



**PATIENT**

Piper Skillings

**SPECIES**

Canine

**BREED**

Bichon Mix

**SEX**

Female

**AGE**

2 years

**WEIGHT**

12.4lbs

**INTERPRETED BY**

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

**IMAGING PERFORMED BY**

Karen Ebersole, DVM,  
DABVP

**HOSPITAL NAME**

Scanvet

**REFERRING VET**

Dr. Bennett

**INVOICE**

47288

**DATE**

3/24/26

**PRESENTING CLINICAL SIGNS**

History: No audible murmur. Slow HR with possible arrhythmia. mm pink. Quiet. Exercise intolerance. No sedation.

**ELECTROCARDIOGRAPHIC FINDINGS**

A six lead ECG is available at 50mm/s; 10mm/mV. Significant heart rate variability from 80-170bpm. The rhythm is sinus in origin. Occasional 2<sup>nd</sup> degree AV block; suspect type I. Low grade with only single blocked P waves. Wandering pacemaker suspected. No premature beats or dysrhythmias observed.

ECG diagnosis: Suspect profound respiratory sinus arrhythmia due to high vagal tone with low grade 2<sup>nd</sup> degree AV block and a wandering pacemaker.

**ECHOCARDIOGRAM FINDINGS**

2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no prolapse into the left atrial lumen. No obvious mitral regurgitation with a normal left atrial dimension. Normal LV diameter with adequate myocardial function. The tricuspid valve appears normal with no tricuspid regurgitation. Normal right atrial and ventricular diameter and morphology indicating no overt evidence of pulmonary arterial hypertension. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No obvious aortic or pulmonic insufficiency. No pericardial or pleural effusion noted. No obvious cardiac masses.

**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	1.1	38	70	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	107	1.1	0.8	5.6	1.5	2.5	1.6
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
<b>BODY WEIGHT DEPENDENT PARAMETERS</b>				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
<i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>				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



## PATIENT

Piper Skillings

## SPECIES

Canine

## BREED

Bichon Mix

## SEX

Female

## AGE

2 years

## WEIGHT

12.4lbs

## INTERPRETED BY

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

## IMAGING PERFORMED BY

Karen Ebersole, DVM,  
DABVP

## HOSPITAL NAME

Scanvet

## REFERRING VET

Dr. Bennett

## INVOICE

47288

## DATE

3/24/26

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Overtly normal cardiac dimensions and function, with no obvious dysfunction or dilation of the left heart. No significant valvular leaks are visualized, and no evidence of pulmonary hypertension.

The ECG shows a respiratory sinus arrhythmia with occasional single blocked P waves, consistent with 2<sup>nd</sup> degree AV block. This is suspected to reflect high vagal tone as there is a prolongation of the PR interval prior to the block, significant HR variability, and what is likely a wandering pacemaker. An Atropine challenge is strongly recommended, particularly prior to any anesthetic event, to ensure a normal exuberant response in this young dog. Assuming the Atropine challenge is normal, this is a benign finding in dogs and does not warrant therapy.

Monitor for development of a heart murmur, cough, labored breathing, exercise intolerance or collapse episodes.

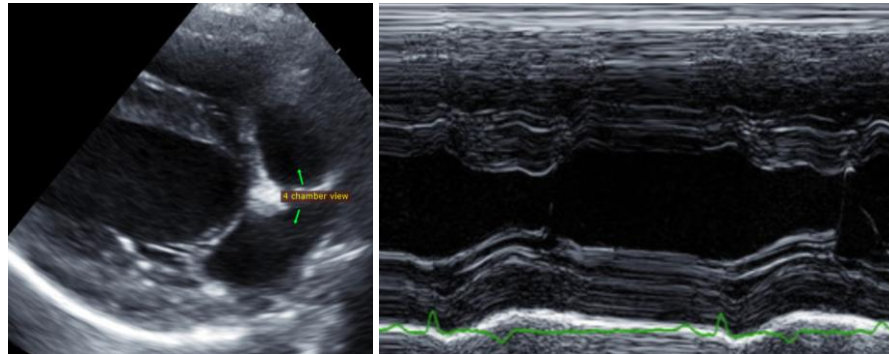
Anesthesia is not advised prior to an abnormal atropine challenge.

## PLAN

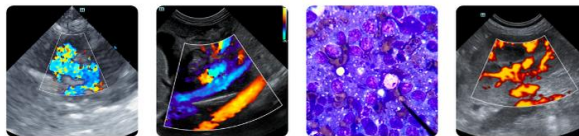
An Atropine challenge is recommended; administer 0.04mg/kg IV or IM of atropine. Assess response in 10-15 minutes. A normal response (significant sinus tachycardia that maintains for at least 10 minutes) confirms high vagal tone is present. An abnormal response is consistent with conduction disease in which case a holter monitor and/or referral is indicated.

A recheck echocardiogram is recommended in 1 year, sooner if a murmur or signs of cardiac disease arise in the interim.

## 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.**



## PATIENT

Piper Skillings

## SPECIES

Canine

## BREED

Bichon Mix

## SEX

Female

## AGE

2 years

## WEIGHT

12.4lbs

## INTERPRETED BY

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

## IMAGING PERFORMED BY

Karen Ebersole, DVM,  
DABVP

## HOSPITAL NAME

Scanvet

## REFERRING VET

Dr. Bennett

## INVOICE

47288

## DATE

3/24/26

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