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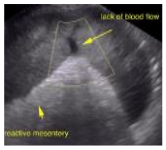
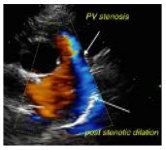
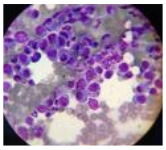
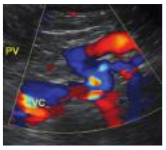
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™

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

PATIENT
Randy Griffiths

SPECIES
Canine

BREED
Pitbull Mix

SEX
Male neutered

AGE
9 years

WEIGHT
46lbs

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

IMAGING PERFORMED BY
Karen Ebersole, DVM, DABVP

HOSPITAL NAME
Scanvet

REFERRING VET
Dr. Fortin

INVOICE
30463

DATE
4/26/23

PRESENTING CLINICAL SIGNS

History: Diagnosed with PS as a young dog. No medications currently. Last summer owner noted occasional episodes of collapse. Dusky colored mm, and excessive panting after even mild excitement. Limits exercise. Grade 4-5/6 heart murmur. Sedated with Trazodone 100mg PO.
-Radiographs: Showed mild cardiomegaly, no pulmonary edema.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 25mm/s; 10mm/mV. The average heart rate is 100bpm (range 68-107bpm). 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 is inverted. The MEA is shifted right. normal. No ectopic beats, pauses or dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with respiratory variation. Right axis deviation secondary to right ventricular hypertrophy.
*The ECG was repeated after light exercise. The average heart rate increased to 140bpm with a regular rhythm. No dysrhythmias are observed.

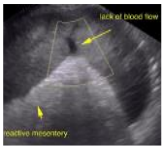
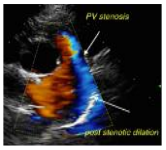
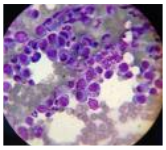
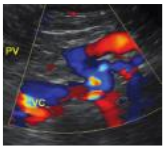
ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no obvious prolapse into the left atrial lumen. No obvious mitral regurgitation. Normal left atrial dimension. Normal LV diameter with normal myocardial function. The LV wall appears normal. The tricuspid valve appears mildly thickened with mild insufficiency seen. Mild right atrial dilation. Mild to moderate right ventricular hypertrophy. Pulmonic outflow velocities are elevated at the level of the valve. The pulmonic valve appears severely thickened, tethered and stenotic. There is moderate post-stenotic dilation of the main pulmonary artery and branches. Mild pulmonic insufficiency. The aortic valve appears to have normal morphology and mobility. No obvious cardiac shunts are present. No pericardial or pleural effusion noted.

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	1.0	1.2	52	86	0.15
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	140	1.8	60	20.9	2.4	2.3	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				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)

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

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Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995	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

Severe valvular pulmonic stenosis persists. The degree of obstruction is severe based upon the velocity/pressure gradient across the pulmonic valve and the secondary hypertrophy and remodeling of the right ventricle. There is mild RA dilation and mild TR. The risk for CHF in the future is elevated; however, in a senior dog it is unknown if this will develop within the natural lifespan. A recent onset of clinical signs at 9 years of age is certainly a good sign. No other congenital or age-related abnormalities were visualized, and the mitral valve appears intact.

Referral for balloon valvuloplasty should be considered as the gold standard therapeutic option for this condition and may improve long term outcome and improve clinical signs (including exertional syncope and right-sided congestive heart failure). That being said, given the age of the patient with only a recent onset of syncope, simple monitoring would be reasonable. The ECG is largely normal with a right axis deviation, which is benign and is commonly seen with RV hypertrophy. The post-exercise recording does show a mild increase in heart rate, which is suspected to be the cause of reported syncopal episodes. Recommend medical management with atenolol going forward to **block heart rate elevation in times of activity. The patient's resting heart rate is quite low and we certainly do not want to drop this any further.** Monitor for development of associated clinical signs (collapse, abdominal distention, cough, labored breathing). Mild exercise restriction is advised.

Syncope is suspected to be benefited by atenolol therapy, as blocking heart rate increases will hopefully help avoid acute hypoxia and syncope. If that is not the case, further evaluation for possible arrhythmogenic causes should be considered through a holter monitor. Mild lifelong activity restriction is advised. Serial monitoring is advised and referral to a local Cardiologist in the future may be warranted should further symptoms arise.

