IMAGING PERFORMED BY

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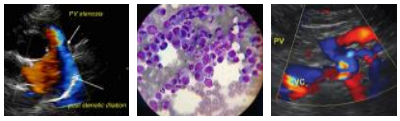

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PATIENT
Alfred Voight

SPECIES
Canine

BREED
Boxer mix

SEX
Male Neutered

AGE
10.23.13

WEIGHT
90lbs

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

HOSPITAL NAME
Pet Wellness Center

REFERRING VET
Dr. Twardus

INVOICE
30121

DATE
4.7.23

PRESENTING CLINICAL SIGNS

History: Presented for excessive panting.
-Pertinent abnormal PE/Chem/CBC/UA Results: Possible heart-based tumor and possible mets.
-Current medications: Carprofen BID, Gabapentin BID and Tramadol BID
-Sedation used: Not required to complete full diagnostic ultrasound.
-Pertinent previous ultrasound results: No previous.
-STAT: Declined at this time.
-Imaging performed by: Stephanie Warga RDCS, RVT.

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

Normal cardiac silhouette. Increased soft tissue opacity in the region of the heart base. No obvious evidence of CHF.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Uniform echogenicity mass associated with the heart base; 4.0 x 5.4cm in best viewed cross section. The mass is well encapsulated and is overlying the pulmonary artery/LA. No obvious obstruction to blood flow or imposition on cardiac chambers is seen at this time with normal pulmonic outflow velocities; however, the location is highly concerning for early compression. No mitral regurgitation; mildly thickened mitral valve with no prolapse. LV function is adequate. Left atrium is normal. LV is normal in diameter. Mildly thickened TV with trace TR. Normal velocity. The pulmonic and aortic valves are normal in appearance. Normal LVOT and RVOT velocity. Trace AI. No PI. 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	NA	2.7	NM	1.3	34	63	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	111	1.5	0.9	40.8	3.1	3.9	2.6

*Normal chamber parameters expressed as a mean value (SD)

BODY WEIGHT DEPENDENT PARAMETERS				
**Note: All measurements based upon multi-modal images and methods. An average value is reported.*	3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
	5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
	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 dimensions and function are identified in this study. There is however, cardiac neoplasia 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 as is suspected to be the case here, 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 is recommended to screen for true extent of the lesion.

The prognosis with cardiac chemodectomas is fair. 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.

Given these findings**, it is unclear if the tumor is causing clinical issues at this time, as excessive panting is nonspecific and there is no obvious fluid accumulation.** Early PA compression is certainty possible and must be monitored going forward. Full systemic evaluation is advised including abdominal ultrasound to screen for metastatic lesions, hepatic congestion, etc. That being said, there is certainly risk for the tumor to increase in dimension and lead to right-sided congestion (ascites/effusions) with increasing pulmonary pressures and syncope with exertion. Monitor for abdominal distention, syncope and/or respiratory changes.

No cardiac medications are indicated at this time. Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

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.

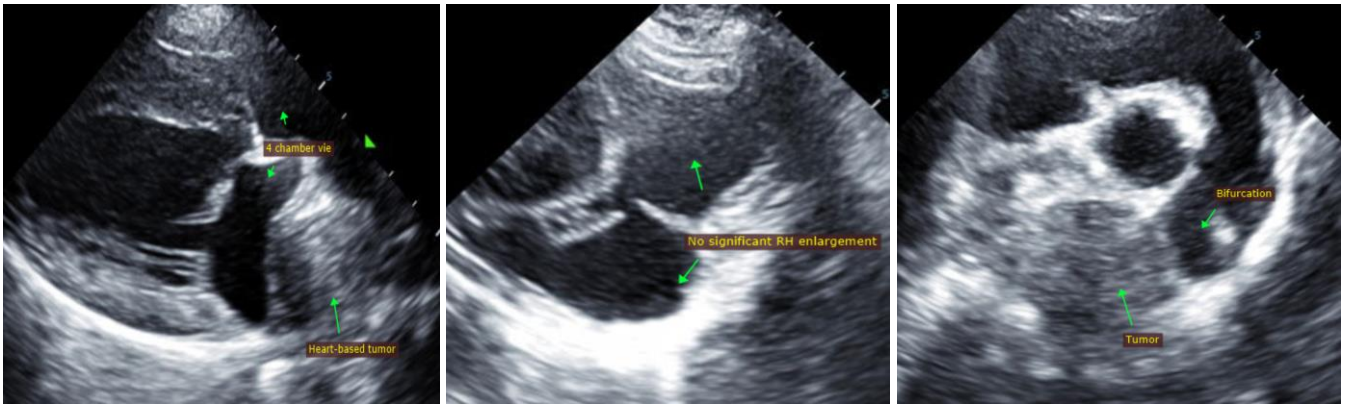
Anesthetic risk is considered mild if needed. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

PLAN

Further systemic evaluation is advised. Consider further evaluation of tumor extent through thoracic CT as discussed.

Recheck tumor size via echocardiography in 3-4 months, sooner if clinical signs arise.

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
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