CARDIOLOGY MYTHS

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In veterinary medicine, continuing education is generally accepted as necessary to perform our work properly, although sometimes we assume that certain medical beliefs need not be questioned. These beliefs can become dogma as time goes and, unfortunately, relying on these myths can become dangerous for the animals. This talk includes a list of myths around veterinary clinical cardiology, usually based on these beliefs and even in the literature, that we have learned over the years, and with little evidence to support their validity.

**Congestive Heart Failure (CHF)**
Degenerative mitral valve disease is the most frequent acquired heart disease in dogs, and it usually leads to the development of the clinical picture of CHF.

It is important to recognize that cough is not a consistent finding in CHF, and the coexistence of chronic cough and heart murmurs in a dog should not be misinterpreted. Other concurrent diseases that appear in dogs predisposed to mitral valve disease, such as tracheal collapse, chronic bronchitis, etc. can difficult the clinical distinction.

The congestive heart failure seen in dogs with degenerative mitral valve disease is due to the increased pressure in the left atrium and pulmonary veins, causing accumulation of fluid in the lung interstitium. In these cases, the best indicator of CHF is breathing rate. The cause of the cough in these dogs is rather due to compression of the airways seen with left heart enlargement. However, cough can be caused by cardiomegaly without having CHF.

In cases of CHF where cough is observed, this tends to be due to the accumulation of fluid in the airways. These patients also show other signs of respiratory distress such as dyspnoea and even cyanosis.

It is true that people with CHF show cough. This cough is usually related to changes of position, from vertical to horizontal when going to bed. Therefore, the cough is usually more common at night, or at getting up in the morning. Dogs with CHF may cough; however, we should also have other findings such as tachypnea, tachycardia, and dyspnea.

**Heart rate (HR)**
We've been taught that HR is different in dogs according to the body size. While it is true that there is a difference between species, e.g. the typical example of the heart rates of an elephant and a mouse, this difference is not so clear in animals of the same species and different size. Puppies normally have a higher HR than adult dogs.

Most of the studies on the subject show that there is no association between the size of the animal and the heart rate. These studies are based on itinerant monitoring during 24 hours or electrocardiograms during a calm state. Another study with a larger number of animals showed that large dogs can have a lower HR than small dogs. However, this difference is 10 beats per minute, so it is difficult this has any clinical relevance. The fact that the study is based on auscultation of the animal during the consultation in the clinic highlights the role played by the stress on the heart rate variation.

**X-rays and enlargement of the heart**
For many years we've been taught that an inverted ‘D’ in ventrodorsal x-rays is indicative of right heart enlargement. However, when we perform ultrasounds, many dogs with these radiographic findings have a normal heart. Therefore, an inverted ‘D’ is rather a normal variant in some dogs and should not be used as an indicative finding for cardiomegaly.

The vertebral heart scale (VHS) was published as a general measure to help clinicians to identify cardiomegaly. What VHS does is identify a big heart due to volume overload. However, HSV cannot identify heart disease.

**Electrocardiography**

The electrocardiogram (ECG) is an extremely useful tool for identifying arrhythmias. The use of echocardiography, as well as the low sensitivity of the ECG to identify enlarged heart chambers, has rendered the ECG with a lower clinical utility that in the past.

ECG can be used to identify arrhythmias present at the time. However, the effectiveness of the antiarrhythmic drugs cannot be based on the electrocardiographic findings. A 2-minute electrocardiography recording provides information only of 0.15% of cardiac events. Therefore, patients who have intermittent arrhythmias (such as ventricular ectopic complexes) or are receiving antiarrhythmic medication will benefit much more from a 24-hour Holter.

**Dental and heart diseases**

The association between gum disease and degenerative mitral valve disease is probably one of the biggest myths that exist in veterinary cardiology.

In people, antibiotics have been administered prophylactically before oral cleaning for many years due to increased risk of heart disease (mainly arteriosclerosis). However, cardiology guidelines changed this practice several years ago, and prophylactic antibiotics are only recommend to people at high risk (prosthetic implant). At the same time, individuals with congenital diseases such as aortic valve stenosis or patent ductus arteriosus have a higher risk of developing infective endocarditis secondary to oral infections.

This information has been extrapolated to veterinary medicine for many years. However, there is no evidence that this is true. Dogs rarely develop arteriosclerosis. Dogs with degenerative mitral valve disease are usually small dogs, which rarely suffer bacterial endocarditis. In fact, this condition is much more common in large breed dogs (being a large breed dog is considered a risk criterion for endocarditis), in which degenerative disease of the mitral valve is not as common as in small breed dogs. Therefore, disease of the mitral valve should not be associated with an increased risk of bacterial endocarditis. We must not forget that dogs with congenital diseases such as subaortic stenosis have a higher risk of developing bacterial endocarditis, and should receive antibiotics prophylactically during dental cleaning or any other surgical procedure.