Anesthetic risk is mild to moderate at this time. Avoid heart rate stimulating drugs such as atropine or glycopyrrolate unless absolutely necessary. Avoid vasodilators such as acepromazine. Mild IV fluid restriction is advised. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O2 if possible. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary.

PLAN

Consider institute atenolol to effect: 25mg tabs, ¼ tab PO BID to start (up-titrate to desired effect). Goal is to suppress heart rate <120bpm with stress/activity. If any lethargy or symptoms worsen with institution of the medication, discontinue. Referral for balloon valvuloplasty consultation if desired. If syncope persists, consider a holter.

If surgery is declined, recommend recheck echocardiogram annually to assess for progression, response to medication, and/or development of age-related disease.

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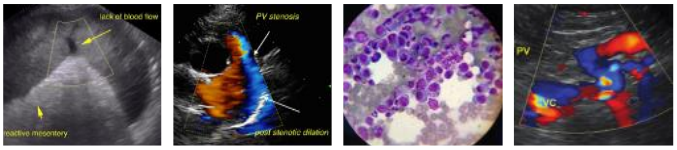

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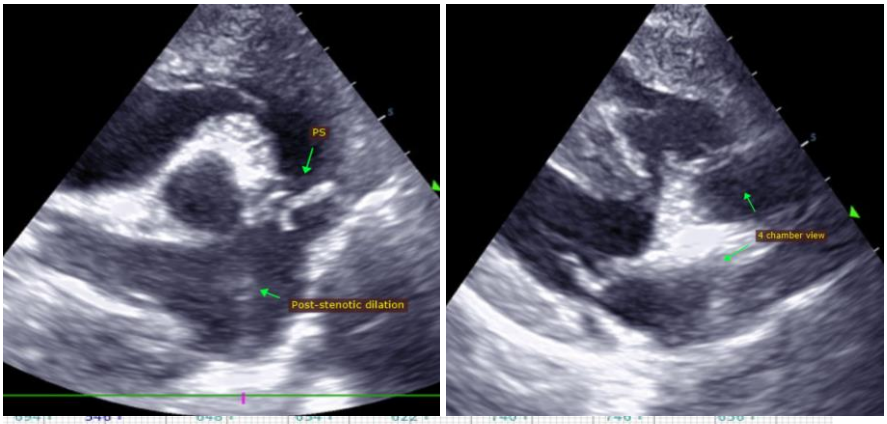
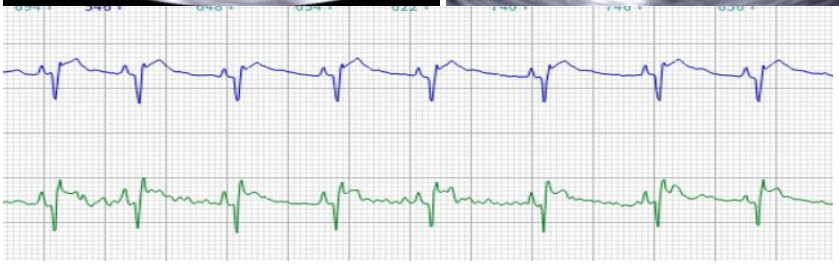
IMAGES





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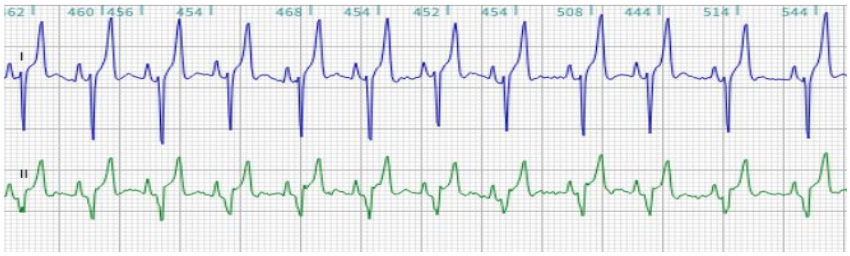

Post-exercise

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

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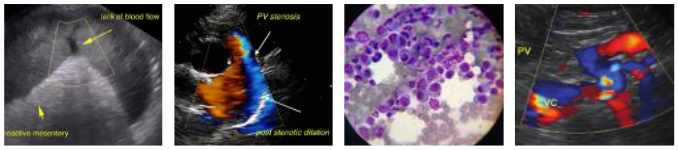

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