

# Canine Cardiomyopathy

A PowerPage Presented By



Dilated Cardiomyopathy (DCM) is by far the most common cardiomyopathy seen in dogs and is therefore likely to come up on board exams. The key features of DCM are discussed on this PowerPage. Familial Arrhythmogenic Cardiomyopathy is a condition seen mainly in Boxer dogs, and the key features are briefly discussed here.

## Dilated Cardiomyopathy

- Definition: A primary myocardial disease characterized by cardiac enlargement and impaired systolic function
- The breeds prone to develop DCM are mainly large breed dogs: **Doberman**, Irish Wolfhound, Great Dane, St. Bernard, Newfoundland, Leonberger, Boxer, Giant Schnauzer, Cocker Spaniel, Flat Coat Retriever

### Clinical Signs

- Early signs include
  - Fainting, lethargy, exercise intolerance
  - Many dogs are asymptomatic until they suddenly have symptoms associated with heart failure; onset of symptoms may be extremely rapid (a few days)
- Signs of heart failure
  - Respiratory distress from left-sided congestive heart failure
  - Abdominal distention from ascites from right-sided congestive heart failure

### Diagnosis

- Made based on echocardiography which should be performed if there is clinical suspicion based on clinical signs, auscultation, and radiographic findings
- Echocardiogram will show predominantly systolic cardiac dysfunction (poor contractility and shortening fraction)

### Treatment

- Treatment of subclinical dogs (controversial; you are less likely to be asked about this)
  - Some cardiologists recommend ACE inhibitors and/or pimobendan for dogs with early stage cardiac dilatation
  - For dogs with arrhythmias, therapy should be instituted
    - For ventricular tachycardia (especially in Boxers and Dobermans), options include sotalol, amiodarone, mexilitine, and very low dose atenolol
- Treatment of mildly symptomatic dogs
  - Diuretic therapy (**furosemide**, spironolactone, and/or hydrochlorothiazide)
  - Pimobendan and/or an ACE inhibitor
  - Dogs with tachycardia may benefit from digoxin or a careful administration of a beta blocker
- Treatment of moderately and severely symptomatic dogs
  - Hospitalize, **oxygen**, and IV **furosemide** until resolution of pulmonary edema
  - Also consider **nitroglycerin** ointment, pimobendan, nitroprusside, or dobutamine

## Familial Arrhythmic Cardiomyopathy (aka Arrhythmogenic Right Ventricular Cardiomyopathy – ARVC)

This disease appears to be an autosomal dominant trait, primarily of Boxer dogs, of variable penetrance ranging from mild to severe forms. As the name implies, VPCs occur and when severe, can cause sudden cardiac death, even at a young age. Major clinical sign is **syncope**.

### Diagnosis and Treatment

- Diagnosis typically requires a 24 hour Holter monitor to assess the severity and response to treatment because a brief ECG may dramatically overestimate or underestimate the frequency of VPCs due to their intermittent nature
- The disease can be classified with 3 levels of severity:
  1. Asymptomatic dogs with VPCs
    - While strict diagnostic criteria do not exist, >100 VPCs per 24 hours or runs of couplets, triplets, or ventricular tachycardia is consistent with disease and >1000 VPCs per 24 hours, runs of ventricular tachycardia, or evidence of R on T warrant treatment
  2. Symptomatic dogs (dogs with syncope)
    - 2 options are sotalol or the combination of mexilitine and atenolol
      - If a poor response is seen with 1 option, the other may be more effective
  3. Dogs with systolic dysfunction and heart failure
    - Should be treated as dogs with DCM
    - Also, some cardiologists advocate supplementing L-carnitine

