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CASE REPORT

Bartonella-associated inflammatory cardiomyopathy in a dog

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Abstract A 6-year-old, male, mongrel dog was presented for acute onset of dyspnea and cough. At admission, the dog was cachectic and severely depressed. The electrocardiogram showed a sinus rhythm conducted with left bundle truncular branch block and interrupted by frequent multiform ventricular ectopic beats organized in allorhythmias. Thoracic radiographs revealed a marked cardiomegaly with perihilar edema, whereas transthoracic echocardiography revealed a dilated cardiomyopathy with segmental dyskinesis. Furosemide, enalapril, pimobendan, and mexiletine were prescribed, and a Holter was scheduled after resolution of congestive heart failure. Three days later, the dog died suddenly during sleep. Histopathology revealed diffuse myocyte hypertrophy with multifocal hemorrhages, alternating to areas of severe replacement fibrosis and lymphoplasmocytic infiltrates. Immunohystochemistry stains were strongly positive for T-lymphocyte infiltration (CD3) and weakly positive for B-lymphocytes (CD79). Polymerase chain reaction was positive for *Bartonella* spp. Based on these results, a post-mortem diagnosis of bacterial inflammatory cardiomyopathy was made.

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Abbreviations

cTnI	cardiac troponin I
DCM	dilated cardiomyopathy
EMB	endomyocardial biopsy

A 6-year-old, 28-kg, male mongrel dog was referred to our institution for acute onset of dyspnea and coughing. The dog lived outdoors, was current on vaccinations, was receiving monthly heartworm prevention, and had frequent tick infestation. He had a history of idiopathic epilepsy that was managed for the last three years with phenobarbital (3 mg/kg PO q12 h) first and then with imepitoin (10 mg/kg PO q12h). At admission, the dog was cachectic and markedly depressed, heart rate was irregular with an average rate of 120 bpm, and a grade II/VI left apical systolic murmur was heard. The respiratory rate was 60 bpm with audible crackles in the caudo-dorsal lung fields. Femoral and dorsal metatarsal pulses were weak with frequent pulse deficits and pulsus alternans.

The 12-lead ECG showed a sinus rhythm with a rate of 120 bpm with wide QRS complexes (100 ms), and a normal axis on the frontal plane (84.45°). The QRS complexes were positive in lead I, II, III, aVF and from V_2 to V_6, with no observable Q waves. The QRS complexes appeared negative in aVR, aVL and V_1 (Fig. 1). Frequent multiform ventricular ectopic beats, with a prevalent right bundle branch block morphology often organized in ventricular bigeminy, were also noted. According to the surface electrocardiographic findings, the diagnosis of sinus rhythm conducted with a truncular left bundle branch block and interrupted by frequent ventricular ectopic beats, often organized in allorhythmias, was made.

Thoracic radiographs revealed severe generalized cardiomegaly (vertebral heart score of 14: normal reference 9.7 ± 0.5) with pulmonary venous congestion, caudal vena cava dilation, and an interstitial perihilar pulmonary pattern.

Two-dimensional echocardiography showed a dilated cardiomyopathy with segmental dyskinesis characterized by a dilated left ventricle and left atrium (EDVI 288 mL/m^2, left atrial to aortic root dimension ratio 2.4; Fig. 2), and with poor systolic function (ESVI 166 mL/m^2, shortening fraction 21%, 2D-based ejection fraction obtained with Simpsons method 23%). Severe left ventricular apical akinesis was noted. A central jet of mitral regurgitation was documented by color Doppler and continuous-wave Doppler (5.43 m/s; pressure gradient 117.9 mmHg). Mild tricuspid regurgitation was also present (3.8 m/s; pressure gradient 57.8 mmHg), suggesting the presence of moderate type II venous passive pulmonary hypertension. No other abnormalities were detected.

A complete blood count revealed mild leukocytosis (white blood cells 19.1 × 10^3/μL, reference range 6.0—17 × 10^3/μL); routine biochemistry

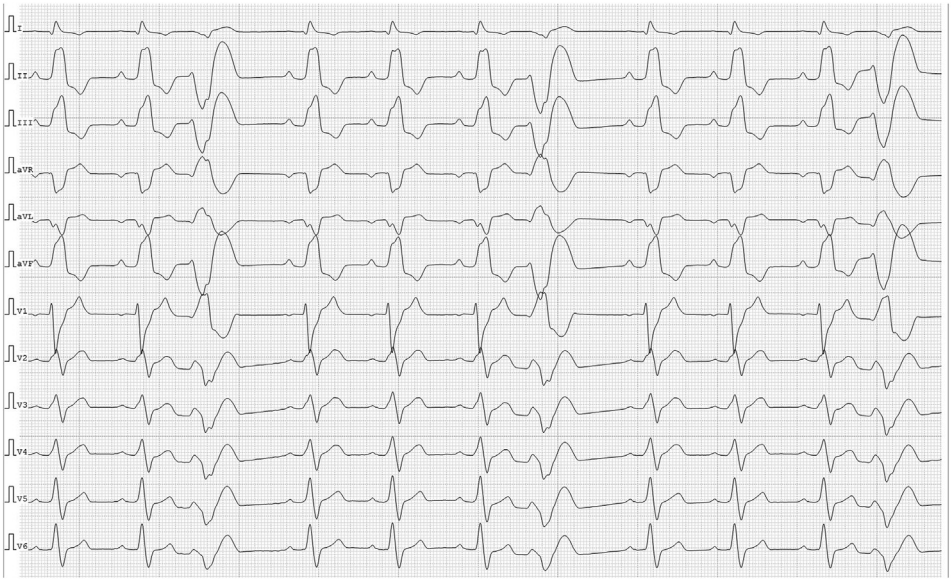

Figure 1 Twelve-lead surface ECG recordings obtained at admission, showing the presence of sinus rhythm conducted with truncular left bundle branch block, interrupted by frequent ventricular ectopic beats with right bundle block morphology organized in allorhythmias. Paper speed = 50 mm/s; 1 cm = 1 mV.

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