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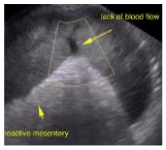
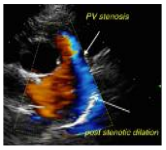
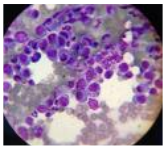
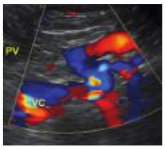
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™

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1-800-838-4268 info@sonopath.com

PATIENT
Welby Haenel

SPECIES
Canine

BREED
Golden Retriever Mix

SEX
Male Neutered

AGE
14 years

WEIGHT
61.7lbs

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

IMAGING PERFORMED BY
Andrea Nicastro

HOSPITAL NAME
Veterinray Specialty Care Blue Pearl

REFERRING VET
Dr. Graham

INVOICE
23883

DATE
4/26/22

PRESENTING CLINICAL SIGNS

History: Presented for restlessness and labored breathing. History of CHF (1/2021). Diagnosed with severe MR and mild TR with pulmonary edema. No evidence of CHF on chest radiographs 2-3 weeks ago. Grade 3/6 heart murmur.
-Current medications: Placed on Lasix 50mg BID (3.6mg/kg per day), Benazepril 10mg BID and Pimobendan 7.5mg BID.
-Abnormal PE/Chem/CBC/UA Results: BUN 33, Creat 1.9, ALT 595, ALP 292, CBC- wnl, USG > 1.050.
-AUS results: Hepatopathy, renal changes

ELECTROCARDIOGRAPHIC FINDINGS

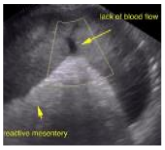
A six lead ECG is available at 50mm/s; 10mm/mV. The average heart rate is 90bpm (range 40-120bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is normal. Occasional isolated VPCs are identified. A single APC is noted with a suspect atrial couplet.
ECG diagnosis: Suspect respiratory sinus arrythmia with atrial and ventricular premature beats. A single couplet identified.

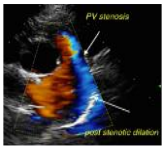
ECHOCARDIOGRAM FINDINGS

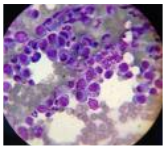
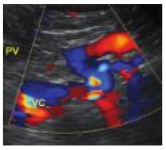
2D, m-mode, color flow and doppler imaging is available. The mitral valve is thickened with no prolapse into the left atrial lumen. There is moderate to severe eccentric mitral regurgitation present. There is moderate severe left atrial enlargement. There is moderate left ventricular dilation. Left ventricular systolic function is adequate for this breed. Mild right atrial and ventricular dilation (subjective). Mild thickening of the tricuspid valve with mild TR. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. The main pulmonary artery is normal in diameter. The pulmonic valve is normal in appearance. No pericardial/pleural effusion or cardiac masses are seen.

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	NM	NM	1.9	27	50	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	NM	NM	28.0	3.6	5.9	4.3
*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.* Adapted from June Boon, Veterinary Echocardiography, 1998				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)





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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	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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing moderate to severe mitral and mild tricuspid regurgitation. The LA and LV are significantly dilated indicating risk for clinical signs going forward. No additional concurrent issues such as systolic dysfunction are documented.

Given a history of congestive heart failure, full lifelong cardiac support should be continued as prescribed, with addition of Spironolactone. This is for potential long-term benefit. Continued assessment of progression in the future will help predict long term outcome, however, prognosis is typically poor with an average survival time of <1 year once CHF is diagnosed. This patient has already outdone the average, which is a good sign. Unfortunately, the patient will always be at risk for recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

The ECG does show a low resting heart rate with occasional isolated APCs and VPCS. A single atrial couplet is noted (likely, ventricular origin is not entirely ruled out); however, the remainder of the tracing is relatively unremarkable. Given what is seen here, these abnormalities are likely developing secondary to atrial dilation in a stressed patient with systemic inflammation. The low resting heart rate may be due to sedation (depending on patient response to torb) or reflect high vagal tone, given reported liver disease. No treatment is recommended for what is seen here at this time. My suspicion is these findings are secondary rather than being a primary issue, given the nonspecific clinical signs. A follow up ECG and/or holter monitor may be warranted, once systemic illness has resolved.

