



## PATIENT

Bella Lugo

## SPECIES

Canine

## BREED

Chihuahua

## SEX

Female

## AGE

9 years

## WEIGHT

7.7lbs

## INTERPRETED BY

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

## IMAGING PERFORMED BY

G. Ferrer, DVM

## HOSPITAL NAME

Paseos Veterinary  
Center

## REFERRING VET

Dr. Martes

## INVOICE

20903

## DATE

9/7/21

## PRESENTING CLINICAL SIGNS

History: Patient was presented on 9/6 for evaluation of acute onset of dyspnea/tachypnea. Patient was started on furosemide, enalapril and vetmedin around March 2020 at another veterinary clinic. -She is currently on furosemide 20mg 1/2 tablet BID, vetmedin 2.5mg 1/2 tablet BID and enalapril 5mg 1/2 tablet BID. She is fed Royal Canin Early Cardiac diet; diet has helped with weight loss. Owners were unable to give medications the day before presentation. During the morning of 9/6, owners noticed she was dyspneic and was falling to the side. Patient stayed during the day at the clinic and furosemide was administered IV at 10am (0.3ml IV - 4mg/kg), 11:25am (0.15ml IV - 2mg/kg) and 2:20 pm (0.15ml IV - 2mg/kg). Tachypnea improved slightly to 62bpm. Patient was referred to 24/7 clinic for overnight observation and two additional doses of furosemide were administered. -Abnormal PE/Chem/CBC/UA Results: PE: periodontal disease (calculus accumulation and gingivitis), crackles auscultated on right thorax, tachypnea (96 bpm) and dyspnea, grade V/VI heart murmur. CBC: mild eosinopenia and monocytosis. Chemistry: azotemia (BUN 53), hyperphosphatemia. -Radiographs: Pleural lines between right cranial & middle, and right middle-caudal lung lobes. increased pulmonary opacity at caudo-dorsal thorax.

## ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with marked prolapse into the left atrial lumen. Severe eccentric mitral regurgitation with severe left atrial dilatation. Normal MR velocity. Mild LV dilation with hyperdynamic myocardial function. The tricuspid valve appears normal, with mild TR. Normal velocity. Mild right atrial and ventricular enlargement. The pulmonic and aortic valves are normal in morphology and mobility. Normal aortic and pulmonic outflow velocities with laminar flow. No AI/PI. No pericardial or pleural effusion noted. No obvious cardiac masses.

## 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	4.5	2.3	NM	2.4	64	92	0.23
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	0.94	1.0	3.5	2.4	3.1	1.1
*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



**PATIENT**

Bella Lugo

**SPECIES**

Canine

**BREED**

Chihuahua

**SEX**

Female

**AGE**

9 years

**WEIGHT**

7.7lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

G. Ferrer, DVM

**HOSPITAL NAME**

Paseos Veterinary  
Center

**REFERRING VET**

Dr. Martes

**INVOICE**

20903

**DATE**

9/7/21

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The cause of the murmur is chronic degenerative valve disease causing severe mitral and mild tricuspid regurgitation. Severe left atrial enlargement indicates the risk for spontaneous congestive heart failure is elevated. Early pulmonary hypertension is suspected, which is likely secondary to chronic LA pressure elevation. No additional issues are identified.

In light of the clinical signs, chest radiograph findings and severity of disease on echocardiogram, the diagnosis of congestive heart failure is supported, and medications are warranted lifelong as below. Collapse in this patient was likely due to early CHF; however, follow up is advised should the episodes persist in the future. Monitoring of sleeping respiratory rates will be paramount to screen for congestive heart failure at home. Cough suppression to improve QOL can also be considered (hydrocodone, 0.2-0.4mg/kg up to q4-6h PRN) for any residual mechanical cough in the face of normal sleeping respiratory rates. The average survival time of canine patients with active pulmonary edema is 8-9 months on medications, however they generally are able to maintain a good quality of life for that period. Patient will always be at risk for recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit. Monitor for acute progression of the cough, labored breathing, exercise intolerance or collapse episodes in the future.

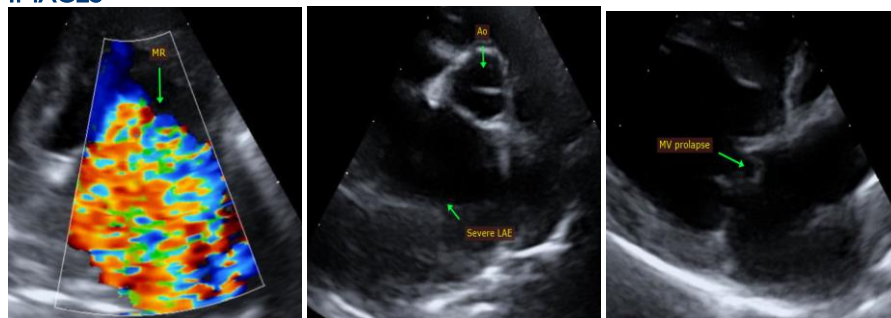
**PLAN**

Institute Pimobendan 0.3mg/kg PO q12h. Institute Furosemide 1-2mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h.

Monitor SRRs at home. Monitor renal values and BP in 10-14 days, then every 3-4 months while on diuretics. If doing well and BP >130mmHg, institute ACEI 0.5mg/kg PO q12h. Consider hydrocodone if needed for QOL.

Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of associated clinical signs occurs in the interim.

**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