MULTIPLE CHOICE QUESTIONS

- What has pulse oximetry monitoring in cats been shown to do?
 - Reduce the odds of death
 - Not be important
 - Be unreliable
 - Increase the odds of death
- Which one does ECG NOT give us information on?
 - Heart rate
 - Electrical activity of the heart

- Cardiac output
- Cardiac rhythm

- Effectively monitoring a patient that is anaesthetized consists of which of the following?
 - Monitoring, including capnography, pulse oximetry and arterial blood pressure
 - The presence of a suitably trained and experienced anaesthetist
 - Clinical observations of the patient
 - All of the above

ECG monitoring under anaesthesia

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In recent years, the use of an ECG has become commonplace in companion animal practice. An ECG provides us with information about the electrical activity of the heart, allowing determination of both the rhythm and heart rate. However, it does not tell us whether the heart is contracting normally and therefore should be used in conjunction with peripheral pulse palpation; ideally echocardiography should also be used when assessing cardiac function.

The use of an ECG during routine monitoring of patients during sedation and general anaesthesia can help identify cardiac rhythm disturbances. Whilst a large proportion of the arrhythmias seen during anaesthesia are benign and require no intervention, it is important to identify those that are haemodynamically and clinically significant. If untreated, these malignant arrhythmias can result in a reduction in cardiac output, arterial hypotension, hypoperfusion of tissues and even death.

Cardiac arrhythmias are an important cause of perioperative complications encountered in companion animal species. The causes of arrhythmias seen during anaesthesia can be broadly divided into three categories:

- Anaesthetic-related, including drug administration, hypoxaemia, hypotension and hypothermia
- Procedural, including surgical stimulation and haemorrhage
- Patient-related, including underlying cardiac disease and pre-existing systemic illness.

Successful management of cardiac arrhythmias under anaesthesia requires accurate identification of the nature of the arrhythmia itself, establishing and, where possible, correcting any factors that may have contributed to its development and selecting appropriate pharmacological interventions.

KEY LEARNING OBJECTIVES

- Develop confidence in identifying abnormal electrocardiogram (ECG) rhythms that may be encountered in patients following sedation and under general anaesthesia
- Understand when arrhythmias encountered under anaesthesia require intervention and which treatment options may be most appropriate
- Appreciate the arrhythmogenic potential of commonly used anaesthetic drugs

MULTIPLE CHOICE QUESTIONS

- What does the 'T' wave on a normal ECG trace represent?
 - Atrial depolarization
 - Atrial repolarization
 - Ventricular depolarization
 - Ventricular repolarization
- Which arrhythmia is depicted in the ECG trace in Figure 1?

Figure 1: ECG trace.

- Sinus tachycardia
 - Second-degree degree atrioventricular block
 - Accelerated idioventricular rhythm
 - Atrial fibrillation
- The cardiac effects of medetomidine can be described as biphasic. Which of the following describes the phase 1 response?
 - Peripheral vasoconstriction, hypertension and reflex bradycardia
 - Peripheral vasoconstriction, hypertension and reflex tachycardia
 - Peripheral vasodilation, hypotension and reflex bradycardia
 - Peripheral vasodilation, hypotension and reflex tachycardia