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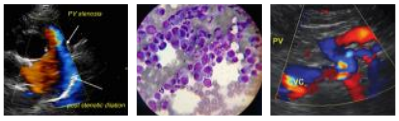

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**PATIENT**
Eddie Miller

**SPECIES**
Canine

**BREED**
Chihuahua

**SEX**
Male Neutered

**AGE**
9.15.10

**WEIGHT**
9lbs

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

**HOSPITAL NAME**
Everhart Veterinary Hospital

**REFERRING VET**
Dr. Notarangelo

**INVOICE**
24053

**DATE**
5.5.22

## PRESENTING CLINICAL SIGNS

History: History of chronic skin ulceration. Recently biopsied to reveal adenocarcinoma. Staging x-rays showed suspected heart-based mass. No evidence of other chest metastasis. Planned bicavitary for further staging and to assess possible heart-based tumor. No murmur.
-Pertinent abnormal PE/Chem/CBC/UA Results: adenocarcinoma biopsy.
-Current medications: None.
-Blood pressure: 171mmHg & 173mmHg.
-Sedation used: Not required to complete full diagnostic ultrasound.
-Pertinent previous ultrasound results: No previous.
-STAT: Not requested
-Imaging performed by: Andi Parkinson, RDMS.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Massive heterogenous echogenicity mass likely associated with the heart base, although exact origin cannot be determined. 5.2 x 2.4cm in best viewed cross section with extensive infiltration. The mass is poorly encapsulated, although appears to be overlying the pulmonary artery/LA. Infiltration into the right atrium is suspected, although difficult to confirm. Mild right heart enlargement. Trace mitral regurgitation thickened mitral valve with no prolapse. LV dimension and function is normal. Left atrium is mildly dilated. LV is normal in diameter. Mildly thickened TV with mild TR. 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 | 5.1 | NM | NM | 1.3 | 34 | 65 | 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 | NM | 1.1 | 0.9 | 4.1 | 1.6 | 2.1 | 1.3 |
| *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** **Note: All measurements based upon multi-modal images and methods. An average value is reported.* | | | | 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

Chronic degenerative valve disease is identified with trace mitral and tricuspid regurgitation. Mild right heart enlargement is seen, which is likely secondary to the mass. No additional issues dysfunction are noted in this study.

Of greater concern, there is also cardiac neoplasia associated with the heart base. The most likely tumor type given the size and echogenicity is a chemodectoma; however, other more malignant differentials, such as hemangiosarcoma are certainly not ruled out. The mass is so large an origin cannot be determined in a 2D study. 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 strongly recommended to screen for true extent of the lesion and possible treatment options.**

The prognosis with this size mass is guarded to poor regardless of tumor type. 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. Great concern for compression/infiltration in this case, which may lead to congestive signs. Chemotherapy and/or radiation therapy can also be discussed with an Oncologist.

Despite these findings, the patient is largely asymptomatic, which is certainly encouraging; however, any further growth/infiltration of the tumor may lead to congestive signs. Monitor for development of arrythmias, effusions and/or collapse going forward.

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

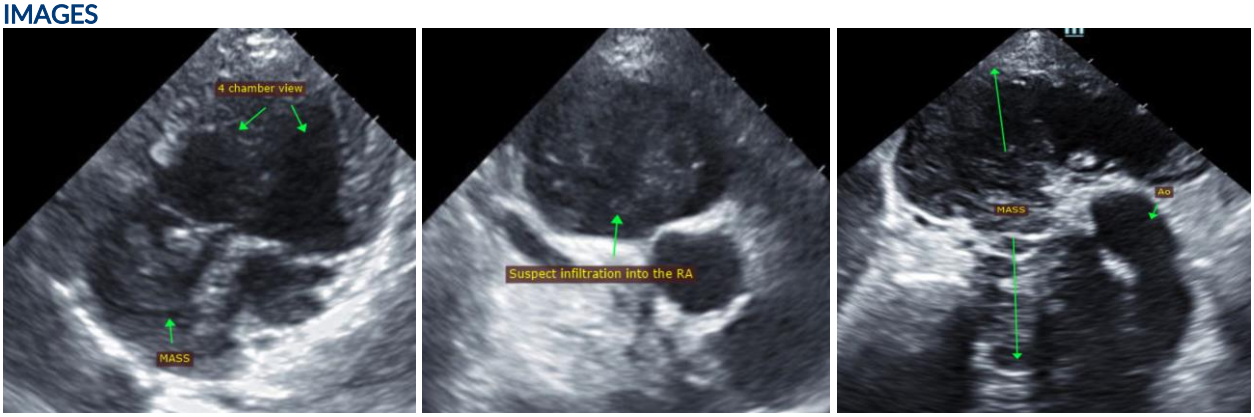
Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit. Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

Anesthesia should be avoided at this time.

## PLAN

Highly recommend referral to further evaluate tumor extent and possible treatment options. If this is declined, recheck echocardiography in 6 months, or if symptoms develop.

## 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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