Proceedings of the International Congress of the Italian Association of Companion Animal Veterinarians

June 8-10, 2012 - Rimini, Italy

Next SCIVAC Congress:

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Current State of Knowledge

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Dogs with dilated cardiomyopathy (DCM) are much more likely to develop clinical signs than those with chronic mitral valve disease (CMVD). The clinical course varies with breed, with different breeds sometimes being managed differently according to the predicted risk of complications. These complications may include acute pulmonary edema, pleural effusions, ascites, atrial fibrillation, ventricular arrhythmias and sudden death. As with CMVD, the treatment varies according to the stage of disease.

STAGING DILATED CARDIOMYOPATHY

The heart failure staging system adapted for use in CMVD can also be used to stage DCM.1

STAGE A: AT RISK OF DCM

Large purebred dogs are most at risk of DCM, and particularly giant breeds. Breeders may request screening to identify affected dogs before breeding, although overt signs of DCM may not develop until after breeding age. It can be difficult to distinguish the earliest echocardiographic signs of DCM from the echocardiographic changes seen in some athletic but normal dogs. A scoring system has been suggested to minimise the risk of falsely diagnosing DCM in asymptomatic dogs.2 This scoring system emphasizes that a low value for left ventricular fractional shortening alone is not sufficient evidence to diagnose DCM; at the very least, a dilated left ventricle should also be present.

STAGE B: DCM WITHOUT CONGESTIVE HEART FAILURE

Diagnosis

Asymptomatic dogs with DCM are most often identified as a result of routine screening, but sometimes an incidental murmur or arrhythmia is detected during examination for another reason. In large breed dogs, a murmur or arrhythmia should always be investigated further with echocardiography and an ECG, ideally followed by a 24 hour ambulatory ECG. Syncope may occur in dogs without congestive heart failure, and should also be investigated with echocardiography and ambulatory ECG monitoring. Measuring plasma biomarkers may prove to be another method for identifying dogs affected with DCM.3

Treatment

Few prospective studies have been reported of treatment in DCM prior to the onset of congestive heart failure. There is some evidence that ACE inhibitors may prolong survival when given to preclinical Dobermanns with DCM.4 Careful up-titration of beta-adrenergic antagonists has also been suggested, but great caution is advised with this approach. There is no evidence of benefit in clinical cases of canine DCM,5 and there is potential for harm with beta-blockers in the short-term, as the negative inotropic effects may precipitate congestive heart failure.

STAGE C: PAST OR PRESENT CONGESTIVE HEART FAILURE

Once signs of congestive heart failure have developed, dogs with DCM are classified as Stage C, even if clinical signs subsequently resolve with treatment. Treatment will vary according to whether clinical signs are acute and life-threatening and require hospitalisation, or whether signs are mild to moderate and the patient can be treated as an outpatient.

Diagnosis

In contrast with small breed dogs with both valve and airway disease, congestive heart failure is relatively easy to diagnose in dogs with DCM through a combination of physical examination and thoracic radiographs. The main sign of congestive failure in large breed dogs is tachypnea with or without pulmonary crackles (or sometimes with quiet breath sounds ventrally if pleural effusion is present). Tachycardia is likely to be present, and the rhythm will be irregular if atrial fibrillation is present. A holosystolic murmur is often present at the left apex (and sometimes on the right), but is
with lidocaine in the short-term. Dogs with ventricular arrhythmias can be managed with medications used to slow ventricular response. It is usually better to aim for gradual heart rate control with oral medications rather than rapid intravenous therapy. Dogs with ventricular arrhythmias are undesirable, care should be taken with hypokalemia during heart rate control. Fast atrial fibrillation is not necessarily a contraindication to dobutamine. Dogs that continue to show respiratory distress despite aggressive diuresis may require an additional constant rate infusion of sodium nitroprusside, but blood pressure should be monitored closely. Systolic pressures should not be reduced below 100mmHg. If dobutamine is not available, amiodarone may be a better choice.

Monitoring the chronic patient consists of owner measurement of respiratory rate at home, and re-check visits to monitor heart rate and rhythm control (usually with Holter monitoring), renal function and electrolytes. The furosemide dose should be increased if respiratory rate at home is increased (>40 breaths/min), or the dose may be decreased if the respiratory rate is normal and stable. Thyroid function and liver enzymes should be monitored in dogs receiving amiodarone.

STAGE D: CHRONIC REFRACTORY HEART FAILURE

Refractory signs of congestive heart failure are usually managed initially by increasing the dose of furosemide. Further approaches to refractory heart failure include giving furosemide parenterally instead of orally, adding spironolactone, adding a thiazide, or replacing furosemide with torasemide at 1/10 of the furosemide dose.

BIBLIOGRAPHY


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