

**PATIENT**

Coco Piovanetti

**SPECIES**

Canine

**BREED**

Schnauzer

**SEX**

FS

**AGE**

11y

**WEIGHT**

17.6lbs

**INTERPRETED BY**

Maggie Machen  
Lamy, DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Dr. Ferrer, DVM

**HOSPITAL NAME**

Paseos Veterinary  
Center

**REFERRING VET**

Dr. Ferrer

**INVOICE**

29841

**DATE**

3/27/23

**PRESENTING CLINICAL SIGNS**

History: Patient presented today for evaluation of respiratory distress that developed 3 days ago. Pt had abdominal component breathing and noticed a heart murmur grade II-III/VI on the right side and left side grade I-II/VI and crackles. Radiographs show pulmonary edema and cardiomegaly. HR: 140 RR: 60. No up today on preventions. Started on Furosemide inj initially at 4mg/kg IV as pt was in distress and gave pimobendan 2.5mg : 1 and 1/2 given today while pending final recommendation. Abnormal PE/Chem/CBC/UA Results: Pe: grade 1-2 /6 left and 2-3/6 right side systolic HMs Some clear nasal discharge when coughing. CBC: WNL CHEM: ALKP: 340 U/L (23 - 212) Radiographs attached as supporting evidence BP: 3-27-23 1. 136/69 (85 mean) 2.187/97 (127 mean) 3.223/100 (141 mean)

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with minimal prolapse into the left atrial lumen. Severe eccentric mitral regurgitation with severe left atrial dilation. Normal MR velocity. Severe LV dilation with hyperdynamic myocardial function. The tricuspid valve appears normal, with mild TR. Normal velocity. Mild right heart and MPA 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. Bradycardia throughout.

**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	2.2	NM	2.8	52	84	0.25
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	68	1.0	0.72	8.0	3.3	4.0	1.9
*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> <i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>  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				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)

**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



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congestive heart failure is elevated. Some degree of pulmonary hypertension is suspected, which is likely secondary to chronic LA pressure elevation. No additional structural issues are identified. **It is worth noting that the patient is quite bradycardic for a stressed dog in crisis. If this is independent of sedation, consider an atropine challenge. This signalment is highly predisposed to sinus node dysfunction, which as a concurrent issue can lead to a lack of response to therapy.**

In light of the clinical signs and severity of disease on echocardiogram, the diagnosis of congestive heart failure is supported and medications are warranted lifelong as below. Chest radiographs are always recommended to confirm the diagnosis. 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.

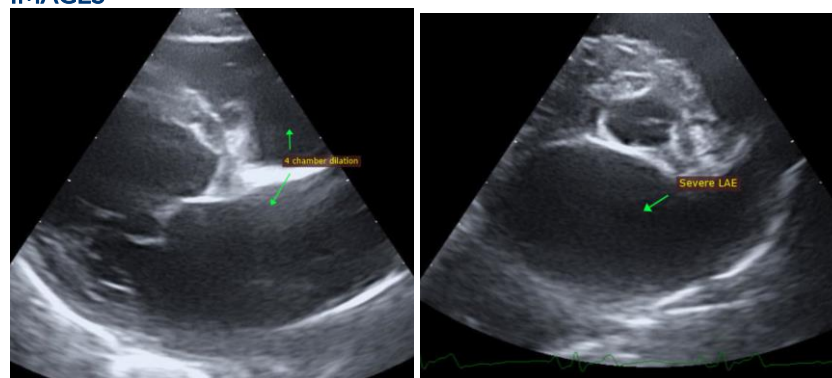
Omega fatty acid supplementation and mild salt restriction may also be of some long term benefit. Monitor for acute progression of the cough, labored breathing, exercise intolerance or collapse episodes in the future.

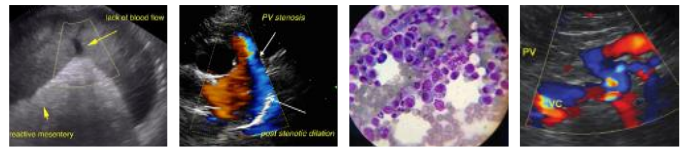
Plan: Institute Pimobendan 0.3mg/kg PO q12h. Institute Furosemide 1-2mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h. Screening ECG for further evaluation of bradycardia with an atropine challenge if indicated.

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





**PATIENT**

Coco Piovanetti

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.

**SPECIES**

Canine

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

**BREED**

Schnauzer

Maggie Machen Lamy, DVM  
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)  
info@sonopath.com

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