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Syncope complain is always scary for the owner, and a puzzle for the veterinarian. Most of the times, by the arrival at the hospital, the animal is conscious and looks healthy, and often, without any alterations that immediately explain the syncope episode.

Syncope or fainting is a sudden and transient (brief) loss of consciousness associated with loss of postural tone, followed by a spontaneous recovery. Syncope may or may not be associated with urine and feces elimination. It is the result of an abrupt reduction of oxygen and/or glucose delivery to the brain, essential substrates for the oxidative metabolism.

Syncope is a clinical sign, not a disease. Therefore, the main cause must be determined to perform the best management. There are several possible causes for a syncope episode among them are cardiovascular, metabolic, respiratory and neurological origins.

**Syncope or seizure?**

Syncope must be differenciated from seizure. Typically, syncope has a short duration (less than 1 minute), results in consciousness loss, flacid paralysis or limb spasticity, and sometimes, opisthotonos (condition of abnormal posturing that involves rigidity and severe arching of the back, with the head thrown backward) and vocalization. Seizure, more commonly leads to tonic-clonic muscle contractions, with a longer duration (over a minute), may present some pre-ictal behavior change, a slower return to normal and some degree of neurological post-ictus compromise. Pre-syncope is characterized by a transient wobbling and weakness of rear limbs, without loss of consciousness, caused by a slight decrease in brain perfusion.

**Causes**

**Cardiogenic syncope** – results from incapacity to adequate cardiac output (CO), as a result of myocardial failure, valvular insufficiency, bradyarrhythmias (sinus arrest, complete atrioventricular block) or tachyarrhythmias (supraventricular and ventricular), sick sinus syndrome, difficulty in ventricular filling (cardiac tamponade, intracardiac masses), outflow obstruction (hypertrophic cardiomyopathy with anterior motion of mitral valve, subaortic stenosis, pulmonic stenosis), cyanotic congenital heart diseases, pulmonary thromboembolism, pulmonary hypertension, heartworm disease.

**Hypotension syncope** – may be caused by the use of drugs that alter vascular responsiveness (vasodilators), hypovolemia caused by blood loss, plasma volume reduction secondary to excessive diuretic use or gastrointestinal problems (diarrhea, vomiting).

**Neurocardiogenic syncope** - also called neurally mediated bradycardia, cardioneurogenic syncope, vasodepressor syncope, reflex syncope or vasovagal syncope – apparently, this is the most common diagnosed cause in humans. There are evidences of the occurrence of this type of syncope in animals, but the mechanism is not well established. It has been reported in Boxers. Pathophysiology of neurocardiogenic bradycardia is unclear, but in people, it is described as caused by an autonomic reflex, leading to a bradycardia, in the presence of vasodilation or hypovolemia. It may be triggered by specific situations as cough, micturition, defecation, pain, emotion, agitation, exercise, use of slip collar. This type of syncope is also described in Boxers are is commonly known as ‘‘syncope in Boxers’’ or ‘‘the Boxer Syndrome’’.

**Syncope secondary to anemia, blood hyperviscosity, hypoglycemia, hypoxia.** In patients with hypoadrenocorticism it may result from hypovolemia and hypoglycemia. Chronic respiratory diseases and resultant hypoxemia and pulmonary hypertension are also possible causes of syncope.

Other causes related to syncope in dogs: respiratory diseases (tracheobronchial and pulmonary diseases, upper airway diseases), metabolic and hematological diseases (anemia, hyperadrenocorticism, hypoadrenocorticism, GI diseases, neurological diseases)

The clinical approach to the patient with a history of syncope requires a detailed history, complete physical examination, and other exams, which include complete blood count,
biochemical profile, potassium and glucose determination, electrocardiogram, blood pressure, echocardiogram. Questions regarding the use of drugs, which may contribute to syncope as vasodilators, beta-blockers, diuretics, insulin, etc.

Depending on animal characteristics (signalment), history and physical exam results, the diagnostic tests are performed to confirm or to eliminate certain causes. If the animal presents pale mucous membranes, differentiation between anemia and vasoconstriction should be done. If a loud systolic murmur over the aortic valve area is auscultated, a diagnosis of subaortic stenosis should be considered, and an echo will be necessary to confirm the diagnosis and determine the severity. In this case, an ECG is also required, including a Holter monitoring, in order to evaluate the possibility of arrhythmias. Boxers and Dobermanns are predisposed to dilated/ arrhythmogenic cardiomyopathy, with risk of sudden death. Therefore, an ECG and echocardiographic evaluation are indicated. Other possible tests are high resolution ECG, postural test and electrophysiological studies.

When the primary cause can be identified and treated, syncope can be abolished or avoided. Prognosis depends on the primary cause.

Examples of treatment for the causes of syncope: pacemaker for bradyarrhythmias, antiarrhythmics for tachyarrhythmias, sildenafil for pulmonary hypertension, pimobendan for myocardial failure, cough suppressants, treatment of anemia.

References: