SonoPath
Clinical Sonography & Telecytology
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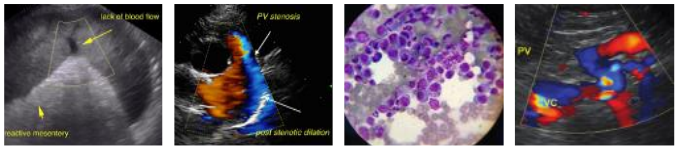


SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT
Crash Bieber

SPECIES
Canine

BREED
German Shepherd

SEX
Male Neutered

AGE
7 years

WEIGHT
92.6lbs

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

IMAGING PERFORMED BY
Kelly Romero, DVM

HOSPITAL NAME
FC Veterinary Emergency Hospital

REFERRING VET
Dr. Romero

INVOICE
21460

DATE
10/11/21

PRESENTING CLINICAL SIGNS

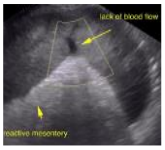
History: Had been lethargic for a day w/ decreased appetite and one episode of V. Would not get up by the time owner presented for exam. History allergic dermatitis.
-Abnormal PE/Chem/CBC/UA Results: Initial PE - abdominal fluid wave. Weak femoral pulses and heart difficult to auscultate. Blood work - mild inc. in PT, marked inc. APTT, marked inc. in lactate (10), initial inc. K (6) and decreased Na (119), mild azotemia, PCV/TP 50/4.2, mild inc. in WBC, ALT>1000 Radiographs of chest (included), interpretation: Mild pleural effusion, and partial atelectic consolidation of the left lung tissue. The lung consolidation is suspected due to positional and exhalation atelectasis given the reduction in volume, but potential for this to be aspiration pneumonia, hemorrhage or neoplastic consolidation is not ruled out. Initial AFAST - large amount of fluid everywhere Initial TFAST - large amount pericardial effusion Post pericardiocentesis abdominal ultrasound - two splenic masses, one with some cavitation but no obvious bleeding, several hyperechoic liver masses without change in capsule, only small amount anechoic effusion remaining in caudal abdomen Tx - Fluids, Vetstarch, pericardiocentesis removed 55 ml hemorrhagic fluid. Took a very long time to become alert enough to get up and be able to walk (all of the day on Sunday). Today he is alert and able to complete the echo w/ some butorphanol on board. Electrolytes and azotemia both made some improvement but did not return to normal. Blood pressure today is 134mmHg systolic and he has a sinus bradycardia on ECG

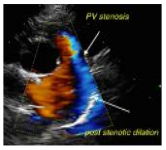
ECHOCARDIOGRAM FINDINGS

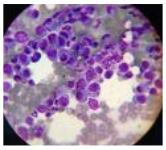
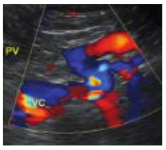
2D, m-mode, color flow and doppler imaging is available. The mitral valve appears normal with no obvious mitral regurgitation. LV dimension and function is adequate. Left atrium is normal in diameter. The pulmonic and aortic valves are normal in appearance. Normal outflow velocities; laminar flow. No obvious mass is seen, either intra or extra-cardiac. Right AV groove appears normal. Mild right heart enlargement. Small to moderate volume pericardial effusion without evidence of tamponade. No obvious pleural effusion. The pericardial surface appears irregular; however, no discrete lesion identified.

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	1.2	1.2	49	81	0.38
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	1.2	1.0	42.0	3.3	4.1	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 **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

The cause of the clinical signs is confirmed to be pericardial effusion causing presumably cardiac tamponade (resolved). The cardiac structure and function are largely normal in this patient, although the right heart is mildly enlarged. This is not enough to explain the effusion, which would not be hemorrhagic in this instance. No definitive tumors are seen in this study; however, it is important to note that ultrasound is largely insensitive for small extra-cardiac masses and suspicion persists. In light of the signalment and preliminary AUS findings of splenic abnormalities, the likely diagnosis is cardiac hemangiosarcoma until proven otherwise. The clotting times are elevated which should also be considered as a possible explanation. Reassessment is advised, given a discrepancy in the 2 values. Finally, an echocardiogram by an attending Cardiologist and/or thoracic CT may also be reasonable to further screen the external surface of the heart if elected.

