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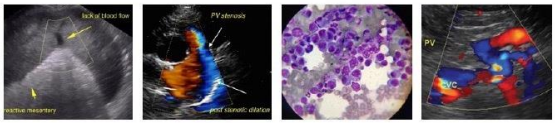

THE FOCAL ZONE
IMAGING PERFORMED BY
289-808-2608 info@thefocalzone.com

PATIENT
Halo Curia

SPECIES
Canine

BREED
Bulldog Mix

SEX
Female Spayed

AGE
11 years

WEIGHT
66.1lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Kelly Reschny, RVT

HOSPITAL NAME
Acton Veterinary Clinic

REFERRING VET
Dr. Gajadhar

INVOICE
30089

DATE
4/6/23

PRESENTING CLINICAL SIGNS

History: Presented for collapse episodes; last less than a minute. Tends to happen after exerting herself. No murmur.
-Current medications: Galliprant and Gabapentin.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

A single lead ECG is available; 50mm/s, 20mm/mV. The underlying rhythm is sinus in origin with an inverted QRS morphology. The heart rate appears reasonable, although rare sequential sinus beats are appreciated. Isolated VPCs are seen throughout with ventricular bigeminy. The VPCs are monomorphic and singles only. Occasional APCs are identified.
ECG diagnosis: Ventricular bigeminy with occasional APCs.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Relatively large homogeneous echogenicity mass associated with the aortic root; 3.4 x 3.9cm in best viewed cross section. The mass is well encapsulated and near the bifurcation overlying the left atrium. No obstruction to blood flow is seen or imposition of cardiac chambers; however, this is not entirely ruled out in this image set. No significant mitral regurgitation, thickened mitral valve with no prolapse. LV function is adequate. Left atrium is mildly dilated, although obscured by the mass. The LV is normal in dimension. Normal TV with no TR. No significant right heart enlargement. The pulmonic and aortic valves are normal in appearance. Normal LVOT and RVOT velocity. No AI or PI identified. No pericardial or pleural effusion.

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	<1.5	32	62	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	130	1.5	0.9	30.0	NM	4.0	2.2
*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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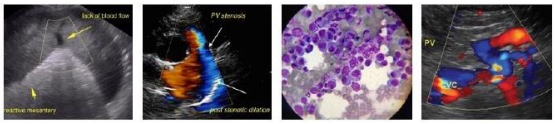

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Cardiac neoplasia is identified associated with the heart base. The most likely tumor type given this location and the breed is a chemodectoma; however, other more malignant differentials cannot be ruled out. Chemodectomas are often incidental findings only causing clinical signs if blood flow is obstructed, pericardial effusion occurs, or a metastatic lesion causing systemic issues. It is difficult to definitively evaluate the mass peripherally (i.e., cannot rule out peripheral obstruction of flow through distal PA's) and a CT may be helpful to screen for true extent. The overall cardiac dimensions and function appear normal.

The prognosis with cardiac chemodectomas is typically fair, although a patient with development of syncope is certainly concerning. The limiting factor is often hemorrhage into the pericardium, impingement of cardiac blood flow secondary to tumor growth, or metastasis to the thorax or abdomen. **Chemotherapy and/or radiation therapy can also be discussed with an Oncologist.**

In addition, and of equal importance, there is a significant arrythmia appreciated with ventricular bigeminy. This indicates that every other beat is a VPC and may suggest more malignant arrythmias that are not appreciated here. These are likely developing secondary to the tumor, and should be monitored closely going forward.

Given the totality of findings, the reported episodes are likely cardiogenic in origin. First would be an arrhythmic cause with periods of brief VT developing (not captured here). Additionally or alternatively, the chemodectoma is of great concern and may be causing peripheral compression, which could lead to exertional hypoxia. **In total, advanced evaluation is recommended in this case, as peripheral congestion by the mass would be the most concerning issue at this time. Highly recommend a referral to a multi-specialty center for advanced thoracic imaging, such as a CT scan and evaluation of syncope.** Additionally, Sotalol and Pimobendan are recommended given the degree of arrythmia and reported clinical signs.

Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes. Activity restriction is recommended. Sudden death is a possibility in any arrhythmic patient even on medications, and the owner should be alerted to this.

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. Prognosis is guarded long-term.

Anesthesia is not advised at this time.

PLAN

Consider referral in this complicated case for advanced thoracic imaging and evaluation. If declined, institute Pimobendan 0.3mg/kg PO q12h. Institute Sotalol 1-2mg/kg PO q12h. Full systemic screening is recommended to assess for metastasis. Consultation with an Oncologist may be beneficial.

Recheck ECG in 1-2 weeks, then every 3-4 months lifelong to determine if additional anti-arrhythmic therapy is needed.

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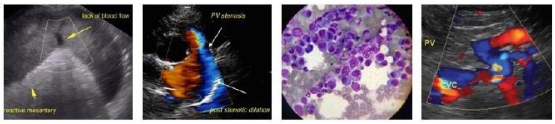

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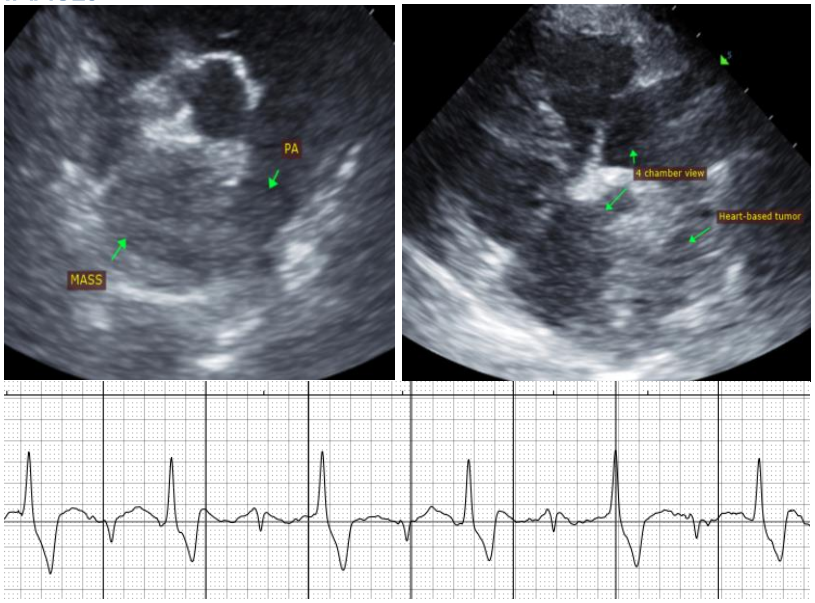
If referral is declined a recheck echocardiogram and ECG are recommended in 4-6 months to assess rate of tumor growth.

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.

Maggie Machen Lamy, DVM
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com