



ELSEVIER

Case Report

Pulmonary artery dissection following balloon valvuloplasty in a dog with pulmonic stenosis[☆]

K.A. Grint, DVM , H.B. Kellihan, DVM*

Department of Medical Sciences, School of Veterinary Medicine, University of Wisconsin, 2015 Linden Dr. Madison, WI 53706, USA

Received 11 April 2016; received in revised form 20 September 2016; accepted 27 September 2016

KEYWORDS

Vascular trauma;
Congenital heart disease;
Canine;
Complications;
Valve rupture

Abstract A 3-month-old, 9.9 kg, male pit bull cross was referred for evaluation of collapse. A left basilar systolic heart murmur graded V/VI and a grade IV/VI right basilar systolic heart murmur were ausculted. Echocardiography showed severe pulmonic stenosis characterized by annular hypoplasia, leaflet thickening, and leaflet fusion. After 1 month of atenolol therapy, a pulmonic valve balloon valvuloplasty procedure was performed, and the intra-operative right ventricular pressure was reduced by 43%. Echocardiography, performed the following day, showed apparent rupture of a pulmonary valve leaflet and a membranous structure within the pulmonary artery consistent with a dissecting membrane. Short-term follow-up has shown no apparent progression of the pulmonary artery dissection and the patient remains free of clinical signs.

© 2016 Elsevier B.V. All rights reserved.

[☆] 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: heidi.kellihan@wisc.edu (H.B. Kellihan).

<http://dx.doi.org/10.1016/j.jvc.2016.09.005>

1760-2734/© 2016 Elsevier B.V. All rights reserved.

Abbreviation

BPM	beats per minute
BV	balloon valvuloplasty
MPA	main pulmonary artery
PDA	patent ductus arteriosus
PS	pulmonic stenosis
PV	pulmonary valve
RV	right ventricle

A 3-month-old, 9.9 kg, male, pit bull cross was presented to the Cardiology service at the University of Wisconsin Veterinary Medical Teaching Hospital (University of Wisconsin Veterinary Care) for evaluation of collapse. Three weeks before presentation, the dog collapsed twice. He was taken to his family veterinarian for evaluation, and physical examination was unremarkable aside from a loud heart murmur. He was sent to a local referral center, where an echocardiogram showed evidence of pulmonic stenosis (PS). The patient was treated with atenolol (2.5mg PO q12h) and was referred to University of Wisconsin Veterinary Care for further evaluation.

On presentation, the dog was bright, alert, and responsive with a heart rate of 130 beats per minute (bpm). The heart rhythm was regular, and femoral pulses were strong and synchronous with the heartbeat. A grade V/VI left basilar systolic and grade IV/VI right basilar systolic heart murmurs were ausculted. The right-sided murmur was presumed to be secondary to radiation from the left-sided murmur. Electrocardiographic findings included a sinus tachycardia (heart rate = 200 bpm) with a right-sided axis deviation (mean electrical axis = -120°). A standard transthoracic echocardiogram was performed in right and left lateral recumbency using a phased-array transducer with a 5.0 MHz frequency. The pulmonary valve (PV) leaflets appeared redundant and moderately thickened with decreased excursion, and the PV annulus was hypoplastic (aortic:pulmonary annulus ratio was 1.5), consistent with an intermediate morphology (characteristics of type A and B morphology). There was severe post-stenotic dilation of the main pulmonary artery (MPA; Fig. 1A, Video 1). There was severe generalized right ventricular concentric hypertrophy, there was moderate septal flattening, and the myocardium near the septal papillary muscle was hyperechoic, suggestive of ischemia. The right atrium was mildly enlarged. Severe PS was diagnosed with a peak PV systolic

pressure gradient of 146 mmHg, moderate pulmonic regurgitation, and significant turbulent flow extending throughout the MPA (Fig. 2A, Video 1). The patient's atenolol dose was increased to 10mg PO q12h to reduce myocardial oxygen demand and improve coronary perfusion of the hypertrophied right ventricle (RV).

One month after initial presentation, the patient returned for a PV balloon valvuloplasty (BV) procedure. The clinical condition of the dog had improved a few days after starting the increased atenolol dose, and no further collapse episodes occurred. The patient had grown to 13.6 kg and characteristics of the heart murmur had not changed. The heart rate was 90 bpm with a regular rhythm and strong, synchronous femoral pulses. Transthoracic echocardiogram repeated before the procedure showed PV leaflets with similar appearance to the previous exam. The PV annulus measured approximately 13 mm from hinge point to hinge point of the leaflets from the right parasternal views. The severe post-stenotic dilation of the MPA appeared subjectively unchanged, and a balloon length of 5.5 cm was deemed appropriate for the length of the right ventricular outflow tract from the infundibulum to the roof of the MPA (Fig. 3A). The peak PV gradient had decreased from 146 mmHg to 122 mmHg after atenolol increase. A saline contrast echocardiographic bubble study did not reveal any evidence of an intracardiac right-to-left shunt.

The patient was intravenously premedicated with 0.15mg/kg hydromorphone and 0.15mg/kg midazolam. Anesthesia was intravenously induced with 0.88mg/kg etomidate and maintained using inhalant isoflurane in oxygen. The vital parameters were monitored using a multiparameter monitor. For analgesia, a constant rate infusion of 8–10 mcg/kg/hr fentanyl was started before the procedure. Shortly after starting the procedure, a constant rate infusion of dopamine 5–7 mcg/kg/min was started to support hypotension and a constant rate infusion of lidocaine 50–60 mcg/kg/min was started after a 1mg/kg bolus of lidocaine to prevent ventricular ectopy.

The right lateral neck was clipped and aseptically prepped. An 11-Fr introducer was percutaneously placed into the patient's right jugular vein. Using fluoroscopic guidance, a 5-Fr Berman catheter was advanced through the RV and into the MPA. The pressures in the MPA were: systolic 15 mmHg, diastolic 0 mmHg, and mean 7 mmHg. The catheter was pulled back into the RV and the pressures were recorded as: systolic 139 mmHg

Download English Version:

<https://daneshyari.com/en/article/5536057>

Download Persian Version:

<https://daneshyari.com/article/5536057>

[Daneshyari.com](https://daneshyari.com)