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Clinical Sonography & Telecytology
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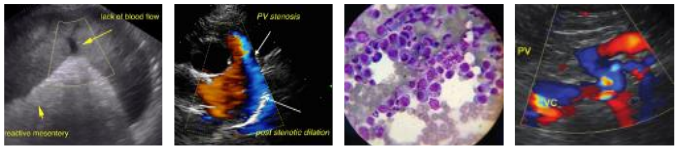

SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT
Roxanne Aden

SPECIES
Canine

BREED
French Bulldog

SEX
Female Spayed

AGE
3 years

WEIGHT
8lbs; 3.6kgs

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

IMAGING PERFORMED BY
Melissa Weisman, DVM

HOSPITAL NAME
Minnesota Veterinary Ultrasound

REFERRING VET
Dr. Weisman

INVOICE
28306

DATE
1/12/22

PRESENTING CLINICAL SIGNS

History: Recheck echo. Blue Pearl Cardiologist dx patient with severe pulmonic stenosis and hypoplastic trachea in May of 2022. At the time, she belonged to a shelter. Either balloon valvuloplasty or surgical correction was recommended. Please see attached records. The dog was placed on atenolol and was adopted out. Per primary vet, current owners were unaware of the extent of Roxanne's disease. The patient has moderate to severe dyspnea at rest due to upper airway constriction. She was given 0.8mg butorphanol SQ 30-45 min prior to this echo. She also received face mask oxygen during the exam. Current meds include atenolol at 12.5mg PO BID. BP: 127mmHg.
-Pertinent previous echo findings (5/2022 MN): Severe PS, max PG: 99mmHg, mild to mod RAE, RVE.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental cardiac information only.

Right-sided cardiomegaly. No obvious evidence of CHF.

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 mitral regurgitation. Normal left atrial dimension. Normal LV diameter with adequate myocardial function. The LV wall appears normal. The tricuspid valve appears normal with no insufficiency seen. Mild to moderate right atrial dilation. Moderate right ventricular enlargement with hypertrophy, indicative of pressure overload. Pulmonic outflow velocities are severely elevated at the level of the valve. The pulmonic valve appears thickened and tethered, consistent with a valvular stenosis. 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. Normal aortic outflow velocity. 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	NA	NM	1.3	51	84	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	106	0.9	4.6	3.6	2.0	2.8	1.4
*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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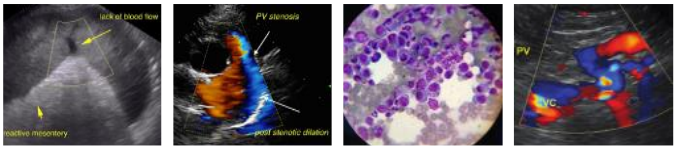

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Largely unchanged severe valvular pulmonic stenosis. The degree of RV changes remain moderate despite presumably adequate heart rate control. No obvious additional issues are identified and no progression is identified.

Given these findings, continue Atenolol as prescribed, maintaining stressed heart rates under 140bpm. Referral for balloon valvuloplasty remains the gold standard recommendation in any case of severe PS. The patient also has severe brachycephalic airway syndrome which must also be considered, as was documented on the previous echo report. This is likely the more significant contribution to quality of life, as what is described is not necessarily related to PS. That being said, if the procedure is successful it can extend asymptomatic life, which would certainly be the goal. If declined, continued medical management with Atenolol would be the alternative approach.

Exercise restriction is advised lifelong as stress/exertion will certainly lead to worsening of the obstruction.

Anesthetic risk is moderately elevated at this time. Referral to a facility with an Anesthesiologist should be considered. 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.

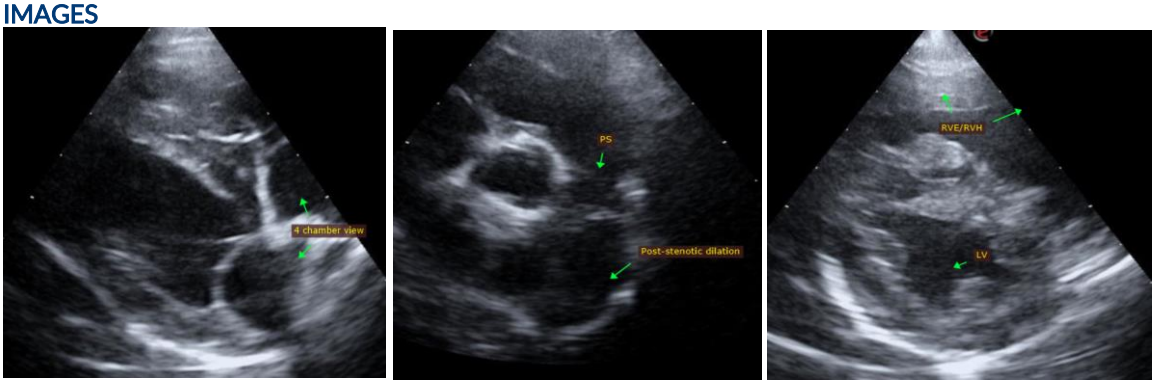
Prognosis remains guarded long-term with risk for right-sided CHF, worsening syncope and/or sudden death in the future.

PLAN

Continue atenolol as prescribed. Consider referral for surgical consultation if desired.

An echocardiogram is recommended annually, sooner if clinical signs arise.

IMAGES



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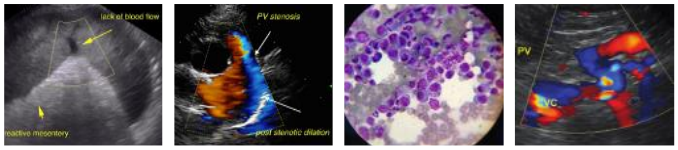

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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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