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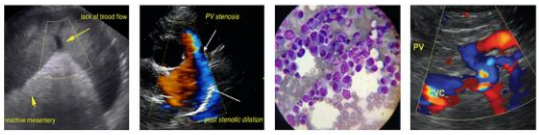

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Clinical Sonography & Telecytology
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**PATIENT**

Liv Wunderlich

**SPECIES**

Canine

**BREED**

Splitz

**SEX**

FS

**AGE**

2009

**WEIGHT**

23

**INTERPRETED BY**

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

**IMAGING PERFORMED BY**

Rebekah Jakum, CVT ARDMS/RVT

**HOSPITAL NAME**

New Britain VC

**REFERRING VET**

Dr. Bandekar

**INVOICE**

14664

**DATE**

8/23/22

## PRESENTING CLINICAL SIGNS

3/6 murmur, hypothyroid, elevated liver enzymes, pre surgical Soloxine .2 BID

## ULTRASONOGRAPHIC EXAMINATION OF THE HEART AND ABDOMEN

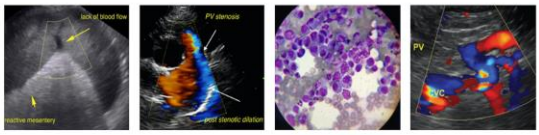
| CANINE CARDIAC PARAMETERS | MR VMAX (m/s) | TR VMAX (m/s) | LA/AO (Boon method) | LA/AO (Heart Base; Swe) | FS (%) | EF (%) | EPSS (cm) |
|---|---|---|---|---|---|---|---|
| NORMAL PARAMETER | 4.5-5.5 | <2.7 | 1.3 | <1.6 | 28-40 | 40-100 | <0.6 |
| PATIENT | 5.4 | 1.0 | | 1.38 | 51 | 83 | 0.12 |
| **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 | 78 | 2.2 | 1.3 | | 3.0 | 3.1 | |

### *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 thickening consistent with endocardiosis. Doppler indicated measurable 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. Minor elevated LVOT velocity was noted. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted or chamber overload. **Tricuspid** valvular assessment demonstrated 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. **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 3.0 cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no uroliths or





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sediment. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes was noted.

The area of the aortic trifurcation was free of pathology.

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 4.3 cm in length. The right kidney measured 5.4 cm in length.

### *Adrenal Glands*

The bilateral adrenal glands exhibited normal position and within normal limit for size with maintained symmetrical capsule contour and mind nonhomogeneous parenchyma consistent with probable age-related adrenal changes. No evidence of adrenomegaly or adrenal tumors. The left adrenal gland measured 0.61 cm width at the caudal pole and 0.55 cm width at the cranial pole. The right adrenal gland measured 0.58 cm width at the caudal pole and 0.65 cm width at the cranial pole.

### *Spleen*

The spleen exhibited primarily finely textured parenchyma which was hyperechoic to the liver and renal cortical parenchyma. Mild generalized parenchyma heterogeneity was present without evidence of nodular changes. Mild asymmetrical medial capsule contour with potential for medial splenic capsule fibrosis was present. The splenic vasculature at the hilus was normal in volume with no evidence of congestion or thrombosis. The parenchymal heterogeneity is likely consistent with benign changes such as extramedullary hematopoiesis or age-related remodeling with minor potential for inflammatory or neoplastic disease.

### *Liver/ Gallbladder*

The liver was mildly to possibly moderately enlarged in size with normal structure and contour. The liver parenchyma was mildly nonuniform and hypoechoic to the spleen with a moderate coarse echotexture and subjective mild to benign parenchymal remodeling. The hepatic and portal vasculature were normal in appearance without signs of congestion. The gallbladder was non-distended in size. The gallbladder walls were sonographically normal. The gallbladder contained anechoic content with mild non-dependent, mildly hyperechoic to Indistinctly striated echogenic luminal debris. No evidence of gallbladder or peripheral gallbladder inflammatory criteria was noted. 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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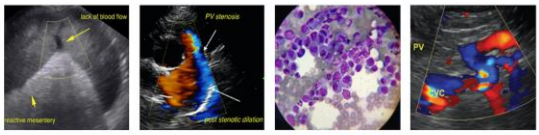

