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Clinical Sonography & Telecytology
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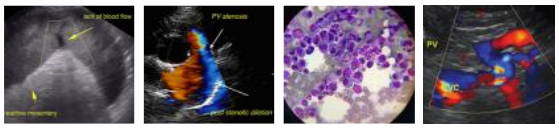


ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

PATIENT
KD Campbell

SPECIES
Canine

BREED
Cavalier King Charles Spaniel

SEX
SF

AGE
11 years

WEIGHT
21 lbs.

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

IMAGING PERFORMED BY
Sara Hansen

HOSPITAL NAME
Countryside AC

REFERRING VET
Dr. Cox

INVOICE
13978

DATE
6/1/22

PRESENTING CLINICAL SIGNS

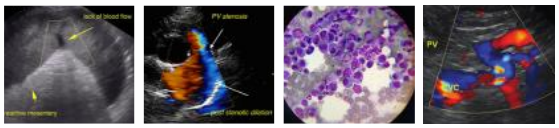
Kidney stones - Heart murmur - Reverse sneezing - Head tremors, focal seizures - PUPD Abnormal PE/Chem/CBC/UA Results: Senior panel done at Santa Clara 02/16/2022. Xrays taken at Santa Clara 02/17/2022. Radiographs and Cardiopet proBNP done at OVRA 10/12/2021. Waiting to receive labs and radiographs from previous clinics. Heart Rate and Respiratory Rates Heart Rate: 114. Respiratory Rate: 24. Blood Pressure Measurments Did not take. Current Medications Phenobarbital 15mg 1 1/2 tab BID.

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	5.0			1.3	46.7	81.6	0.26
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	1.2	0.75		3.3	3.0	

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 mild subjective 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,



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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 was normal in size and tone with subtle generalized prominent urinary bladder walls yet exhibiting homogenous echotexture. Anechoic urine was primarily present with mild to moderate primarily dependent urinary bladder mineral. The urethra was normal in structure and tone to a depth of 3.0 cm. Concurrent nondependent particulate sediment, which may indicate concurrent cellular debris / protein, crystalline debris, or mucus, was present.

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. Nonobstructive left kidney medullary renolith measuring 1.3 cm in diameter was present, along with minor mineral in the left kidney lateral diverticuli. Focal areas of nonobstructive mineral were also noted in the lateral diverticuli of the right kidney. No evidence of pelvic dilation was present. The left kidney measured 5.6 cm in length. The right kidney measured 4.5 cm in length.

Adrenal Glands

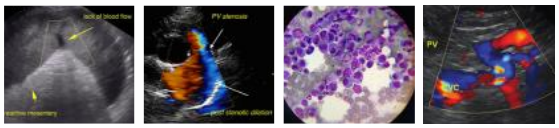
The left adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 0.56 cm width at the caudal pole and 0.49 cm width at the cranial pole. The right adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The right adrenal gland measured 0.64 cm width at the caudal pole and 0.65 cm width at the cranial pole. No evidence of adrenal hyperplasia or tumors.

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. 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. 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 presented mildly 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 mild, primarily dependent, nonorganized,



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nonmineralized gallbladder debris. The gallbladder was otherwise normal. The cystic and common bile ducts were normal.

Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. Mild nonshadowing chyme was present in the stomach.

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.

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)
- Urinary bladder mineral
- Bilateral chronic renal changes with nonobstructive medullary mineral/ renolithiasis more prominent in the left kidney
- Vacuolar hepatopathy pattern
- Mild gallbladder debris (non-mucocele)
- Pancreatic remodeling - likely associated with age

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 complication secondary to mitral valve insufficiency is low at this time and, without current clinical signs, indicates that medical therapy is not required. However, prognosis at this stage Is highly variably and serial sonographic monitoring is required for further prognosis. Conservative monitoring is recommended with a recheck echocardiogram in 6-12 months, sooner if clinical signs suggestive of heart disease develop.

Urine culture and sensitivity on a sterile urine sample if not recently done is recommended. This patient may be passing small amounts of mineral from the kidneys into the urinary bladder.

The liver is most consistent with benign hepatomegaly potentially associated with Phenobarbital administration. Monitoring of hepatic enzyme levels is recommended.

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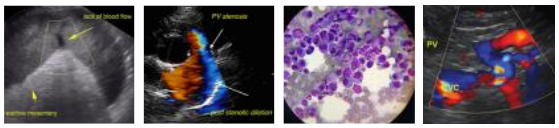

