Cardiology: when to worry

potential impact on quality of life and outcome. Treatment strategies are aimed at either cardioversion (return to a normal rhythm), or simply controlling the ventricular rate. Drugs commonly used for chemical cardioversion include sotalol, lidocaine, mexiletine and amiodarone. In some cases (e.g. atrial fibrillation, atrial flutter, other SVTs), electrical cardioversion may also be used. Drugs commonly used for rate control include diltiazem, atenolol, propranolol and sotalol, and work by slowing conduction over the atrioventricular node to reduce the number of impulses that reach the ventricles (SVTs only). A definitive diagnosis and treatment may be achieved with a minimally invasive procedure where catheters are used to record electrograms inside the heart (electrophysiology or EP study) and radiocatheter ablation is used to destroy the affected areas of the heart.

KEY LEARNING OBJECTIVES

- Identify and distinguish the various tachyarrhythmias
- Understand the underlying causes for tachyarrhythmias and their significance
- Understand the various treatment strategies for tachyarrhythmias

MULTIPLE CHOICE QUESTIONS

1. Which of the following tachyarrhythmias is caused by ONE ectopic focus in the atrium?
(A) Atrial flutter
(B) Atrial fibrillation
(C) Focal atrial tachycardia
(D) Ventricular tachycardia
2. A tachycardia with wide and bizarre QRS complexes may be found in which of the following circumstances?
(A) Ventricular tachycardia
(B) Atrial flutter without bundle branch block
(C) Any SVT with bundle branch block
(D) A and C
3. Which of the following treatment options would be appropriate in a dog with ventricular tachycardia?
(A) Diltiazem for rate control by blocking the impulses in the atrioventricular node
(B) Intravenous lidocaine
(C) Digoxin
(D) None of the above

Arrhythmias in congestive heart failure

N. Sydney Moise

The coexistence of arrhythmias with valvular or myocardial disease is common. In some situations the development of the arrhythmia may precipitate deterioration that necessitates hospitalization. For example, some animals may be reported to have a sudden worsening in their condition with increased dyspnoea and weakness. Increasing current medications will be likely to help; however, the reason for a sudden change must be investigated. A common reason for such a history is the development of atrial fibrillation. Atrial fibrillation is the most common arrhythmia that is treated in human and veterinary medicine. This particular arrhythmia may develop in dogs with degenerative atrioventricular valve disease or dilated cardiomyopathy, particularly if marked atrial enlargement is present. In dogs with dilated cardiomyopathy (especially Dobermanns), ventricular arrhythmias are common and can be detrimental. Furthermore, Boxers with heart failure secondary to arrhythmogenic right ventricular cardiomyopathy are very prone to ventricular arrhythmias.

The specific plan of how to treat atrial fibrillation depends on numerous factors, such as the underlying diagnosis, severity of congestive heart disease, ventricular response rate, renal function and the ability to have a follow-up examination. Diagnostics to understand these

problems must be completed. In addition, a baseline 24-hour Holter recording in the home environment is helpful for understanding the heart rate of the dog. It is well established that the heart rate at a veterinary clinic does not offer a true picture of the ventricular response rate. Once this is understood, medications such as diltiazem, digoxin or a combination of diltiazem and digoxin are given. This is followed by a recheck examination in 7–10 days to assess how the dog is doing and determine the digoxin level, and a follow-up Holter recording is performed to evaluate the heart rate response over the entire 24 hours. Treatment decisions are made based on these results. Follow-up examinations will probably occur at 3-month intervals. At first, owners may not understand that the financial and time investment will make a difference; however, when the heart rate over the 24 hours averages less than 125 bpm this can be very beneficial to the patient. The importance of titrating medication can be explained: using the analogy of treating this rhythm disorder just as a diabetic might have its blood glucose monitored helps owners to understand the value of careful treatment management.

