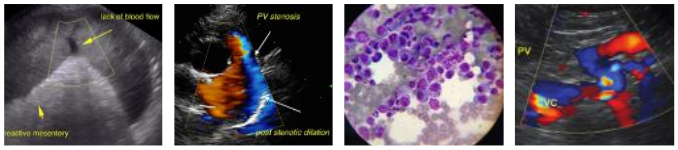
SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™



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

PATIENT
Bento Sarff

SPECIES
Canine

BREED
Portuguese Water Dog

SEX
Male Neutered

AGE
9 years

WEIGHT
75lbs

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

IMAGING PERFORMED BY
Jennifer Todd, DVM

HOSPITAL NAME
Lambs Gap Animal Hospital

REFERRING VET
Dr. Todd

INVOICE
31963

DATE
7/20/23

PRESENTING CLINICAL SIGNS

History: Presented on 7/7/23 for lethargy, decreased appetite, refusing his walks. Bloodwork showed mild, regenerative anemia, mild neutrophilia/monocytosis/basophilia, mild ALP increase (411), mildly decreased sodium and chloride. Snap cPL in clinic was normal. BP: 148, 149, 146mmHg.
-Radiographs: Showed cardiomegaly. No CHF. Ascites.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

A single lead ECG is available; 25mm/s, 10mm/mV. The average heart rate is 100bpm (range 60-125bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with respiratory variation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Small volume pericardial effusion without obvious tamponade. Large mixed echogenicity mass likely stemming from the aortic root, although the size of the mass extending around the cardiac silhouette makes visualizing an origin difficult; 6.5 x 4.8cm in best viewed cross section. Mild right heart enlargement. The remainder of the cardiac dimensions appear normal without significant valvular regurgitation. The LV function is adequate. The mass can be seen compressing the main pulmonary artery with mildly increased flow through the region. No pleural effusion is visualized.

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	1.0	1.3	36	70	0.3
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	1.3	2.5	34.0	2.1	3.3	2.1
*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

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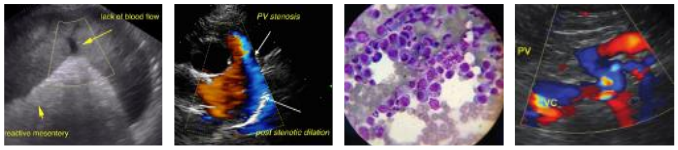

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Cardiac neoplasia is present with development of pericardial effusion. The mass is likely associated with the aortic root, although this is difficult to confirm given the size. An association with the right heart is also possible. This size mass is more consistent with a chemodectoma; however, hemangiosarcoma would be an alternative and viable differential. Of concern, the mass is large enough that early compression of the MPA is visualized and mild right heart enlargement has developed, putting the patient at risk for congestive signs in the future. The remainder of the cardiac structure and function is unremarkable. The ECG is unremarkable with a normal sinus rhythm.

The amount of pericardial effusion seen today is considered mild without obvious tamponade. Two broad possibilities for the effusion's origin could be considered. First would be a tumor bleed has occurred, leading to hemorrhage into the pericardial space. The second explanation would be early right-sided congestion is developing secondary to tumor compression. Highly recommend further evaluation in this case given the unusual findings. This includes referral for a diagnostic pericardiocentesis, advanced imaging/CT scan, etc. A pericardiocentesis is typically unnecessary without tamponade; however, a tap would certainly differentiate compression versus hemorrhage (i.e., blood versus transudate). If able to be performed at your facility, this may be beneficial from a diagnostic standpoint; however, this does carry risk without significant effusion.

Effusion aside, given the size of the mass and location, further tumor growth may lead to congestive signs such as collapse, ascites or additional effusions. This patient is at high risk for arrhythmias and/or sudden death and a baseline ECG is recommended.

While the prognosis with chemodectomas is typically fair (MST of 1-2 years), the finding of effusion and early congestion will dramatically limit outcome. HSA has a much more grave outlook, with a MST of 2-3 months. Regardless of definitive diagnosis, this case carries a poor to grave prognosis prognosis, given the size of the mass at time of diagnosis and development of effusion regardless of origin. Other sequelae include impingement of cardiac blood flow secondary to tumor growth, or metastasis to the thorax or abdomen. Full systemic evaluation may be useful to screen for metastatic lesions. Finally, consultation with an Oncologist or Internist may be indicated to explore Chemotherapy and/or radiation treatment options.

Patient will always be at risk for recurrent pericardial bleeds, development of arrhythmias and/or sudden death going forward.

PLAN

Highly recommend referral for advanced imaging, diagnostic pericardiocentesis, etc. to determine the best course of action. If declined, consider attempt supportive care through cardiac supportive medications as follows to assess response: administer Pimobendan 0.3mg/kg PO q12h, administer low-dose Lasix 1mg/kg PO q12h, administer Spironolactone 1-2mg/kg PO q12h.

Reassess clinical status and effusion in 5-7 days, sooner if any decline in the interim. A renal panel can be considered at this visit.

Reassess tumor dimensions in 1-2 months, sooner if clinical signs arise.

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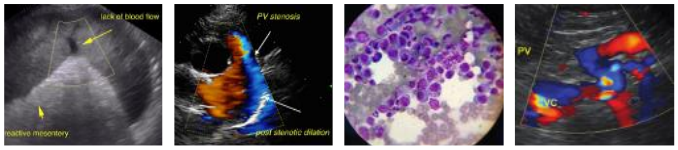

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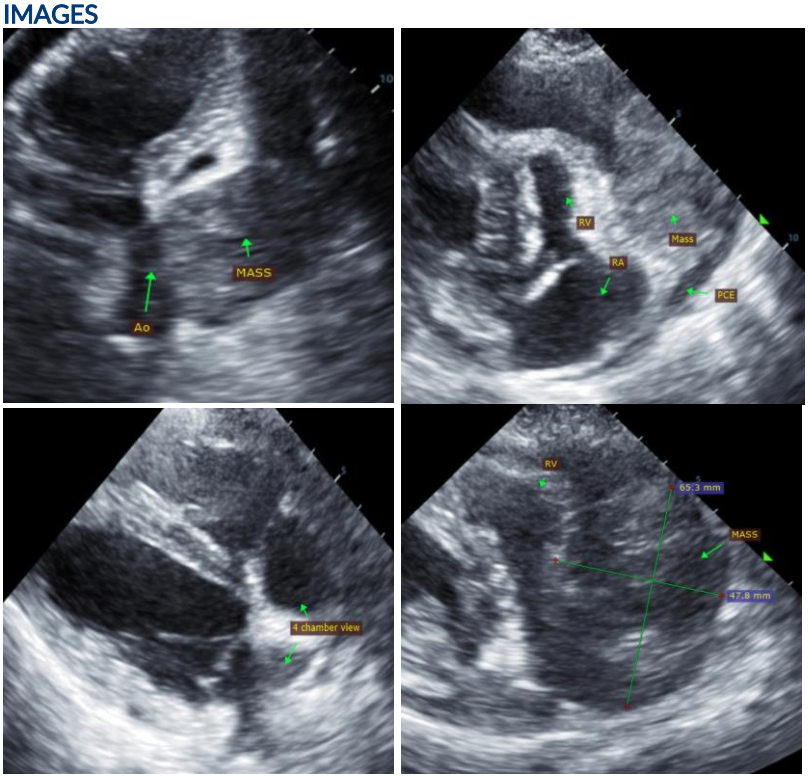
IMAGES



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