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***Pancreas***

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**

- Chronic mitral valve disease (ACVIM B1)
- Mild TR
- Mild elevated LVOT velocity - not consistent with stenosis
- Hepatopathy exhibiting mild nonhomogeneous parenchyma
- Non-dependent, mildly congealed to Indistinctly striated gallbladder debris - possible early mucocele
- Mild chronic renal changes
- Heterogeneous pancreas - age-related pancreatic changes suspected and incidental, potential for remodeling owing to previous inflammatory episode, or low-grade to chronic pancreatitis possible
- Age-related spleen

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The cause of the murmur is chronic degenerative valvular changes with secondary eccentric mitral valve insufficiency. The lack of left atrial enlargement implies that the risk of complications secondary to mitral valve insufficiency is low at this time and, without current clinical signs, indicates that medical therapy is not required. Conservative monitoring is recommended with a recheck echocardiogram in 6-12 months, sooner if clinical signs suggestive of heart disease develop. Anesthetic risk Is considered low. The following anesthetic protocol is recommended.

The hepatopathy was nonspecific with considerations including vacuolar hepatopathy, inflammatory / immune-mediated disease, nodular hyperplasia, hematopoiesis, early to mild fibrosis, or other hepatopathy with infiltrative neoplasia thought unlikely. Screening hepatic FNA for cytology could be considered. Monitoring for evidence for increasing cholestasis and/or cranial abdominal / subxiphoid discomfort on palpation, potentially associated with the gallbladder, and recheck sonogram If these clinical signs are noted, is suggested. Hepatosupportive medications including Denamarin and Ursodiol may prove beneficial.

Adrenal testing in this patient could be considered If clinical signs such as PU/PD and polyphagia are present or arise. No overt hepatic anesthetic contraindications, given normal hepatic functionality exhibited by normal albumin, glucose, cholesterol, and BUN levels.

Suggested anesthetic protocol may include opioid or Benzodiazepine pre-med, induction with Propofol or Alfaxalone, and appropriate gas anesthesia with avoidance of alpha 2 agonists.

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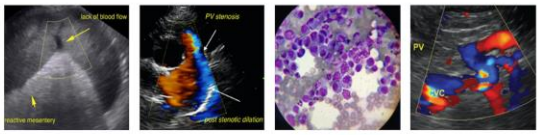

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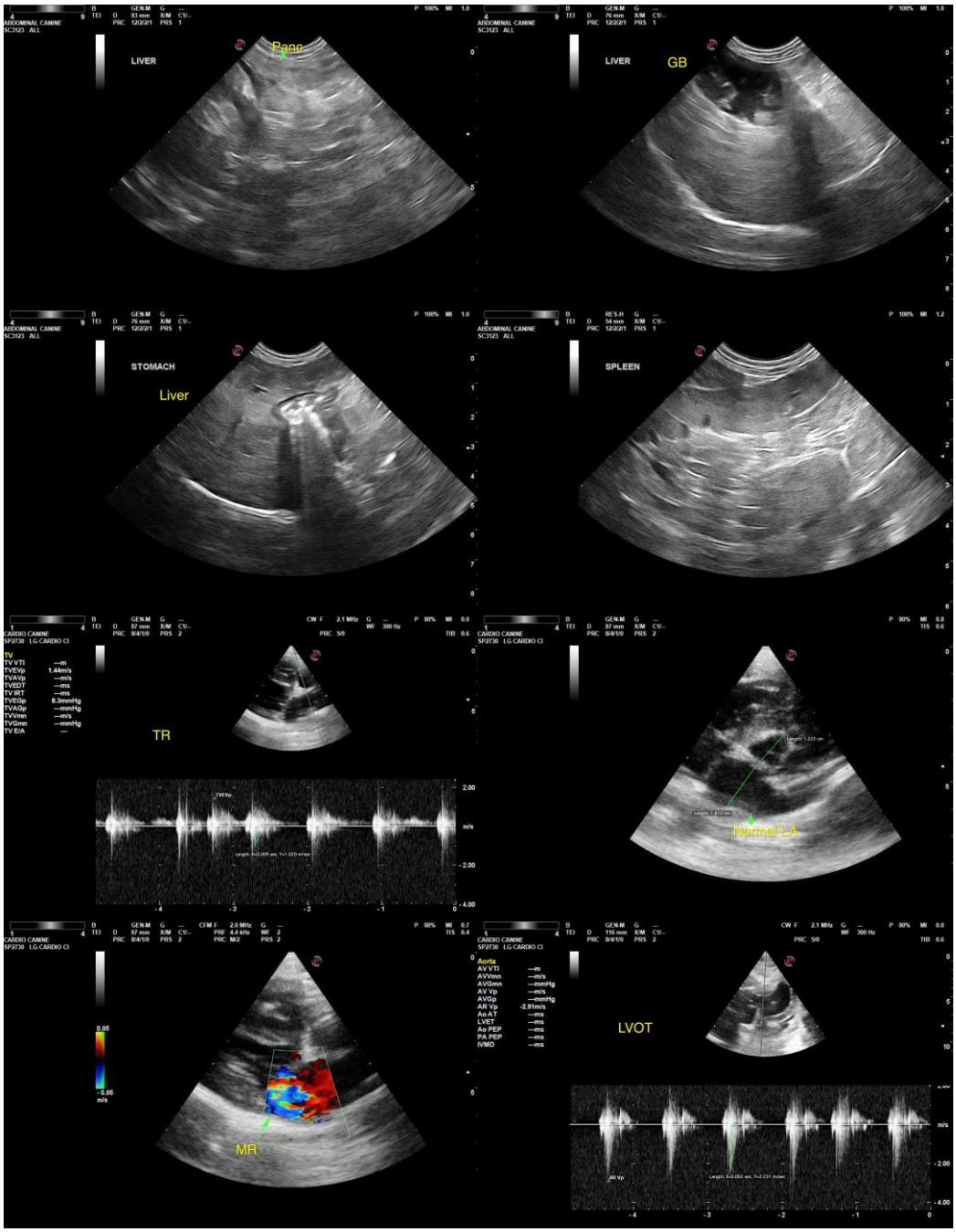

