

# RETROSPECTIVE CLINICAL STUDY ON CHRONIC COUGH IN DOGS

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**Abstract:** The cough is a vital physiological reflex (initiated by cough receptors in the larynx, trachea and bronchi) that serves as a defence mechanism by evacuating foreign or self materials from the airways. Despite its obvious protective function, chronic unproductive cough can lead to damage to the airway mucosa, as well as patient discomfort and reduced quality of life. In general, chronic cough in dogs may occur as a secondary symptom of respiratory and/or cardiac disease. Treating these underlying problems takes priority over simply suppressing cough, although determining these underlying causes of cough can be challenging. The study aimed to analyze the underlying causes of chronic cough in dogs, with the goal of refining and prioritizing diagnostic strategies and methods for determining the etiology of chronic cough. This study was carried out on 92 cases, between January 2019 and December 2022, which met certain conditions, being corroborated clinical examination (inspection, palpation, listening) with paraclinical examinations (imaging examinations and laboratory tests). Chronic bronchitis and heart failure were the main pathologies associated with chronic cough in dogs, especially in dogs aged 8-14 years. The haematological profile did not show significant changes from the reference values nor among the conditions causing chronic cough in the dogs in this study. Chest radiography should be the first step in the clinical approach to identifying the cause of chronic cough.

**Keywords:** cronic cough, dogs, clinical examination, paraclinical examination

## • Introduction

Coughing is a vital physiological reflex (initiated by cough receptors in the larynx, trachea and bronchi) that serves as a defence mechanism by evacuating foreign or own material from the airways, improving mucociliary cell motility and protecting the airways against accidental aspiration of material from the oral cavity.

The European Respiratory Society (ERS) defines cough as "a forced expelling action" or "action against the closed glottis that is associated with a characteristic sound or sounds". In veterinary practice, cough is an important clinical sign that may indicate an underlying disease process. Despite its obvious protective function, chronic unproductive cough can lead to damage to the airway mucosa, as well as patient discomfort and reduced quality of life.

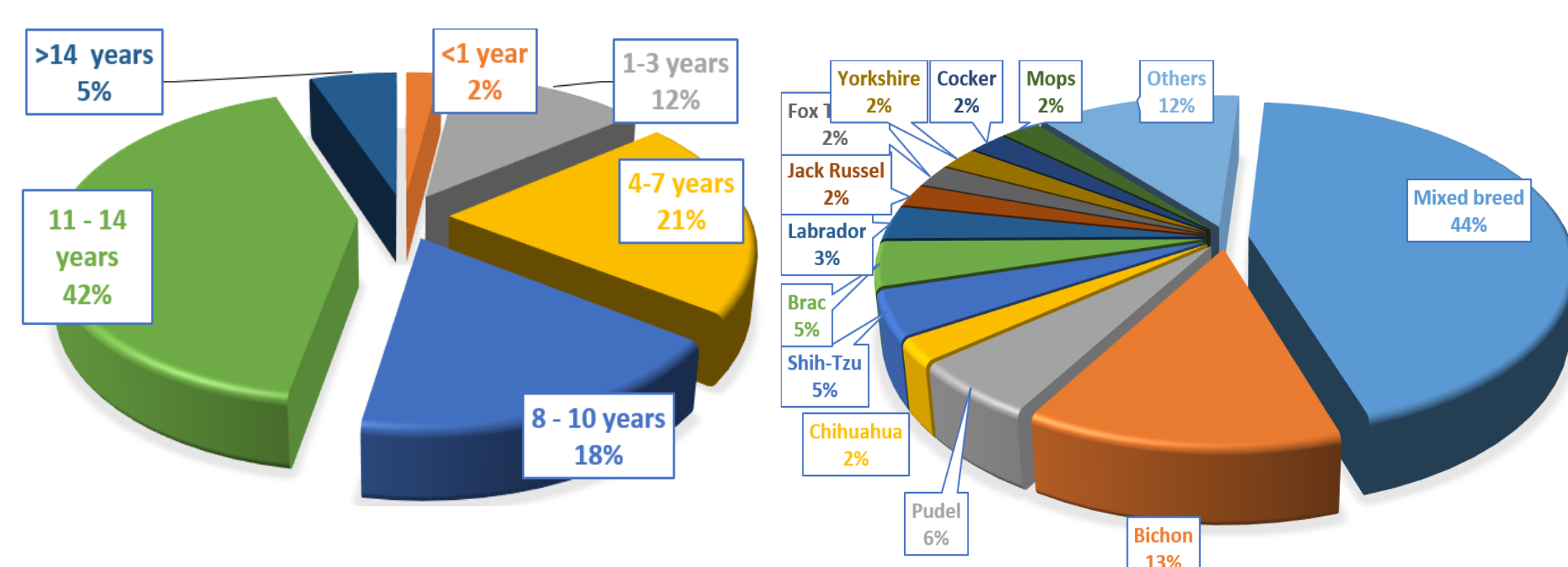
In general, chronic cough in dogs may occur as a secondary symptom of respiratory and/or cardiac disease.