If confirmed, the prognosis with cardiac hemangiosarcoma is poor, with an MST of 3-6 months. The emergent limiting factor is often recurrent hemorrhage, and a pericardial window or subtotal pericardectomy may relieve clinical signs yet is rarely recommended. HSA also has a high metastatic rate, and full systemic screening is recommended for metastatic lesions. Patients with cardiac neoplasia are at high risk for recurrent hemorrhage and development of tamponade, malignant arrhythmias/sudden death in the future. It is impossible to predict if and when pericardial effusion will reoccur. **There is great concern that this patient is rebleeding in this short period of time, depending on the timeline since the prior tap.** Some patients with idiopathic effusion need to be tapped between 1 to 3 times then never again. Other patients may experience frequent recurrence with either HSA or idiopathic disease. If the effusion reoccurs frequently, a surgical procedure called a pericardectomy can be discussed although is rarely recommended with suspect HSA. Finally, consultation with an Oncologist can be considered, as chemotherapy and/or radiation are also options to prolong life span.

No cardiac medications are clearly indicated at this time. Over the counter herbal supplement Yunnan Baiyao (aka Yunnan Paiyao) may help decrease risk of bleeding, however true benefit is speculative (1 capsule PO BID). Please monitor at home for signs of recurrent pericardial effusion including pale gums, difficulty breathing, lethargy/collapse, exercise intolerance, abdominal distention, vomiting, and/or inappetance. If you notice any of these symptoms, patient should be evaluated immediately by a veterinarian.

PLAN

Consider advanced imaging/screening as discussed. Repeat pericardiocentesis as indicated by patient clinical status. If the effusion continues to reoccur within a short period of time, euthanasia should be elected.

A recheck echocardiogram is recommended in 1-2 months to assess for any apparent tumors.

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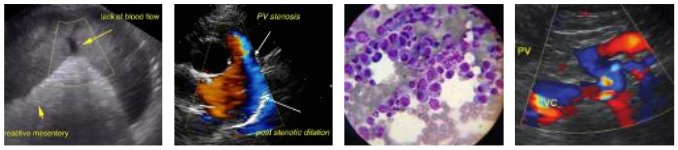

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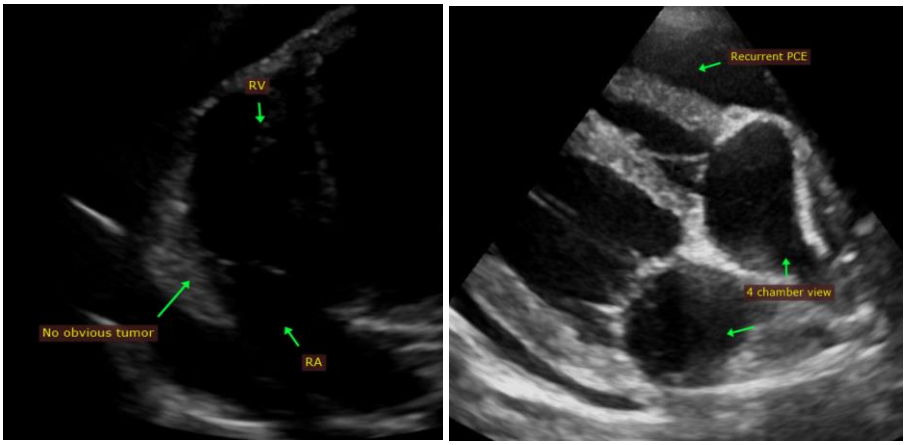
IMAGES



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