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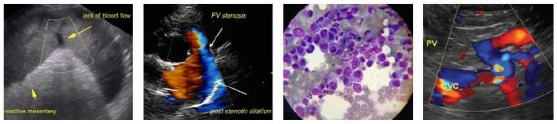

IMAGING PERFORMED BY
pawsonography@gmail.com 530-786-8340

PATIENT
Kelly Huerta

SPECIES
Canine

BREED
Yorkshire Terrier

SEX
Female Spayed

AGE
12 years

WEIGHT
6lbs

INTERPRETED BY
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY
Loetitia St-Jacques, LVT/RVT

HOSPITAL NAME
Animal Medical Center of Reno

REFERRING VET
Dr. Taomino

INVOICE
31434

DATE
6/19/23

PRESENTING CLINICAL SIGNS
History: New grade 3/6 heart murmur. BP: 190, 195, 201mmHg. Assess prior anesthesia.
-Abnormal PE/Chem/CBC/UA Results: T4- normal. Chem- BUN 43, Albumin low at 2.6 (2.7-3.9)-In 2/2022 Albumin was 2.4 on in house with range (2.2 and up). ALT 280 (prev 115), GGT 100 (no previous GGT) CBC WNL.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental cardiac information only.
No significant cardiomegaly. No obvious evidence of CHF.

ELECTROCARDIOGRAPHIC FINDINGS
A six lead ECG is available at 50mm/s; 10mm/mV. The average heart rate is 210bpm with a largely regular rhythm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS is inverted. MEA is shifted right. No ectopic beats, pauses or dysrhythmias observed.
ECG diagnosis: Sinus tachycardia with a right axis deviation; right bundle branch block.

ECHOCARDIOGRAM FINDINGS
2D, m-mode, color flow and doppler imaging is available. Mildly thickened mitral valve leaflets with no obvious prolapse into the left atrial lumen. Trace MR. Normal left atrial dimension. Decreased LV diameter with normal myocardial function. The left ventricular wall thickness is mildly increased with a hyperechoic endocardium. Tertiary papillary muscle. The tricuspid valve appears subjectively normal, with no insufficiency seen. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. The aortic outflow velocity is normal. The pulmonic outflow velocity is mildly elevated depending on heart rate with laminar flow and no obvious obstruction. No AI or PI noted. No pericardial or pleural effusion noted. No obvious cardiac tumors.

CARDIAC CHART

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	NM	NA	1.4	1.3	43	78	0.2
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	180	1.4	2.5	2.7	1.3	1.3	0.7
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
BODY WEIGHT DEPENDENT PARAMETERS				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
Note: All measurements based upon multi-modal images and methods. An average value is reported.				10	1.50 (3.8)	3.27 (3.5)	2.06 (3.1)
				15	1.83 (2.0)	3.71 (2.4)	2.43 (2.1)
				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
				40	2.62 (5.2)	5.48 (6.1)	3.96 (5.4)
				50	2.88 (7.1)	6.07 (8.3)	4.46 (7.4)

Adapted from June Boon, Veterinary Echocardiography, 1998
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435
Hansson et al, Vet Rad and Ultrasound 2002
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995

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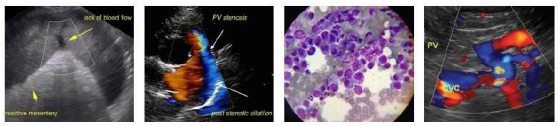

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The finding of mild LV hypertrophy is most commonly secondary in dogs (rather than a primary myocardial disease), and in light of the reported blood pressure this may be the root cause. I have concern for volume issues in this patient as well, given a small LVIDd and elevated velocity through the pulmonary artery, which is the cause of the murmur. Further systemic evaluation is indicated to sort through totality of the findings, including lab work (depending on when the listed results were obtained) and potentially an abdominal ultrasound.

If thought to be accurate, high blood pressure should be treated in this patient as below. Causes of systemic hypertension should be investigated, including PLN, renal disease, Cushing's disease, pheochromocytoma, etc. No additional medications are indicated.

