

BOXER CARDIOMYOPATHY

BASICS

OVERVIEW

- A familial cardiomyopathy of boxers characterized by ventricular and atrial arrhythmias, variable degrees of myocardial dysfunction, congestive heart failure, and sudden cardiac death
- The first manifestations of the disease are transient ventricular arrhythmias. As the disease progresses, myocardial dysfunction occurs in approximately 30-40% of cases.

SIGNALMENT

- occurs in all ages, most common in 4-8 year old boxers
- a genetic basis is very likely
- incidence is slightly higher in males

SIGNS AND SYMPTOMS

General

- Variable depending on stage and presence of myocardial dysfunction

Historical Findings

- In some boxers, the first sign of disease is sudden death
- There may be a history of syncope or collapse
- Relatives may be similarly affected

Physical Exam Findings

- An irregular cardiac rhythm may be present in advanced cases
- A systolic murmur is found in cases with mitral regurgitation and myocardial dysfunction

CAUSES & RISK FACTORS

- Unknown, genetic basis likely

DIAGNOSIS

DIFFERENTIAL DIAGNOSIS

- Other causes of episodic weakness or collapse (Addison's disease, hypoglycemia)
- Dilated cardiomyopathy, viral myocarditis

LABORATORY TESTS

- CBC and profile are usually within normal limits

OTHER TESTS

Thoracic Radiographs

- The cardiac silhouette is within normal limits unless there is accompanying myocardial dysfunction

Echocardiography

- There are no structural abnormalities until late in the course of disease. When myocardial dysfunction occurs, there is left ventricular and left atrial dilatation and a decrease in fractional shortening.

Electrocardiogram

- May be within normal limits considering the transient arrhythmias typical of the disease. The hallmark is the occurrence of ventricular premature complexes with a left bundle branch block pattern.

Holter monitoring

- Continuous ambulatory electrocardiography for 24 hours (Holter monitoring) is currently the most sensitive diagnostic tool. The presence of ventricular premature complexes and ventricular tachycardia are typical findings.

TREATMENT PRINCIPLES

- Patients with CHF should be hospitalized until stabilized
- Activity should be restricted if there is severe ventricular arrhythmia
- A low sodium diet is warranted if there are signs of congestive heart failure

MEDICATIONS

DRUGS AND FLUIDS OF CHOICE

- Antiarrhythmic therapy is indicated when significant ventricular ectopy is definitively documented – atenolol (Tenormin®) at a dose of 12.5 to 25 mg BID along with a class I antiarrhythmic (procainamide or mexilitine) are most commonly used.
- Diuretics are indicated when CHF is present. The aggressiveness of diuretic therapy is proportional to the degree of pulmonary edema (Lasix 1-2 mg/kg PO BID-QID).
- Vasodilators may be beneficial in reducing clinical signs (enalapril - 0.5mg PO SID-BID or benazepril 0.125 to 0.25 mg/kg SID).
- Supplementation with L-carnitine may be of benefit (1-3 gm daily) if there is myocardial dysfunction.

CONTRAINDICATIONS/POSSIBLE INTERACTIONS

- N/A

FOLLOW-UP

- Frequent rechecks of the electrocardiogram are warranted when significant ventricular ectopy is detected and antiarrhythmic therapy used.

EXPECTED COURSE AND PROGNOSIS

- Control of syncope is often achieved with the use of antiarrhythmic medications
- Sudden cardiac death secondary to ventricular arrhythmia is common
- Boxers not succumbing to sudden death may develop signs of dilated cardiomyopathy

MISCELLANEOUS

ASSOCIATED CONDITIONS

- There may be an increase in ventricular arrhythmia associated with whelping and estrus

OWNER EDUCATION

- Considering the familial nature, affected boxers should not be bred

REFERENCE

- Goodwin JK, Cattiny G: Further characterization of boxer cardiomyopathy. Proc Thirteenth Annual Veterinary Medical Forum (ACVIM). 13:300-302, 1995.

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