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DYSPNEA: HOW TO FIND ITS CAUSE? AN INTERACTIVE CASE-BASED VIDEO SESSION

During the presentation a number of videos of dyspneic pets will be discussed. The focus will be on the general impression of the patient, specifically focusing on respiratory noises and the breathing pattern.

Animals with dyspnea are mostly emergency cases and they need immediate veterinary attention. Having a simple algorithm in mind can help the veterinarian to keep calm and find the cause of dyspnea quickly.

Oxygen therapy can always be recommended, but one should keep in mind that oxygen administration can result in more stress in some animals, which in turn may worsen the respiratory distress. Oxygen administration alone is also not suitable to solve the dyspnea. Establishing a diagnosis is therefore essential. Because dyspneic dogs, and especially cats, are very fragile, it is important to collect as many pieces of relevant medical information as possible without restraining the patient. I never force a dyspneic animal to a certain position as this could lead to its death.

What do I do before I touch the animal?

The first question I always ask myself: do I hear a respiratory noise? If the answer is yes, the problem should be localized in the upper airways: nose, pharynx, larynx or the cervical trachea. It is impossible to produce an audible respiratory noise with the lungs, pleural space or the heart. If an audible respiratory noise has been detected, then an airway obstruction should be present. Depending on the type of noise and a (short) medical history, as well as the species, the age and the breed of the animal, a high suspicion of a certain disorder can be established, purely with the inspection of the pet.

If no respiratory noise can be heard, then the problem is most likely located in the thorax. In this case I try to observe the type of respiration. Paradoxical breathing pattern may be indicative of a diaphragmatic dysfunction and can be caused by diaphragmatic hernia, pleural effusion and pneumothorax. Less often, diaphragm fatigue is present, which can develop from any type of dyspnea if it is chronic enough. Diaphragm

paralysis is also a possible cause of paradoxical breathing pattern, but this problem is typically present in a tetraparetic/tetraparalytic animal. In case of a paradoxical breathing pattern palpation of the ictus cordis, auscultation of the heart and lungs and percussion of the lungs can help to differentiate between the above mentioned conditions. To confirm the presence of pleural effusion ultrasonography or radiography can be used, as long as the animal is not forced in a certain position. If pneumothorax is suspected or the respiratory pattern is not paradoxical, then making a thoracic radiograph is the best diagnostic test.

In endemic areas we should always think of *Angiostrongylus vasorum* (French heart worm) infection in dyspneic dogs. This infection is easy to diagnose with an antigen snap test from a blood sample or with light microscopy of a fecal sample. Under the microscope the intensively moving larvae can be easily recognized even from a native sample when the infection is severe.

Unlike cough, dyspnea can be caused by other organs than the respiratory tract. Congenital cardiac anomalies with intra-cardiac right to left shunting (such as tetralogy of Fallot) and severe acidosis (resulting from for example diabetes mellitus) may also lead to dyspnea. Animals with congenital right to left shunting are often too small for their age and the dyspnea spectacularly improves with rest.

Recommended reading

- Le Boedec K, Arnaud C, Chetboul V, Trehiou-Sechi E, Pouchelon JL, Gouni V, Reynolds BS. Relationship between paradoxical breathing and pleural diseases in dyspneic dogs and cats: 389 cases (2001-2009). J Am Vet Med Assoc. 2012;240:1095-1099.