



## PATIENT

Bailey Tiberian

## SPECIES

Canine

## BREED

Golden Retriever

## SEX

Female Spayed

## AGE

9 years

## WEIGHT

87lbs

## INTERPRETED BY

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

## IMAGING PERFORMED BY

Andrea Nicastro

## HOSPITAL NAME

Park West Animal  
Associates

## REFERRING VET

Dr. Brogie

## INVOICE

26669

## DATE

10/3/22

## PRESENTING CLINICAL SIGNS

History: Patient presented for vomiting, followed by weakness/collapse. Was seen last week for hyporexia and diagnosed with back pain. Treated with pain medications: Rimadyl, Gabapentin and methocarbamol and improved. Was feeling very good per O. Meds d/c this weekend. tFAST - moderate pericardial effusion aFAST - scant abdominal effusion.

-Abnormal PE/Chem/CBC/UA Results: CBC/chem - unremarkable (HCT 40%) Pericardial effusion - PCV 40%, TS 6.2.

-Radiographs: Globoid cardiac silhouette

-Abdominal radiographs: Poor serosal detail cranial abdomen, possible summation, possible sublumbar lymphadenopathy.

-Sedated with Torb; scan performed post-pericardiocentesis; abdominal scan - one small hypoechoic splenic nodule, mild pancreatic edema, small amount of ascites; I didn't see an obvious RA mass

Patient received 0.5mL torb IV Pericardiocentesis - removed 10mL frank blood, vitals returned to normal. Ventricular tachycardia during procedure, responded to 2mg/kg lidocaine IV bolus, recurred after 10 minutes but responded to second 2mg/kg bolus.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild thickening of the anterior leaflet of the mitral valve with no obvious prolapse into the left atrial lumen. Mild mitral regurgitation with normal left atrial dimension. Normal MR velocity. Normal LV diameter with adequate myocardial function. Normal LV wall thickness. Tricuspid valve appears mildly thickened; mild TR; normal velocity. No obvious tumor in the RA or right auricle. Suspicious hypoechoic lesion in the AV groove; however, the finding is inconsistent. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic outflow velocities; laminar flow. Scant pericardial effusion. No pleural effusion seen. Scant ascites.

## 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	5.0	2.1	NM	1.3	31	60	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	1.7	0.8	39.5	3.1	4.9	3.4
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
<b>BODY WEIGHT DEPENDENT PARAMETERS</b>				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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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The 2 most common causes of hemorrhagic pericardial effusion in an older large breed dog with mild structural disease are idiopathic and neoplastic. Less commonly, pericarditis (an inflammatory condition) or a bleeding disorder should also be considered. Idiopathic by definition means that a cause cannot be found. If diagnosed (a rule out diagnosis), the long-term prognosis with idiopathic effusion has the potential to be good.

Regarding neoplasia, the most common types of cardiac cancer-causing pericardial effusion include hemangiosarcoma (HSA), chemodectoma, or mesothelioma. The prognosis varies a great deal depending on the underlying type of cancer. In a Rottweiler, HSA should be considered above all other differentials, as this is the most common cause. Cardiac HSA carries a poor to grave prognosis, with a mean survival time of 3-6 months.

Based on the findings of today's echocardiogram, there is not definitive evidence of a clear tumor. The right atrium and ventricle are clear, however there is a hypoechoic region in the right AV groove which is highly suspicious (rule out tumor versus normal soft tissue). Additionally, ultrasound is quite insensitive for small masses (particularly in the absence of active effusion), and it is important to note that there may be a definitive mass not identified here. A reevaluation is recommended in the next 1-2 months, as often small masses will become apparent in that period of time. Even without definitive identification, I am highly suspicious for neoplasia in this case given the signalment. Prognosis is guarded, and any dog with effusion carries risk for development of malignant arrhythmias and sudden death at home.

Further evaluation may also help shed light on a definitive diagnosis. Submission of the effusion for cytology can yield a diagnosis in rare cases, and often the result is inconclusive. If the abdominal ultrasound shows any splenic lesions, HSA is highly likely to be the cardiac diagnosis. Advanced imaging with an attending Cardiologist can be considered, as well as discussion of a thoracic CT/MR to screen the external surface of the heart.

Regardless of underlying cause, it is impossible to predict if and when pericardial effusion will recur/increase and potentially cause clinical signs. Some patients with idiopathic effusion need to be tapped between 1 and 3 times then never again. Other patients may experience frequent recurrence with either HSA or idiopathic disease. If the effusion reoccurs frequently and no malignancy remains identified, a surgical procedure called a pericardectomy can be discussed. Finally, dogs with effusion are at risk for malignant ventricular arrhythmias, and a baseline ECG is recommended. Sudden death is always a possibility in these cases unfortunately.

No cardiac medications are clearly indicated at this time. Over the counter herbal supplement Yunnan Baiyao (aka Yunnan Paiyao) may help decrease risk of bleeding, however true benefit is speculative (1 capsule PO BID). Please monitor at home for signs of worsening pericardial effusion including pale gums, difficulty breathing, lethargy/collapse, exercise intolerance, abdominal distention, vomiting, and/or inappetance. If you notice any of these symptoms, patient should be evaluated immediately by a veterinarian.

Recommend a recheck echocardiogram in 1 month to reassess the surface of the heart and screen for recurrent effusion, sooner if any recurrence of clinical signs. **If acute PCE occurs again, if possible, recommend imaging prior to removal for increased sensitivity.**



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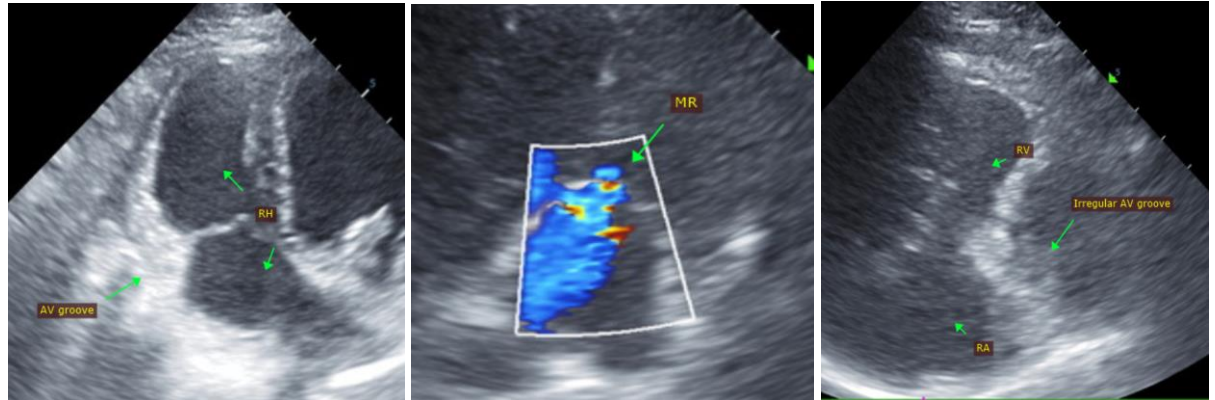
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**IMAGES**



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