The ECG is largely unremarkable with a sinus tachycardia. The QRS has an atypical appearance consistent with a right bundle branch block. This is a benign conduction abnormality common in senior dogs.

Monitor at home for collapse, exercise intolerance, and/or lethargy. Prognosis is guarded pending follow up assessment.

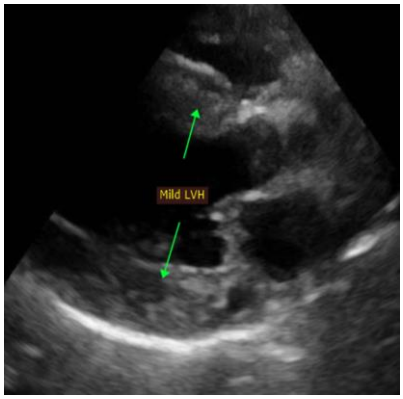
Anesthesia is not advised prior to stabilization of BP, reassessing volume, etc. Once the BP is normalized, reasonable to proceed with typical precautions: Cardiac protective drug choices (opioid/benzodiazepine premedication, Propofol or alfaxalone induction, iso or sevo gas) are recommended. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Judicious IV fluid rates are recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

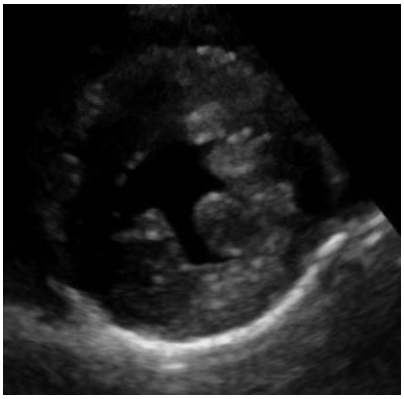
PLAN

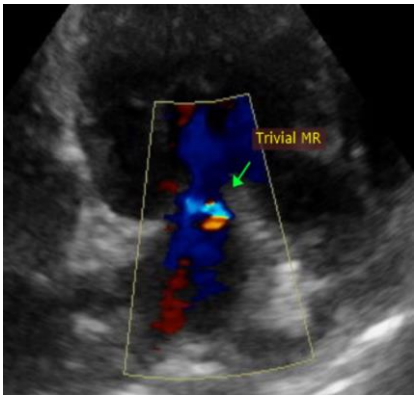
If the BP is thought to be accurate, institute vasodilator therapy with amlodipine and up-titrate to effect; target stressed BP is <150mmHg. Systemic evaluation including lab work if not recent, and abdominal imaging.

Going forward, a recheck echocardiogram is recommended in 6 months to assess for progression/regression of LV changes, sooner if any clinical signs arise.

IMAGES







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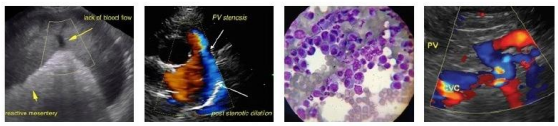

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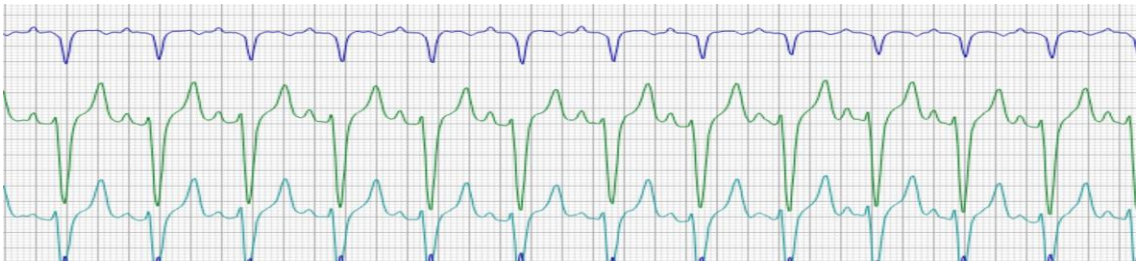

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. This report was generated using transcription software, and minor dictation errors may be present. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance, please contact me.

Maggie Machen Lamy, DVM
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
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