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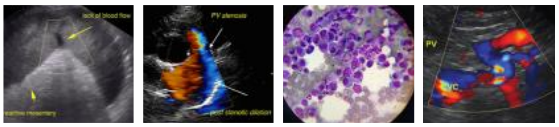

ANIMAL SOUNDS NW
MOBILE VETERINARY ULTRASOUND
IMAGING PERFORMED BY
AnimalSoundsNW.com 541-357-9423

PATIENT

Francis Crouch

SPECIES

Canine

BREED

Boxer

SEX

FS

AGE

9 years

WEIGHT

67.5 lbs.

INTERPRETED BY

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

IMAGING PERFORMED BY

Sara Hansen

HOSPITAL NAME

Eastgate VC

REFERRING VET

Dr. Lantz

INVOICE

17339

DATE

7/21/23

PRESENTING CLINICAL SIGNS

Arrythmia heard, consistent with femoral pulses; irregular irregular- possible sinus arrythmia, patient is panting. No murmur heard today. _Current Medications Since 7/6/23 patient started: Sotalol HCl 80 mg tablets - Give 1/2 tablet orally, every 12 hours for heart arrythmia.; Gabapentin 300mg - Give 1 capsule orally every 8-12 hours as needed. May cause sedation. May decrease to 1/2 capsule if makes patient too sleepy. (O uses as needed, including for noise anxiety over July 4th); Benazepril 5mg tabs - Give 2 tablets orally once a day for protein loss through kidneys.

Abnormal PE/Chem/CBC/UA Results: 6/30/23: ECG to Idexx Heart Rate: 154 bpm Rhythm: Sinus with VPCs in singlets and a coupletECG FINDINGS AND ASSESSMENT: Given the signalment, the arrhythmia is likely secondary to arrhythmogenic right ventricular cardiomyopathy (ARVC) although systemic causes of ventricular arrhythmias (i.e. masses of the liver/spleen) cannot be completely ruled out. ARVC is a genetic disorder whereby the cardiac muscle is replaced by scar tissue and fat which causes arrhythmia formation. This disease can present as an incidental arrhythmia, syncope, or progress to a form of dilated cardiomyopathy. Dogs with ARVC are also at risk of sudden death (owners should be warned about this possibility). All other ECG measurements are within normal limits in this study. (As surprising as it is to believe most Boxers with ARVC have normal hearts on echocardiograms (i.e. the fibrofatty infiltration is on the microscopic level) so a normal cardiac silhouette on radiographs is actually more the normal than the exception i.e. you do not have to have cardiomegaly/DCM to have ARVC in a Boxer.)

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

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	5.0	2.0		1.45	35	64	0.45
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	1.0	0.7		4.7	3.9	

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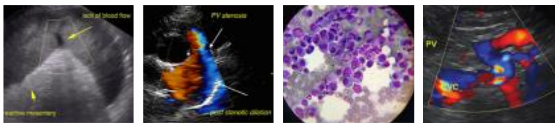

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Cardiac Presentation

The echocardiogram in this patient demonstrated mild increased **left atrial** size based on 2 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. Mild centralized MR was present 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. Normal measured LVOT velocity was noted. The **right atrium** and auricle revealed subtle increased size with normal structure and content. No evidence of masses was noted. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinesis. Mild TR was present 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. Arrhythmia was present.

ULTRASONOGRAPHIC FINDINGS

- Mild compensated LA / RA enlargement
- Normal LV / RV
- Arrhythmia
- Mild centralized MR with concurrent mild TR - no evidence of clinical pulmonary hypertension

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Overall compensated cardiomyopathy most consistent with arrhythmogenic right ventricular cardiomyopathy based on ECG assessment. No overt indication for cardiac medications for structural cardiomyopathy at this stage. However, serial sonographic monitoring is advised given evidence of mild compensated LA / RA enlargement. The hemodynamic effects of the mild centralized MR and TR appear to mild at this stage. Recheck echocardiogram is recommended in 6 months, sooner if clinical signs consistent with cardiac disease arise if progressive cardiac murmur is noted.