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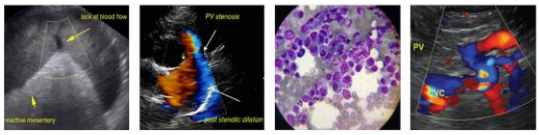

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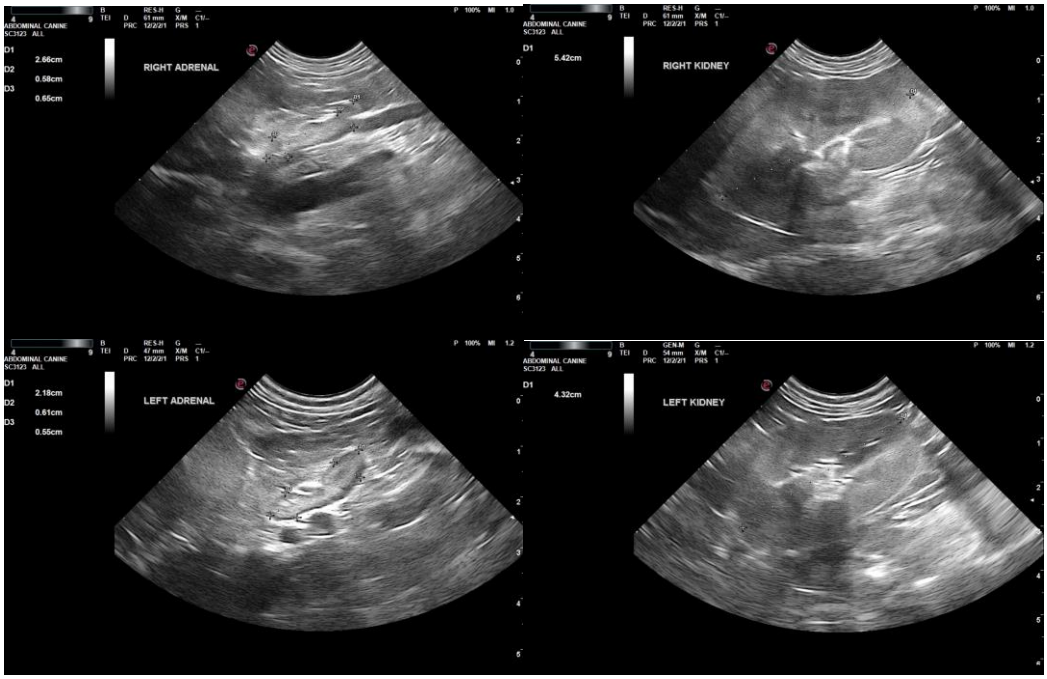


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

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