Journal of Veterinary Cardiology (2017) ■, ■–■

ELSEVIER

Journal of Veterinary Cardiology
ESVC

www.elsevier.com/locate/jvc

Case Report

Primary cardiac tumor presenting as left ventricular outflow tract obstruction and complex arrhythmia☆

R. Fries, DVM [a,*], S. Achen, DVM [b], M.T. O'Brien, DVM [a], N.D. Jackson, DVM [a], S. Gordon, DVM [a]

[a] *Texas A&M University College of Veterinary Medicine, 4474 TAMU, College Station, TX 77843-4474, USA*
[b] *Blue Pearl Veterinary Partners, Southfield, MI 48034, USA*

Received 14 January 2017; received in revised form 17 July 2017; accepted 2 August 2017

KEYWORDS
Sarcoma;
Heart;
Syncope;
Dog

Abstract An adult female mixed breed dog presented for recurrent collapsing episodes over several weeks. Holter evaluation revealed periods of sinus arrest and echocardiography identified a soft tissue mass with subsequent severe dynamic obstruction of the left ventricular outflow tract. The patient was euthanized five days after presentation for severe dyspnea. Necropsy revealed an irregular mass circumferentially lining the left ventricular outflow tract as well as multiple myocardial metastases. The final diagnosis was an undifferentiated pleomorphic endocardial sarcoma.
Published by Elsevier B.V.

☆ A unique aspect of the Journal of Veterinary Cardiology is the emphasis of additional web-based images permitting the detailing of procedures and diagnostics. These images can be viewed (by those readers with subscription access) by going to http://www.sciencedirect.com/science/journal/17602734. The issue to be viewed is clicked and the available PDF and image downloading is available via the Summary Plus link. The supplementary material for a given article appears at the end of the page. Downloading the videos may take several minutes. Readers will require at least Quicktime 7 (available free at http://www.apple.com/quicktime/download/) to enjoy the content. Another means to view the material is to go to http://www.doi.org and enter the doi number unique to this paper which is indicated at the end of the manuscript.

* Corresponding author.
E-mail address: rfries@illinois.edu (R. Fries).

http://dx.doi.org/10.1016/j.jvc.2017.08.001
1760-2734/Published by Elsevier B.V.

Abbreviation

LVOTO Left Ventricular Outflow Tract Obstruction

A 7-year-old, spayed, female Chow Chow mix presented to the emergency service at Michigan Veterinary Specialists for multiple collapsing episodes. The owners reported two collapsing episodes earlier in the day and an additional episode two weeks prior. The collapsing occurred during excitement and lasted for less than a minute, after which time the dog returned to normal behavior and mentation. The owners also reported that the dog had been depressed for two weeks and reluctant to exercise.

On physical examination, the dog was bright and alert with a grade IV/VI left apical systolic murmur. A regular heart rhythm was auscultated with strong synchronous femoral pulses and a heart rate of a 128 beats per minute. No additional abnormalities were identified based on physical examination. Initial diagnostics performed included: i-STAT8 point-of-care blood chemistry,[c] thoracic radiographs, and a resting 6-lead electrocardiogram. There were no significant findings on the i-STAT8 or thoracic radiographs. However, the resting electrocardiogram indicated a sinus rhythm at 130 beats per minute with a left axis deviation (mean electrical axis of -10^0, reference range $+45^0$ to $+105^0$).

The following morning a Holter monitor was placed for a total of 22 min, during which time the dog had a syncopal episode. The Holter monitor was removed and sent for immediate evaluation. This syncopal episode coincided with a 6.6-s period of sinus arrest interrupted by a junctional escape beat and associated premature ventricular complex, followed by a junctional escape rhythm and slow sinus recovery (Fig. I). In addition, there was a shorter period of sinus arrest lasting 3.93 s also terminated with a multiform ventricular couplet, as well as a short (5 complex) run of uniform ventricular tachycardia.

An echocardiogram[d] was performed and revealed mild left ventricular concentric hypertrophy with subjectively mildly decreased systolic function. The left atrium was moderately dilated, and there was moderate mitral regurgitation based on color Doppler with systolic anterior motion of the mitral valve. A 2.2 × 1 × 1 cm homogeneous plaque-like lesion was present on the endocardial surface of the interventricular septum in the left ventricular outflow tract with apparent extension into the septal myocardium, aortic valve annulus, and proximal ascending aorta (Fig. 1A, Videos 1–5). Transaortic velocities were severely elevated (5.9 m/s; Fig. 1B), and there was evidence of moderate aortic insufficiency based on color Doppler (Video 2).

Abdominal ultrasonography was performed and revealed no pathologic findings. There was a mild regenerative anemia present on complete blood count (hematocrit 35.7%, reference rage 37–55%; reticulocyte 2.3%, reference range 0.5–1.5%; absolute reticulocyte 115,690 10^9/L, reference range 0–60,000) as well as an increases in alanine aminotransferase (1.80 μkat/L, reference range 0.08–1.79), creatinine kinase (3.42 μkat/L, reference range 0.17–3.34), cholesterol (12.69 mmol/L, reference range 2.90–8.50), and triglycerides (4.09 mmol/L, reference range 0.52–3.88) on serum biochemistry. Urine and blood were collected for aerobic and anaerobic culture and sensitivity as well as Bartonella screening.

Differential diagnoses for the plaque-like lesion in the heart were discussed with the owners, including an endocardial abscess, endocarditis, neoplasia, or a possible thrombus. The need for a pacemaker was also discussed at this time. Pending the results of the cultures, the owners elected to take the dog home on the following recommendations: strict cage confinement, doxycycline (12.8 mg/kg PO q 24 h), clopidogrel (9.6 mg/kg PO once, followed by 1.6 mg/kg PO q 24 h), prednisone (0.32 mg/kg PO q 24 h, started 3 days after other medications), and a recheck appointment in one week.

Two days before the scheduled recheck appointment, the dog represented to the emergency service for increased respiratory rate, respiratory effort, and coughing. On physical examination, the heart rate was 120 bpm and the patient was tachypneic (80 breaths per minute) and had cyanotic mucous membranes particularly when placed in lateral or dorsal recumbency. Thoracic radiographs showed a severe diffuse interstitial pattern coalescing to alveolar regions bilaterally in the caudodorsal lung fields. The cardiac silhouette was unchanged from prior radiographs and the cranial pulmonary vasculature was normal in size (Fig. II). The dog was started on enrofloxacin (8.7 mg/kg PO q 24 h) and the prednisone was increased (1 mg/kg q 24 h). The following morning, pulmonary fine needle aspirates

[c] Abbott Point of Care Inc. Princeton, NJ, USA {ANGAP (anion gap), BEECF (base excess), BUN, CL, GLUCOSE, HB, HCO3, HCT, K+, NA+, PCO2, PH, TCO2}.

[d] Vivid 7, General Electric Medical System, Waukesha, WI.

Please cite this article in press as: Fries R, et al., Primary cardiac tumor presenting as left ventricular outflow tract obstruction and complex arrhythmia, Journal of Veterinary Cardiology (2017), http://dx.doi.org/10.1016/j.jvc.2017.08.001