## • Material and method

This study was carried out on 92 cases, between January 2019 and December 2022, which met certain conditions, being corroborated clinical examination (inspection, palpation, listening) with paraclinical examinations (imaging examinations and laboratory tests).

## • Results and discussions

In this study, one of the criteria considered was the age of the patients, which ranged from less than 1 year to more than 14 years. For this reason, the dogs taken in the study were divided into six intervals, namely: <1 year, 1-3 years, 4-7 years, 8-10 years, 11-14 years, >14 years. The prevalence of chronic cough according to age was observed to be highest in dogs aged 11-14 years (42%), followed by those aged 4-7 years (21%) and very close to that in those aged 8-10 years (18%), while the lowest prevalence was found in dogs under 1 year (2%)(Fig.1).



**Figure 1.** Prevalence of chronic cough in dogs according to certain age ranges

**Figure 2.** Prevalence of chronic cough in dogs by breed

Out of the total of 92 patients, 52% of the patients seen were male and 48% were female. The very close percentage values resulting from the analysis of the data reveal an approximately equal distribution of the occurrence of this symptom according to gender.

Breed is an important clinical feature in cardio-respiratory diseases evolving with chronic cough, some breeds being predisposed to lung diseases that may trigger the occurrence of this symptom in breed-specific pathologies. Figure 2 shows that out of the total of 92 patients, the dogs with the highest percentage of cough were the mixed breed (44%), followed by the Bichon breed (13%), Pudel (6%), Shih-Tzu (5%), Brac (5%) and other breeds with very low percentage.

The etiological diagnosis is a key element in the treatment of chronic cough, because only after identifying the causative factor can a therapeutic protocol be established to eliminate or mitigate the cause.

Following the evaluation of the dogs included in this study, the most common diagnosis identified was chronic bronchitis in a percentage of 47%, followed by heart failure in different stages (45%).

The mean values of complete blood count parameters did not show changes outside the reference values, but showed more or less obvious fluctuations between the cardiopulmonary conditions diagnosed (table 1).

| Pathology          | RBC<br>M/ $\mu$ L | Hematocrit<br>% | WBC<br>K/ $\mu$ L | Neutrophil<br>K/ $\mu$ L | Monocyte<br>K/ $\mu$ L | Eosinophil<br>K/ $\mu$ L | Platelet<br>K/ $\mu$ L |
|--------------------|-------------------|-----------------|-------------------|--------------------------|------------------------|--------------------------|------------------------|
| Bronchial asthma   | 6,57              | 42,20           | 10,03             | 6,78                     | 0,72                   | 0,57                     | 216                    |
| Bronchopneumonia   | 7,47              | 51              | 10,70             | 6,30                     | 0,20                   | 1,30                     | 247                    |
| Chronic bronchitis | 6,76              | 44,10           | 8,94              | 5,27                     | 1,18                   | 0,66                     | 330,75                 |
| Heart failure      | 6,39              | 39,66           | 13,96             | 10,56                    | 0,83                   | 0,43                     | 273,43                 |

**Table 1.** Average values of blood parameters in the most common pathologies associated with chronic cough

Radiographic evaluation of the chest, including the lung parenchyma, tracheobronchial tree, pulmonary vessels and heart, provided an important database for determining the causes of chronic cough. Thus, in dogs with chronic cough of cardiogenic cause, chest radiographs revealed the presence of cardiomegaly associated with enlargement of the left atrium, the presence in variable amounts of edema fluid in the bronchoalveolar space and pulmonary venous distention.

## • Conclusions

Chronic bronchitis and heart failure were the main pathologies associated with chronic cough in dogs, especially in dogs aged 8-14 years.

The haematological profile did not show significant changes from baseline nor among the conditions causing chronic cough in the dogs in this study.

Chest radiography should be the first step in the clinical approach to identify the cause of chronic cough.

In dogs with generalised or irregular alveolar bronchospastic radiographic patterns, eosinophilia may suggest the presence of eosinophilic bronchopneumopathies and the need to perform bronchoalveolar lavage for cytological examination of lavage fluid to identify the cause of chronic cough.