SonoPath
Clinical Sonography & Telecytology
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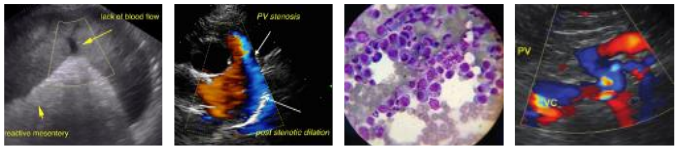

SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT
Finnegan Gonzales

SPECIES
Canine

BREED
Corgi Mix

SEX
Male Neutered

AGE
9 years

WEIGHT
38.2lbs

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

IMAGING PERFORMED BY
Dana Alterman, RDCS, LVT

HOSPITAL NAME
Eubank Animal Clinic

REFERRING VET
Dr.Gonzales

INVOICE
30284

DATE
4/17/23

PRESENTING CLINICAL SIGNS

History: Abnormal thorax radiographs: Suspect heart based mass. Intermittent cough and syncope. No response to ACEI. RX- Gabapentin for seizures.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 25mm/s; 10mm/mV. The average heart rate is 140bpm (range 94-160bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P wave morphology is positive with a normal dimension. Normal PR. The QRS morphology is positive with normal dimension. MEA is shifted right. No ectopic beats, pauses or dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with respiratory variation. Right axis deviation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Mild thickening of mitral valve leaflets with no obvious prolapse into the left atrial lumen. No mitral regurgitation with normal left atrial dimension. Normal LV diameter with adequate myocardial function. The tricuspid valve appears mildly thickened with trace tricuspid regurgitation. Mild right atrial enlargement; moderate right ventricular dilation and hypertrophy consistent with pressure overload. Systolic flattening of the IVS consistent with pressure overload. The pulmonic and aortic valves are normal in morphology and mobility. Severe MPA and branch dilation. No obvious pulmonic or aortic insufficiency. Normal pulmonic and aortic outflow velocities. No pericardial or pleural effusion noted. The heart base is difficult to visualize extensively; suspicion for a mass lesion, although this is inconsistent. The pulmonary venous inflow (into the left atrium) does appear compressed; however, no additional signs of compression are clearly seen.

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	NM	1.1	1.35	55	86	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	0.96	0.7	17.3	1.9	3.9	1.8
*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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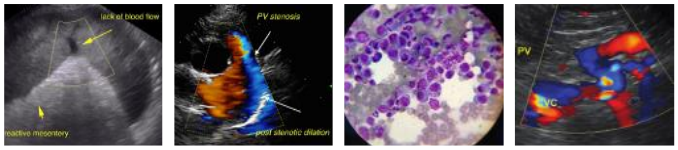

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The primary abnormality identified is right heart/MPA enlargement. This is most commonly secondary to pulmonary hypertension; however, the CXR evaluation suggests a mass lesion. This is inconsistent in this image set as the heart base is difficult to visualize extensively which is unusual (typically heart-based tumors are readily apparent, even if small in size). The most supportive finding of a mass would be the appearance of compressed pulmonary venous inflows; however, further diagnostics are strongly recommended. The next step would be a Radiologist review of the 3-view chest radiographs to confirm the suspicion. A thoracic CT scan may be warranted pending results. Regardless, the right heart changes are significant and no doubt the cause of syncopal episodes. The left heart appears largely normal and the ECG unremarkable.

If a chemodectoma/heart-based tumor is confirmed, there are some options for palliating this type of cancer, including radiation and chemotherapy. Full metastatic screening may also be useful. Consultation with an Internist or Oncologist is recommended in light of echo/CXR results.

Unfortunately if confirmed, this is a progressive tumor with a poor prognosis once clinical signs develop as is the case here. The patient is at high risk for fluid retention and congestive signs and institution of cardiac support including spironolactone is recommended as below. There is no clear indication for Lasix prior to congestion (typically ascites or pericardial/pleural effusion seen). The issue is more of a mechanical obstruction than true pulmonary hypertension; however, sildenafil is benign to try. High risk will always remain for development of effusions (pericardial, pleural or abdominal) and/or arrhythmias/sudden death at home. Monitor at home for progressive abdominal distention, labored breathing and/or lethargy and collapse. Hydrocodone can be utilized if needed for quality of life. Activity restriction is recommended.

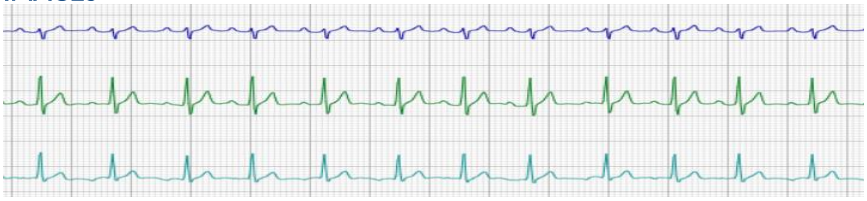
PLAN

Highly recommend further thoracic imaging to confirm suspicion of a heart-based tumor. This includes Radiologist review of 3-view chest films +/- a CT scan pending results. If a tumor is confirmed, consider consultation with an Internist/Oncologist. Full metastatic screening. Administer spironolactone 1-2mg/kg PO q12h. Institute ACEI 0.5mg/kg PO q12h. Administer Pimobendan 0.3mg/kg PO q12h. Institute Sildenafil 1-2mg/kg PO q12h. No obvious indication for Lasix therapy.

A renal panel is recommended every 3-4 months going forward.

A recheck echocardiogram to reassess mass dimension and heart size is recommended in 2-3 months.

IMAGES



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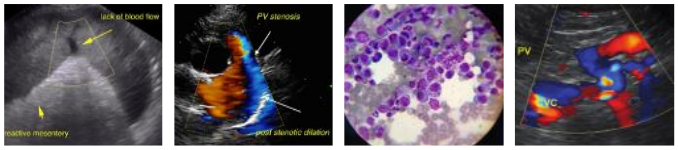

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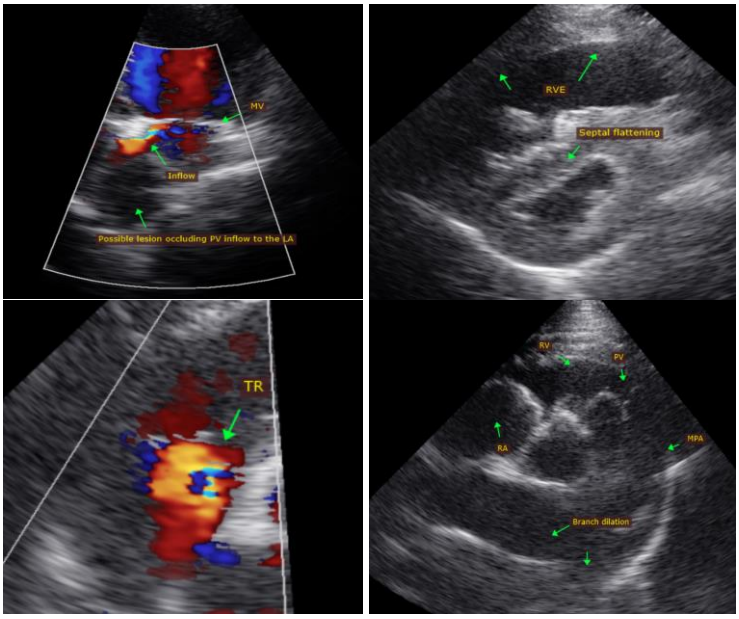

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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