KEY LEARNING OBJECTIVES

- Know the most common arrhythmias that result in deterioration of dogs with heart disease
- Recognize the breed tendencies and predisposing factors for the development of arrhythmias
- Be able to develop a plan for the management of dogs with atrial fibrillation

Delivered by BSAVA to:

Guest (guest)

IP: 54.198.67.100

On: Wed, 26 Apr 2023 11:04:20

MULTIPLE CHOICE QUESTIONS

- Which of the following statements is true concerning 24-hour Holter monitoring?
 - It should only be used in the most difficult cases to understand the heart rate response to atrial fibrillation
 - The frequency of ventricular arrhythmias can be equated to a 10-minute continuous electrocardiogram (ECG) performed in the hospital
 - Decisions for home treatment on dosing of antiarrhythmics and drugs to control ventricular response rate are made at the initial admission and electrocardiographic examination
 - 24-hour Holter monitoring can assist in understanding the ventricular response rate to doses of diltiazem and digoxin
- What are the complications of the following medications used to treat atrial fibrillation?
 - Diltiazem — hypertension
 - Digoxin — anorexia
 - Atenolol — anxiety
 - Mexiletine — hypertension
- What are the ECG characteristics of atrial fibrillation?
 - Wide regular R-R intervals
 - Narrow irregular R-R intervals
 - Wide irregular R-R intervals
 - Alternating wide and narrow R-R intervals

Arrhythmias in cats: when to worry

Pedro Oliveira

Arrhythmias in cats are most commonly due to structural heart disease and less often due to extracardiac disease (e.g. urinary obstruction). A study describing the prevalence of ventricular arrhythmias in cats reported that in 96% of cases an underlying primary cardiac disease was present, in contrast with 69% in dogs. For this reason, the identification of an irregular heart rhythm in a cat should always prompt a cardiovascular investigation with echocardiography, as the likelihood of an underlying structural problem is high. Additionally, an irregular heart rhythm may be the only sign of an underlying cardiomyopathy and may carry the risk of sudden death without any additional clinical signs.

Cardiomyopathies are by far the most common cardiac disease in cats. Hypertrophic cardiomyopathy (HCM) is the most commonly identified, followed by restrictive cardiomyopathy. Arrhythmogenic right ventricular cardiomyopathy is found less commonly. Dilated cardiomyopathy is rare nowadays and most suspected cases are affected by myocarditis or other cardiomyopathies at an end stage with marked systolic dysfunction.

The arrhythmias encountered may be supraventricular or ventricular in origin, with ventricular arrhythmias being very common. Most commonly an arrhythmia is detected during physical examination and then confirmed with an electrocardiogram. Clinical signs directly related to the irregular heart rhythm are uncommon as cats can withstand very fast heart rates during a tachyarrhythmia (e.g. >300 bpm). Additionally, significant bradycardia is uncommon, as even in cats with complete atrioventricular block, the underlying junctional or ventricular escape rhythm maintains the heart rate at a level that is compatible with a relatively normal life (100–140 bpm). Nevertheless, collapse or at least lethargy and weakness may occur in some cases, especially

with sinus node dysfunction or atrioventricular block that results in prolonged ventricular pauses. An echocardiographic examination should always be performed to assess the structure of the heart. Blood analyses and systemic blood pressure should also be performed, especially in case of suspicion of HCM as hypertensive and hyperthyroid cardiomyopathies have the same echocardiographic appearance. The most commonly used anti-arrhythmic drugs in cats include diltiazem for supraventricular arrhythmias, and beta-blockers (atenolol or propranolol) or sotalol for both supraventricular and ventricular arrhythmias.

KEY LEARNING OBJECTIVES

- Identify common arrhythmias in cats
- Know the underlying causes for those arrhythmias and their significance
- Understand treatment options for arrhythmias in cats

MULTIPLE CHOICE QUESTIONS

- In which of the following conditions do cardiac arrhythmias occur most often in cats?
 - Urinary obstruction
 - Respiratory disease
 - Cardiomyopathies
 - Splenic neoplasia
- Which of the following tests would you perform to investigate an arrhythmia in a cat?
 - Electrocardiogram
 - Echocardiography
 - Blood analyses and blood pressure
 - All the above are important and should be performed
- Which of the following drugs is most commonly used for treatment of ventricular tachycardia in cats?

(A) Lidocaine	(C) Diltiazem
(B) Atenolol	(D) Digoxin

BSAVA
Guest (guest)

IP: 54.198.67.100

On: Wed, 26 Apr 2023 11:04:20