



EAST COAST VETERINARY CARDIOLOGY

Atrial Fibrillation

Atrial fibrillation (also called A Fib) is a chaotic heart rhythm (arrhythmia) which causes the heart to beat faster than normal and in an irregular fashion. It typically occurs in animals with dilation of the top chambers of the heart (atria) secondary to heart disease. When the atria become enlarged due to heart disease, the stretch and dilation will affect the electrical fibres of the heart. This will cause



multiple areas within the atrium to try to depolarize (activate, fire) simultaneously leading to lack of organized electrical activation of these chambers. It also results in lack of organized contraction of the atria. It has been shown in animals with atrial fibrillation that the atria are often being electrically activated upwards of 500 times per minute – not all these impulses reach the lower muscle chambers of the heart (ventricles) as there is a specialized collection of cells as

part of the conduction system of the heart which blocks some of these impulses. This site is called the atrioventricular (AV) node. Many of the medications used to manage atrial fibrillation act on the AV node to reduce the number of impulses traveling to the ventricles. In humans with atrial fibrillation, stroke is a common consequence due to risk for clot formation. This is not typically noted in veterinary species following development of atrial fibrillation.

This fast and irregular heart rhythm can result or worsen pre-existing congestive heart failure, lead to exercise intolerance and can even cause fainting. Affected individuals are typically lethargic with a reduced appetite until the arrhythmia is managed. There are two options for therapy for animals with atrial fibrillation – one option is rhythm control where a special procedure (cardioversion) converts the arrhythmia back to a normal (sinus) rhythm. This entails the use of a defibrillator to “shock” the heart back into sinus rhythm. This procedure can result in normal heart rhythm for a period of only moments following the procedure to several months in other patients. It is most successful when performed in patients when the atrial fibrillation is new and not chronic. This procedure does require anesthesia and special preparation prior to the procedure (certain oral anti-arrhythmic medications are given prior to the procedure to increase the probability of conversion).

The second option for management is heart rate control – this involves using anti-arrhythmic medications to help slow the heart rate by slowing conduction of impulses through the AV node. Normally in untreated patients with atrial fibrillation, the heart rate often exceeds 200 beats per minute. With treatment, our goal is to have the heart rate between 130-150 beats per minute (although this is patient dependent). Studies have shown a combination of diltiazem (a calcium channel blocker) and digoxin provide the best rate control in patients with atrial fibrillation.

Animals with atrial fibrillation are monitored closely with regular electrocardiograms (ECGs). However, the stress of an in-hospital visit may cause the heart rate in an animal with atrial fibrillation to be excessively high and not reflect their true average daily heart rate. In these cases, an ECG that animals can wear at home for 24 hours (called a Holter monitor) may be useful to assess efficacy of heart rate control therapy.

Animals with controlled atrial fibrillation generally have a good quality of life and they can be managed chronically for their arrhythmia (months to over a year in some cases). As atrial fibrillation is generally associated with significant structural heart disease, affected patients generally have concurrent congestive heart failure which also requires chronic management. There are some cases where heart failure becomes much more difficult to manage as a result of atrial fibrillation.

In uncommon cases, atrial fibrillation can be present in an animal who does not have structural heart disease. This is called primary or lone atrial fibrillation and is most commonly diagnosed in giant breed dogs such as Great Danes and Irish Wolfhounds. It is also noted in horses. This likely reflects a larger normal heart size (compared to other breeds) which is required to maintain atrial fibrillation. Some patients with lone atrial fibrillation may have no clinical signs and the diagnosis may be purely incidental (such as the arrhythmia detected on a routine physical examination and confirmed with an ECG). Some patients with lone atrial fibrillation require no therapy as their heart rate is generally normal. It has been recommended to follow affected animals long term to monitor for any evidence of development of structural heart disease or complications related to chronic atrial fibrillation.



A lead II ECG of an animal with atrial fibrillation – the rhythm is irregular with no evidence of organized atrial activity.

Key Points

Atrial fibrillation (A Fib) is a common arrhythmia which occurs secondary to heart disease in animals.

A Fib causes the heart to beat in a fast, irregular fashion. This can lead to CHF with signs of lethargy, poor appetite, weakness and collapse.

A Fib is diagnosed from an electrocardiogram (ECG) – a test that looks at the electrical activation of the heart.

Cardioversion with a defibrillator is sometimes used to shock the heart into a normal (sinus) rhythm. This is best attempted when A Fib is recent and not chronic.

Most animals with A Fib are treated with medications to slow their heart rates. Frequent ECGs are useful to ensure good rate control in affected animals.

AFib is occasionally noted in the absence of heart disease, often in giant breed dogs. This is called lone atrial fibrillation and may not require treatment as the heart rate is typically not fast.

