In rabbits, respiratory disease has commonly been attributed to infections with *Pasteurella*. Indeed, this pathogen is commonly isolated from the respiratory tract in rabbits. Nevertheless, various other pathogenic organisms, including *Bordetella*, *Pseudomonas* and *Staphylococcus* spp., may be isolated as well. Thus, although *Pasteurella* may certainly be considered an important cause of respiratory disease in rabbits, other causes should also be taken into consideration and included within the differential diagnoses of rabbits with dyspnoea.

Upon evaluation of respiratory disease, different types of classification may be used, which can be based on aetiology, type and pattern of the associated signs and symptoms, or the location, organ or tissue involved in the disease. Traditionally, a classification based on location is used, whereby diseases can be divided into those affecting the upper or the lower respiratory tract (with the distinction between the two made at the level of the trachea) and those affecting the pleural cavity.

Rabbits with upper respiratory disease involving the nasal cavity and/or sinuses commonly present with sneezing and nasal discharge, and the nature of the discharge may provide clues regarding the aetiology of the underlying cause. For example, serous or mucous discharge points more towards a non-infectious cause (e.g., irritation by dust or fumes), whereas purulent discharge suggests (secondary) bacterial involvement. In addition, it is important to note whether the discharge is uni- or bilateral, with unilateral nasal discharge potentially resulting from a foreign body, periapical abscess, (funal) granuloma or neoplasm. To obtain a diagnosis, imaging techniques (particularly computed tomography [CT]) or rhinoscopy may be helpful. In contrast to diseases of the nasal cavity, tracheal diseases appear less common in rabbits, although tracheal obstructions, either due to iatrogenic trauma from intubation resulting in tracheal stenosis or fungal granuloma, have been diagnosed in rabbits. Tracheoscopy should therefore certainly be considered in the diagnostic protocol of upper respiratory disease in rabbits, especially those demonstrating a typical laryngeal or tracheal stridor.

Aside from pneumonia and lung abscesses, lower respiratory disease in rabbits commonly results from metastatic lung disease, particularly in older does suffering from uterine carcinoma. Other causes may include allergies, primary lung neoplasia, trauma or congestive heart failure, resulting in pulmonary oedema. Similar to dogs and cats, thoracic radiographs or CT will often be helpful to determine extent and pattern of the lung
disease, thereby helping to narrow down the list of possible causes, although additional diagnostic tools (e.g., bronchoscopy, tracheal lavage or performance of lung biopsies) may need to be considered to obtain a definite diagnosis.

In rabbits, intrathoracic processes, in particular thymoma and lymphoma, can also be an important cause of respiratory distress, which often may be diagnosed with the help of radiography or ultrasonography and fine-needle aspiration (FNA). Aside from these tumours, diaphragmatic herniations, which may result in compromised respiration due to intrathoracic organ displacement, have also been reported in rabbits.

In conclusion, although Pasteurella is a commonly found pathogen in rabbits, other causes should also be considered in the differential diagnosis of rabbits with respiratory disease.

**Key Learning Objectives**

- Although Pasteurella is a pathogen that is commonly isolated from the respiratory tract in rabbits, respiratory disease may also arise as a result of various other causes.

- Similar to dogs and cats, respiratory diseases may be divided into those affecting the upper or the lower respiratory tract, and those affecting the pleural cavity, whereby the clinical signs displayed by the animal may help to differentiate between these groups.

- The work-up of respiratory disease in rabbits follows similar guidelines as those in other companion animals, with (advanced) imaging techniques and endoscopy comprising important tools to establish a (tentative) diagnosis.

**Multiple Choice Questions**

1. Which of the following pathogens is rarely isolated from the respiratory tract of rabbits?

   a. *Bordetella* spp.

   b. *Mycoplasma* spp.

   c. *Pseudomonas* spp.

   d. *Staphylococcus* spp.
2. Which of the following is the most common cause for unilateral nasal discharge in rabbits?

   a. Dental abscess

   b. Exposure to dust

   c. Fungal granuloma

   d. Nasal adenocarcinoma

3. A 4-year-old intact doe is presented to you with severe respiratory distress. Which of the following diseases should be placed highest on your list with differential diagnoses for the respiratory distress seen in this particular rabbit?

   a. Asthma/allergy

   b. Cardiac disease

   c. Metastatic lung disease

   d. *Pasteurella*-associated pneumonia

4. Which of the following techniques is considered most useful in the diagnostic work-up of rhinitis due to a periapical abscess?

   a. Computed tomography

   b. Culture and sensitivity testing of the pus

   c. Rhinoscopy

   d. Skull radiographs
5. A 6-year-old male neutered rabbit is presented to you with respiratory distress. Upon physical examination you note a bilateral exophthalmos. Which of the following diseases should be on the top of your list with differential diagnoses?

   a. Cardiomyopathy

   b. Lymphoma

   c. Pericardial effusion

   d. Thymoma

Answers to multiple choice questions are available in the answer key.

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