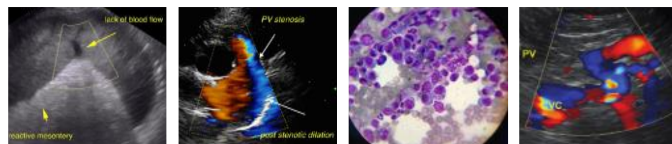
SonoPath
Clinical Sonography & Telecytology

EDUCATIONAL TELECONSULTATION SERVICES™



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

PATIENT
Tama Hoffman

SPECIES
Canine

BREED
Pomeranian

SEX
FS

AGE
11y

WEIGHT
13.10lbs

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

IMAGING PERFORMED BY
Dana Alterman, RDCS, LVT

HOSPITAL NAME
Eubank Animal Clinic

REFERRING VET
Dr. Garb

INVOICE
31886

DATE
7/17/23

PRESENTING CLINICAL SIGNS

History: Coughing for one week.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. No mitral regurgitation with normal to small left atrial dimension. Decreased LV diameter with evidence of pseudohypertrophy. The tricuspid valve appears normal with no tricuspid regurgitation. No right heart enlargement appreciated. RA collapse consistent with tamponade. The pulmonic and aortic valves are normal in morphology and mobility. Low normal pulmonic and aortic outflow velocities with laminar flow. No obvious aortic or pulmonic insufficiency. Moderate to large volume pericardial and pleural effusion. No obvious cardiac masses.

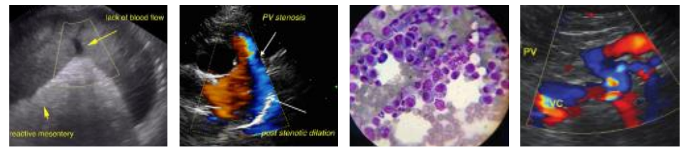
CARDIAC CHART

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	NA	NA	NM	1.1	42	76	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	0.7	0.5	5.9	1.2	1.9	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 **Note: All measurements based upon multi-modal images and methods. An average value is reported.* 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 clinical signs is moderate to large volume pericardial effusion of unknown origin. The cardiac dimensions and function are largely normal, without structural disease. There is evidence of LV pseudohypertrophy secondary to volume depletion and **fluid resuscitation is advised.** No obvious cardiac or extra-cardiac tumors are identified; however, it is important to note that small masses are easily missed, and a thoracic CT scan or MRI would be necessary to fully evaluate the surface of the heart.

Given these findings, no clear cause of the effusion is identified. The next step in this case would be an **immediate diagnostic and therapeutic pericardiocentesis** to determine the type of effusion



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present and aleviate clinical signs. There is evidence of tamponade with secondary pleural effusion and this patient may be at risk for associated clinical signs in the near future (collapse, ascites, shock, etc.). A hemorrhagic effusion would suggest a small tumor, idiopathic issue or bleeding disorder, versus a transudate may support neoplasia, etc. Submitting the fluid for cytology and potentially a culture may also be useful, as in an atypical signalment there is no clear answer at this time. Given the highly unusual signalment in this case (i.e., Pomeranians rarely get pericardial effusion), referral to a multispecialty center should also be considered. Pending results of the tap, further systemic evaluation/treatment may become indicated.

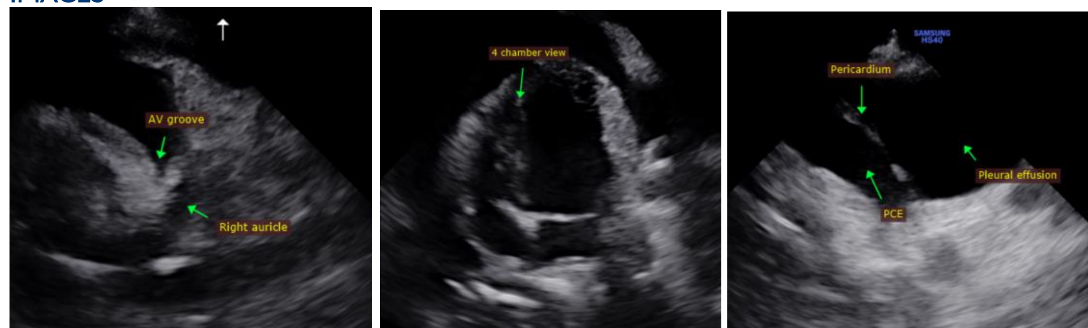
Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

PLAN

Consider referral as discussed. Immediate pericardiocentesis is highly recommended for both diagnostic and therapeutic purposes, with submission for cytology/culture. Full systemic evaluation may be indicated. Consider hospitalization, fluid therapy, CXR, etc.

Recheck based upon additional diagnostic results.

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. 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