Update on Feline Asthma

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KEYWORDS

• Feline asthma • Feline lower airway disease • Airway eosinophilia
• Airway hyperresponsiveness

KEY POINTS

- Feline asthma is an important chronic lower airway disease of cats; however, definitive diagnosis is challenging because of overlapping clinicopathologic features with other lower airway disorders.
- Discriminating asthma from other chronic lower airway diseases (eg, infectious or chronic bronchitis or a variety of parasitic infections) is necessary because of differences in pathogenesis, novel treatments, and prognosis.
- Emerging diagnostics including thoracic CT scans and pulmonary function testing may help differentiate feline asthma from other chronic lower airway diseases.
- Therapy for feline asthma using glucocorticoids and bronchodilators might be inadequate or contraindicated in some cats; novel treatments investigated in experimental models of feline asthma could be beneficial in refractory cases or as adjuncts for glucocorticoid-sparing effects.

INTRODUCTION

Asthma is a common lower airway inflammatory disease in cats thought to be allergic in cause.[1] It is most commonly treated with glucocorticoids and bronchodilators. Although these are effective treatments in many cats, some cats are unresponsive or minimally responsive. In addition, chronic glucocorticoid therapy might not be well tolerated or could be contraindicated with certain diseases, such as diabetes mellitus or congestive heart failure. Finally, these therapies fail to reverse the abnormal immune response and ultimately do not ameliorate chronic airway remodeling that results in declining lung function. New therapies capable of restoring immune tolerance, acting more selectively to diminish allergic immune dysfunction with minimal systemic effects, or blunting airway remodeling would be desirable. Evaluation of novel

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therapeutics in clinical trials of pet cats with asthma is hindered by a lack of consensus on what defines asthma and how it can be discriminated from other lower airway disorders. Thus, development of additional diagnostic tests in this arena is sorely needed. This article reviews what is currently known regarding the diagnosis and treatment of feline asthma as well as several new diagnostics and treatments that are on the horizon.

EPIDEMIOLOGY

Defining epidemiologic factors in feline asthma is complicated by a lack of consensus regarding what defines asthma in cats and how in practice it is best discriminated from other disorders. Most published studies fail to discriminate spontaneous feline asthma from chronic bronchitis, combining information from both disorders. Feline asthma is estimated to affect approximately 1% to 5% of the feline population.[2] Although the median age at presentation is 4 to 5 years, many cats have a history of chronic signs, suggesting that disease onset occurs much earlier in life.[3–5] There is no clear gender predilection.[3–7] The Siamese breed is overrepresented in some studies,[3,7] but not others.[4,6]

PATHOGENESIS

Evidence that asthma is mediated by an allergic response after exposure to inhaled aeroallergens is reviewed in detail elsewhere.[1] Aeroallergen-induced stimulation of a T helper 2 response leads to elaboration of a variety of cytokines. These cytokines drive the molecular switches that lead to pathologic changes in the airways. The 3 major hallmark features of asthma extrapolated from the disease in humans include airway inflammation, airway hyperresponsiveness and airflow limitation (the latter being at least in part reversible), and airway remodeling.[8]

PATIENT HISTORY AND PHYSICAL EXAMINATION

Clinical signs of feline asthma are variable with 2 major common clinical presentations. The first is an asthmatic crisis (“status asthmaticus”) and the second is the chronic clinical presentation of cough and increased breathing effort. There are gradations in the severity and frequency of clinical signs. Cats in status asthmaticus present with open mouth breathing, tachypnea, and increased abdominal effort (“push”) on exhalation. Signs in cats with chronic clinical signs can go unnoticed and untreated by the owner for a long period of time, allowing progression of pathologic changes. It is estimated that 10% to 15% of cats present for vomiting or paroxysmal hacking and coughing[4,7] rather than respiratory distress. Complaints of hacking up hairballs mimicking cough can inadvertently lead to gastrointestinal, not respiratory workups, making identification of a chronic asthmatic patient more challenging.

Classic physical examination findings include cough, expiratory wheeze, and tachypnea.[3–5] Some cats lack abnormalities; however, it is often easy to elicit a cough with gentle tracheal palpation. Aside from these findings, the physical examination is relatively nonspecific, making it important to combine physical examination findings with historical information and results of diagnostic tests to reach a diagnosis of asthma.

DIFFERENTIAL DIAGNOSES

Because there is no single test to diagnose feline asthma definitively, it is important to rule out other diseases that may mimic clinicopathologic features of asthma. Many of