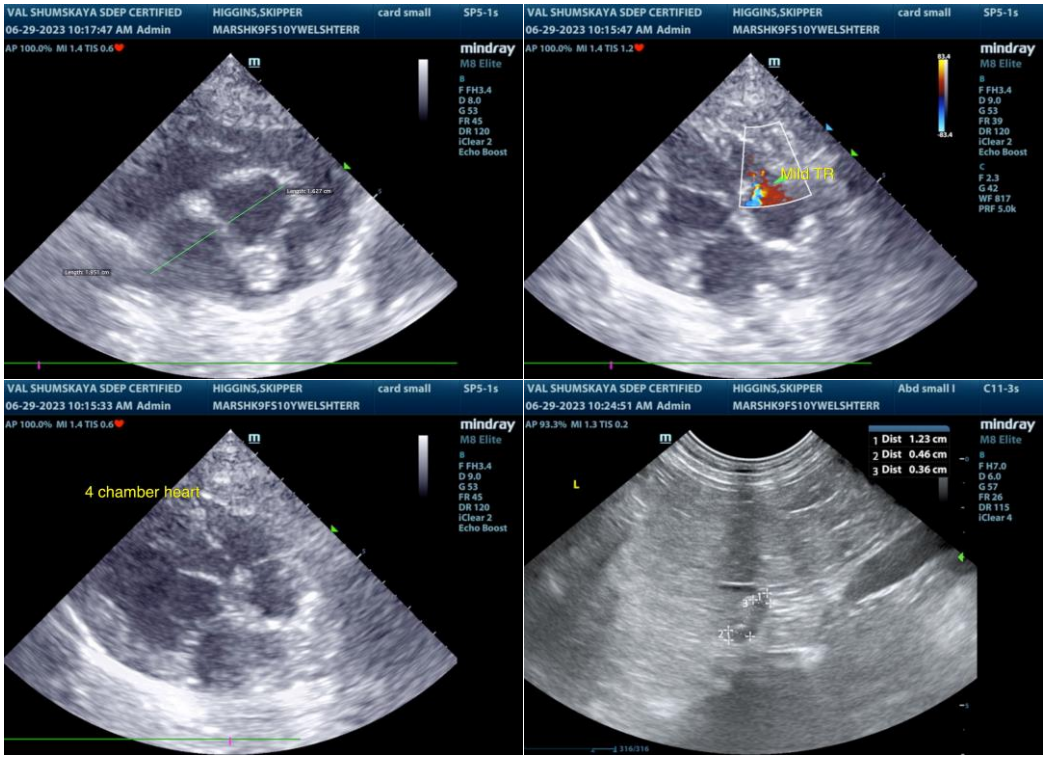

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)
info@sonopath.com