Given what is seen here, restlessness is unlikely to be cardiogenic in origin with relatively stable disease. CHF should be ruled out through chest radiographs if patients respiratory patten is concerning; however, what is seen here is similar to what is described in the prior study.

Close monitoring for development of associated clinical signs (development of a cough, labored breathing, exercise intolerance or worsening collapse episodes) is recommended. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home.

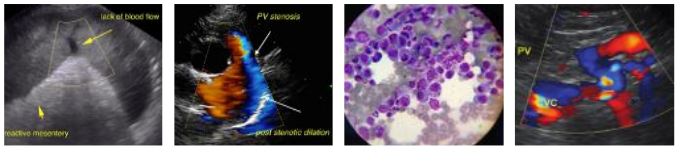
Elective anesthesia is not advised, given risk for complication.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit.

PLAN

A screening BP and CXR are recommended. Continue Pimobendan, Lasix and ACE-I as prescribed. Institute spironolactone 1-2mg/kg PO q12h.

Monitor renal values and BP in 1-2 weeks, then every 3-4 months lifelong to ensure tolerance of medications. If the arrythmia persists despite resolution of systemic signs, a holter monitor may be warranted.



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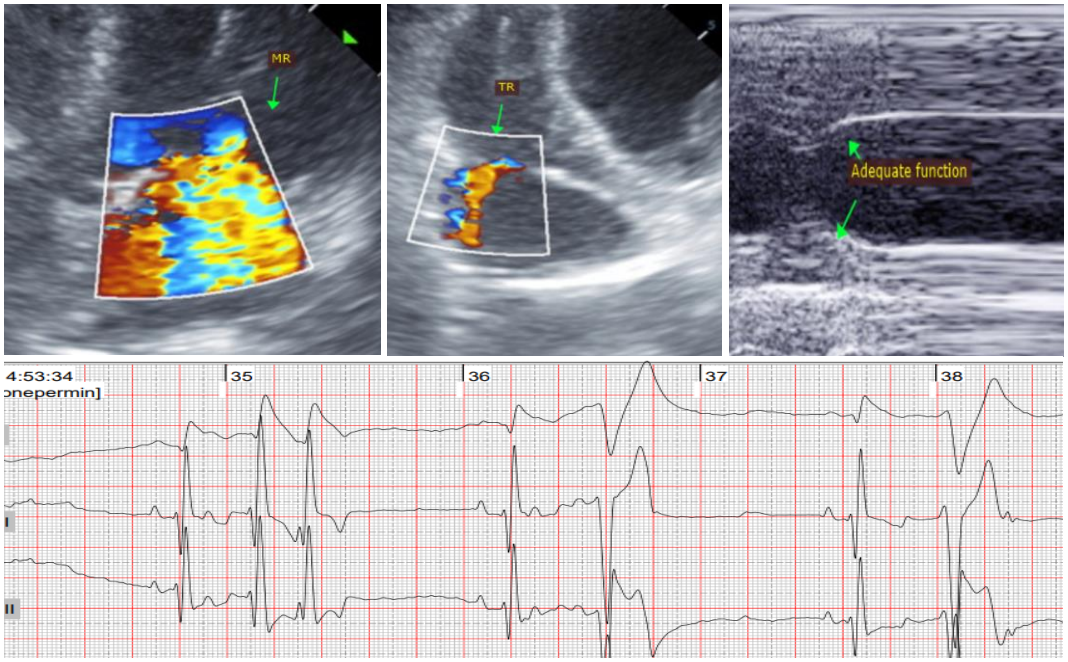
A recheck echocardiogram is recommended in 6 months to screen for progression, sooner if clinical signs arise.

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
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com