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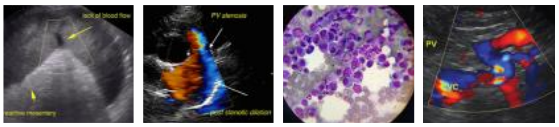

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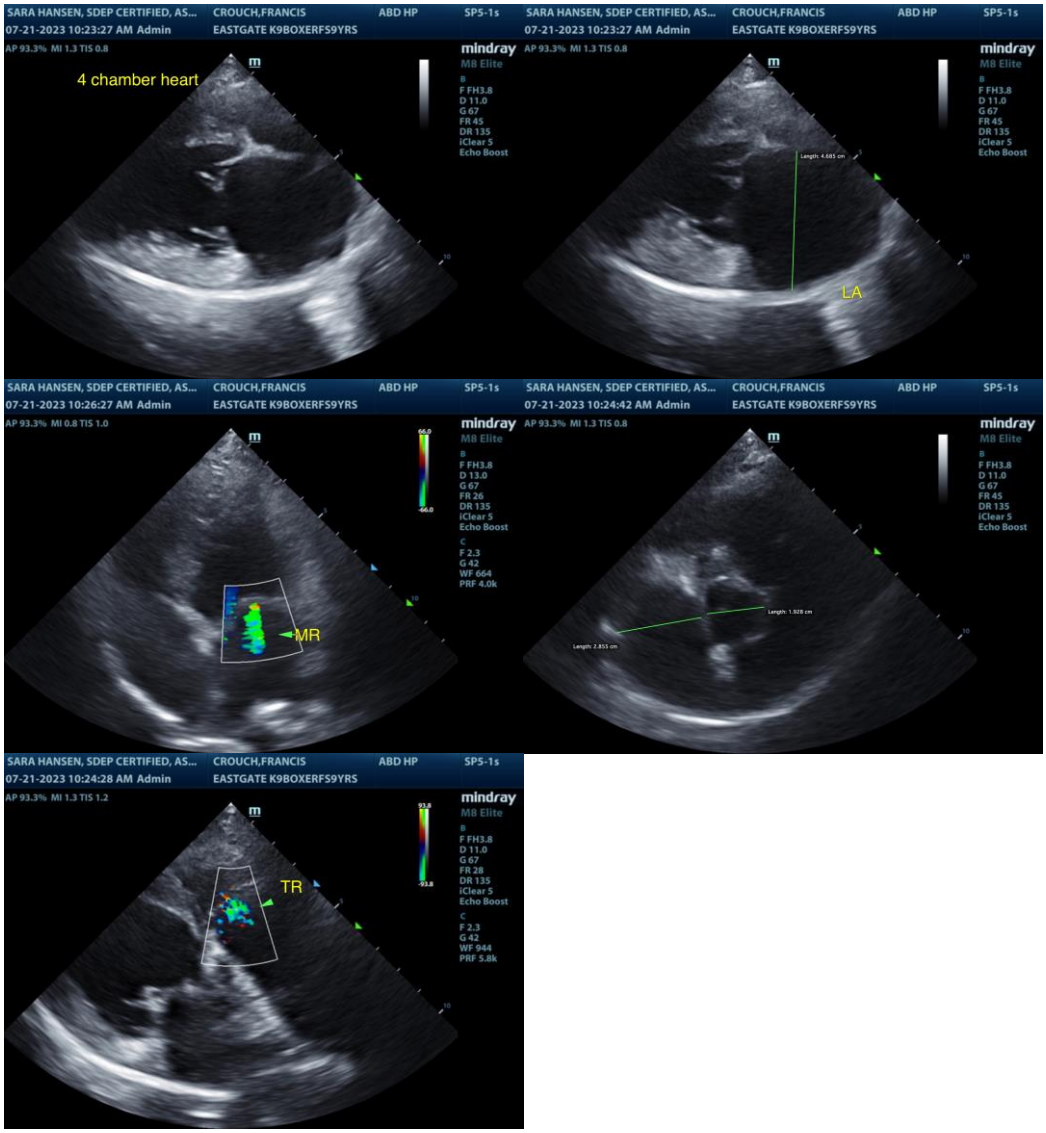

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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