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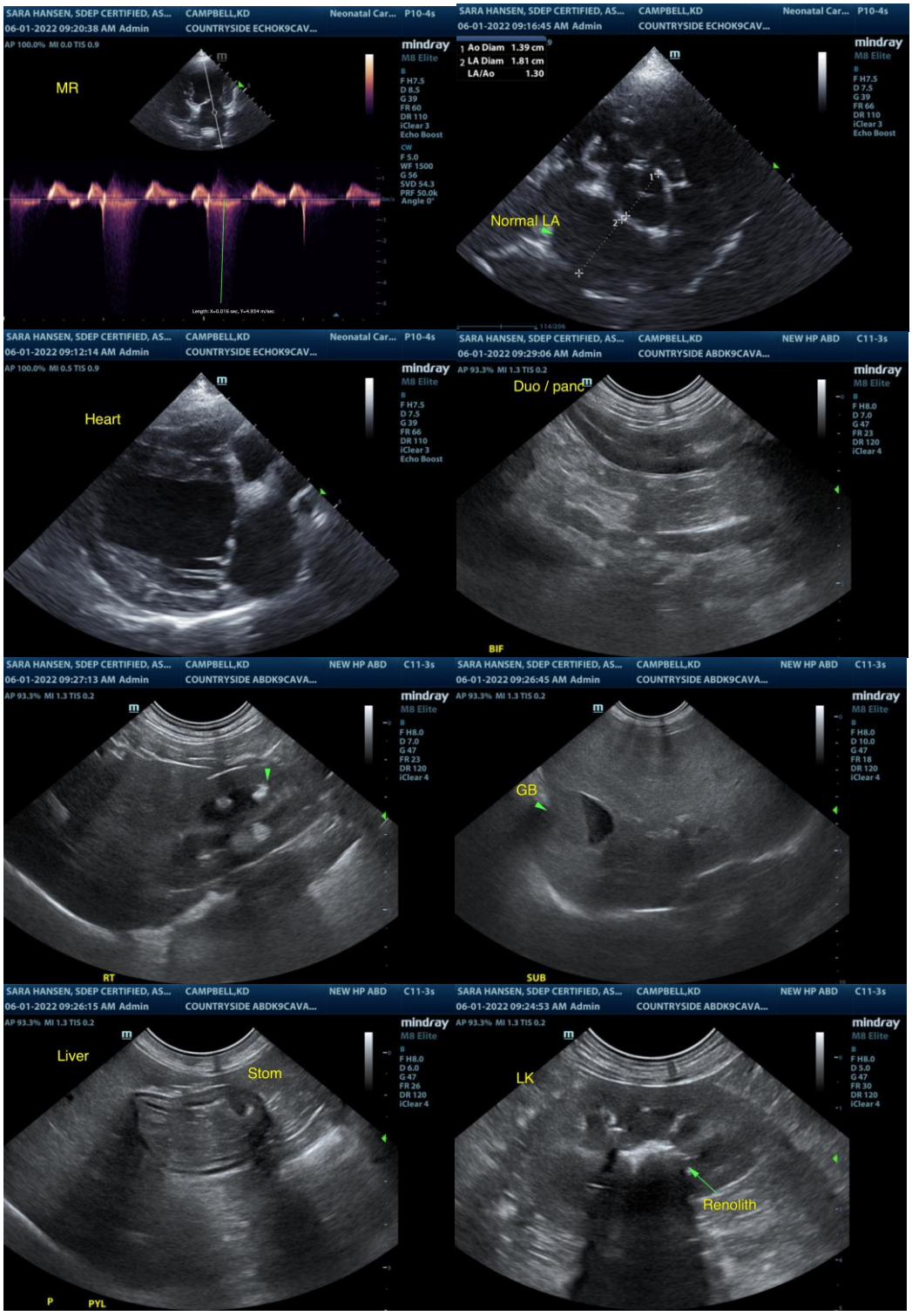
Correlation with recent lab work including urinalysis is recommended.



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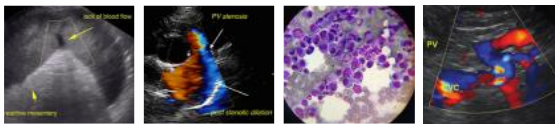

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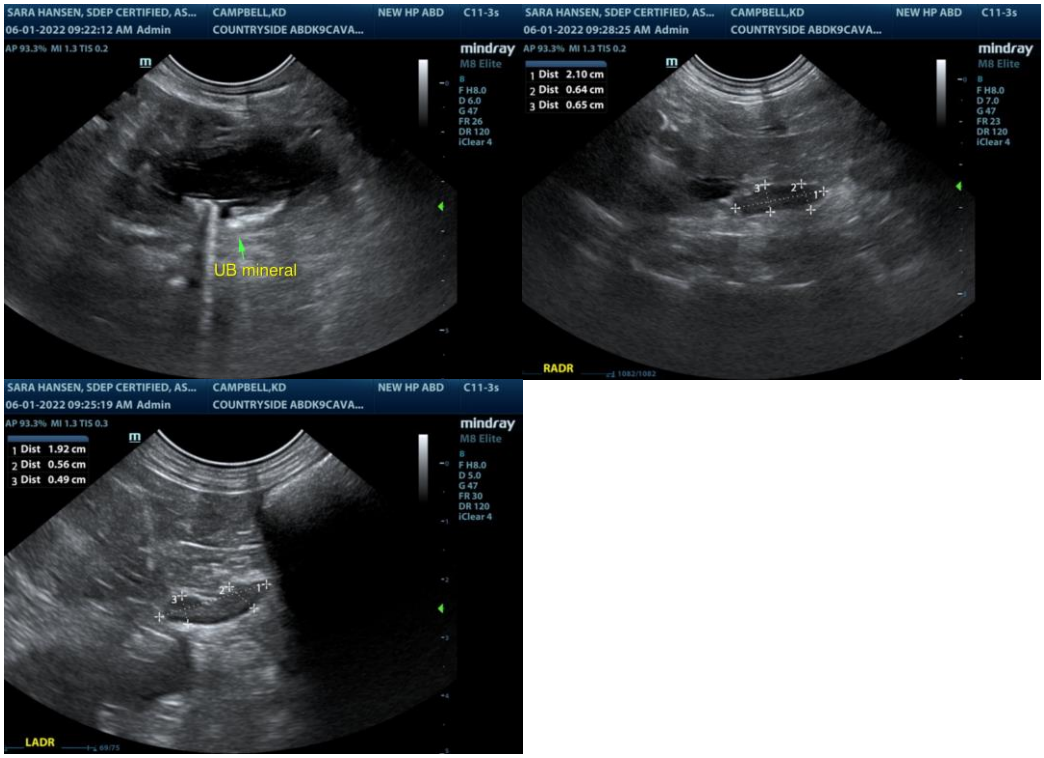

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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