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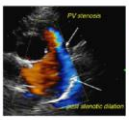
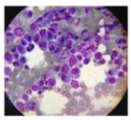
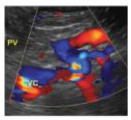
SVS IMAGING

SonoPath
Clinical Sonography & Telecytology
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PATIENT

Shatzi Berry

SPECIES

Canine

BREED

Dachshund

SEX

Male Neutered

AGE

14 years

WEIGHT

20lbs

INTERPRETED BY

Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY

Rachel Runnells, RVT

HOSPITAL NAME

SVS Imaging KC

REFERRING VET

Dr. Mervin

INVOICE

23213

DATE

3/21/22

PRESENTING CLINICAL SIGNS

History: Long term murmur, noticed tongue was mild to moderately cyanotic at appointment. Later in exam not cyanotic. Exam findings and abnormal lab values: Grade 3/6 systolic, rhythm sounded abnormal. HR-156, intermittent VPC's seen on ECG. Very large cardiac silhouette with suspected left auricle enlargement.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is mildly thickened with no obvious prolapse into the left atrial lumen. Trace central mitral regurgitation. Normal left atrial dimension. Normal LV diameter with adequate myocardial function for this breed. The LV wall thickness is normal. The tricuspid valve appears normal in form and function with trace TR. Normal velocity. No right atrial dilation. Mild right ventricular prominence with mild hypertrophy. Mild elevation of pulmonic outflow velocities at the level of the valve and beyond. The exact level of the stenosis cannot be determined, rule out valvular versus supra-valvular. The PV is not visualized. No obvious post-stenotic dilation. Trace pulmonic insufficiency. The aortic valve appears to have normal morphology and mobility. Normal LVOT velocity. No pericardial or pleural effusion. No cardiac tumors.

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		2.5	1.3	1.2	42	80	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	80	1.5	2.6	9.1	1.3	2.7	1.5
*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)
Adapted from June Boon, Veterinary Echocardiography, 1998				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
Hansson et al, Vet Rad and Ultrasound 2002				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
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

Elevated flow velocity through the pulmonic valve is noted, consistent with congenital valvular pulmonic stenosis. The degree of obstruction is mild based upon the velocity/pressure gradient across the pulmonic valve and minimal secondary hypertrophy and remodeling of the right ventricle (mild PG is <50mmHg). The exact level of stenosis cannot be visualized in this image set;

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however, valvular is most common. Small mitral and tricuspid leaks are also noted which may reflect early valve disease; follow up is advised. No additional issues are identified.
Mild PS cases typically do not impact a patient clinically, and most are able to live a normal life free of complications. That being said, risk for progression to clinical signs will always remain and periodic monitoring is advised.

Given mild disease in a senior, I would not recommend surgical intervention in this case. Medical management with atenolol is often recommended in moderate or severe cases, with mild often not requiring therapy. Given that this case is free of associated symptoms and mild in severity, it is reasonable to simply monitor going forward rather than instituting lifelong medications. Referral to a local cardiologist should be considered to discuss advanced imaging and potential medical and surgical options if the client is interested.

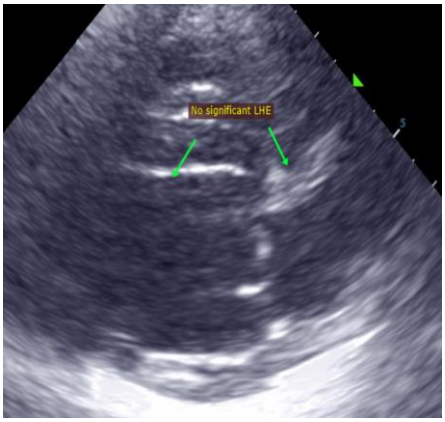
This is unlikely to be related to cyanosis. Primary pulmonary issues should be considered more likely.

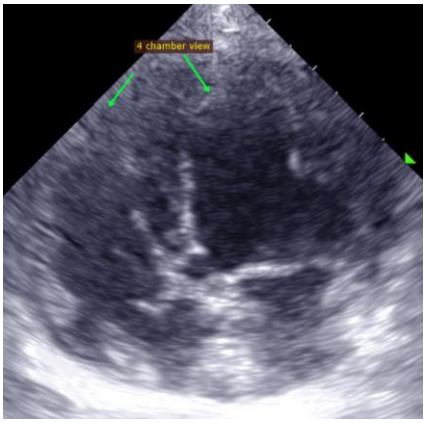
Anesthetic risk is considered mildly elevated. Avoid heart rate stimulating drugs such as atropine or glycopyrrolate. Avoid excessive vasodilation/hypotension. Pre-oxygenate for 5-10 minutes prior to induction. A reasonable protocol would be as follows: premedicate with opioid/benzodiazepine, propofol or alfaxalone induction, isoflurane maintenance. Monitor ECG, BP as is standard. Monitor for hypoxia in recovery; utilize O2 chamber if needed. Mild IV fluid restriction is advised.

Monitor for development of associated clinical signs (exertional collapse, abdominal distention, cough, labored breathing). Omega fatty acid supplementation may have some long-term benefit, given that these cases are predisposed to development of arrhythmias going forward. Breeding is not advised as this condition is genetically linked.

Recommend recheck echocardiogram in 6-12 months to assess for progression, sooner if clinical signs arise in the interim.

IMAGES





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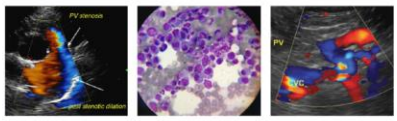

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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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