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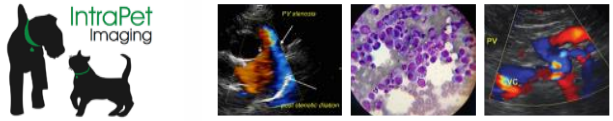

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PATIENT

Mackey Tipton

SPECIES

Canine

BREED

Labrador Retriever

SEX

Female Spayed

AGE

10 years

WEIGHT

66.7lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

HOSPITAL NAME

Timonium Animal Hospital

REFERRING VET

Dr. Montessi

INVOICE

21117

DATE

9/20/21

PRESENTING CLINICAL SIGNS

History: New heart murmur and newly diagnosed diabetic with hypertension. Recent history of frequent panting, labored breathing, and weakness. Grade III/VI systolic murmur with moderate hind end ataxia on PE.
-Pertinent abnormal PE/Chem/CBC/UA Results: Monocytosis 1.5, Glu 595, Cl 100, AST 60, ALP 643
-Current medications: Vetsulin @ 15U BID 3 days duration for both, Enalapril 15mg BID.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental information only.

Normal cardiac silhouette. Bulge in the region of the aortic root.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at both 25 and 50mm/s; 2mm/mV. The average heart rate is 240bpm with a 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 morphology is positive with normal dimension. MEA is normal. No ventricular ectopic beats, pauses or other dysrhythmias observed.
ECG diagnosis: Supraventricular tachycardia; suspect atrial tachycardia.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. Trace mitral regurgitation with no left atrial dilation. Normal LV diameter with mildly depressed myocardial function. LV wall thickness is mildly increased (1.5xcm globally). The tricuspid valve appears normal with no tricuspid regurgitation. 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. Normal pulmonic and aortic outflow velocities with laminar flow. Significantly dilated aortic root. No obvious aortic or pulmonic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac masses.

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	NA	NA	NM	0.8	25	53	NM

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	240	0.95	0.86	30.2	2.2	3.5	2.6
*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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Overtly normal cardiac structure and function. No significant valve leaks are identified, and the systolic function is reasonable given the heart rate. Monitoring for progression/improvement is advised once the rhythm is controlled. There are potential markers for systemic hypertension noted including mild LV hypertrophy and a dilated aortic root. Certainly, vasodilation/treatment for SHT is indicated in this case. No additional structural issues are noted in this study.

More importantly, the patient does have a rapid heart rate with a heart rate of 240bpm. Without seeing the onset or ending of the tachycardia (ie response to a vagal maneuver or similar), possibilities include atrial tachycardia (AT) or sinus in origin. The former is suspected given both the predisposition of this breed and the significantly elevated sustained heart rate; however, response to a vagal maneuver/anti-arrhythmic conversion would be useful. This should be considered if the response to therapy is lacking.

When addressing arrhythmias, 2 issues should be considered. 1. What is the underlying issue leading to their development, and 2. Is treatment indicated? In the absence of structural disease as is the case here, AT can develop as a primary problem (such as due to the presence of an atypical or accessory conduction pathway) or can develop secondary to systemic illness such as neoplasia. In a Labrador Retriever, an accessory pathway is possible as this is relatively common in this breed. That being said, we typically see this form of SVT in younger labs compared to this signalment. Highly recommend systemic evaluation in this case given the history of SHT as well as an arrythmia. Given the dual issues, a pheochromocytoma should be considered as a possible explanation. Further evaluation through AUS is recommended.

Regardless of cause, sustained tachycardia can cause clinical signs due to poor cardiac output and treatment is indicated with sotalol. Depending on how difficult the rhythm is to control, the patient will need periodic ECG and/or holter monitoring, echocardiograms to screen for structural issues, has the potential for breakthrough arrhythmias and recurrent clinical signs.

It is important to note that even in human trials the use of anti-arrhythmics does not clearly decrease risk of sudden death in arrhythmic patients and this risk is present in this case. That being said, I am hopeful we stabilize the patient on oral medications while maintaining QOL and assessing the underlying issue. Prognosis is guarded.

Systemic hypertension is an internal medicine issue and consultation is advised. While Enalapril is on board and is good for PLN, ancillary therapy with Amlodipine may very well be indicated pending response. The goal is a stressed heart rate of <160mmHg in hospital.

Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

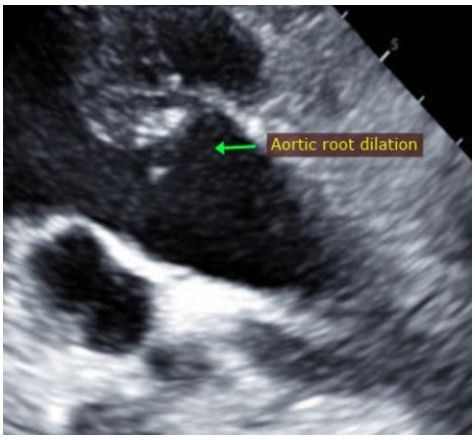
Anesthesia is not advised until the rhythm is stabilized. Moderate activity restriction is advised.

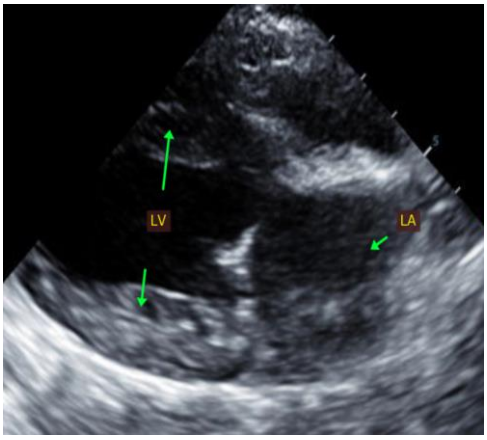
PLAN

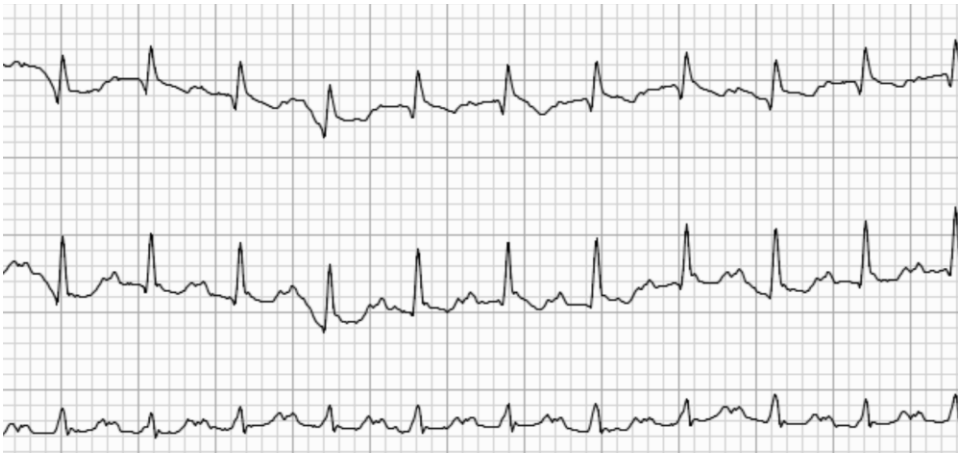
Full systemic evaluation as discussed, including an abdominal ultrasound. Highly recommend an internal medicine consultation in this case. Institute Sotalol 1-2mg/kg PO q12h with a recheck ECG and/or holter monitor in 1-2 weeks to understand control.

Recheck Echocardiogram and ECG is recommended in 6 months depending on patient response.

IMAGES







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.

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