Pacific Tide

An informational newsletter

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About our Author

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Dr. Akol graduated from UC Davis in 1987 with a Doctorate in Veterinary Medicine. Her internship at Coast Pet Clinic in Hermosa Beach followed and was completed in 1988. Dr. Akol then pursued residency training in internal medicine at University of Pennsylvania (1988-1990). She became board certified in internal medicine in 1992. She has published articles in the area of diabetes mellitus, pancreatitis and lipidosis. Dr. Akol has a special interest in feline medicine as well as the sub-specialties of gastroenterology, endocrinology and diseases of the respiratory system.

Dr. Akol enjoys in her free time competing in ballroom dancing and has won titles nationally. She enjoys watching her son play soccer and spending time with her two dogs, Keeper and Pink.

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(small animal)

Feline Lower Airway Disease

Feline Lower Airway Disease occurs most commonly in two forms, including chronic bronchitis and asthma. Chronic bronchitis is defined as n inflammatory disorder of the lower airways that causes a daily, or near daily cough, for which other causes of cough (heartworm, cardiomyopathy, pneumonia, neoplasia) have been excluded. Asthma is specifically a disorder of lower airways that causes airflow limitation due to bronchoconstriction.

The pathophysiology of asthma is now fairly commonly believed to be due to aeroallergen and non-allergen initiated hyperresponsiveness of the bronchial smooth muscle. The allergic component is caused by development and activation of T helper 2 immune responses. Chronic bronchitis can be initiated by a wider range of airway irritants and allergens. Bronchoconstriction is not a hallmark of bronchitis. Limitation of airway diameter is a feature of bronchitis due to hyperplasia of goblet cells and mucus production, infiltration with inflammatory cells, and cytokine induction of edema. The chronic coughing is also a physical irritant that further induces inflammation and swelling. The reduction of airway diameter in chronic bronchitis is not reversible with bronchodilators. This chronic remodeling process can become a final pathway for asthma later on.

Clinical signs, diagnosis and treatment options for these two diseases overlap. There are no specific tests available in general practice that will definitively diagnose asthma vs bronchitis. In human, pulmonary function tests requiring patient participation are the mainstay of diagnosis. Variants of these tests are only available on a limited basis experimentally. So, in feline practice, diagnosis is based on several criteria. 1. History: Historical tachypnea and respiratory distress are hallmarks of both diseases. Daily coughing is usually due to bronchitis, but there can be a cough-variant of asthma that presents that way as well. Wheezing is more typical for asthma, but can be present in both disorders. If it is reversible with a bronchodilator, it is usually due to asthma. Adventitial sounds and crackles are present in later stages of bronchitis. 2. Physical examination-patients with chronic bronchitis are clinical all the time; asthmatics may be consistently clinical or only have episodic attacks. This cannot be used to differentiate since the clinical detection of signs may be too subtle to appreciate, and some variants of asthma are more consistent clinically. Additionally, over time, asthmatic patients can develop chronic airway remodeling due to the common pathways of chronic inflammation shared in bronchitis and asthma. 3. Thoracic radio-

graphs can show peribronchial pattern in both diseases. With chronicity, atelectasis, usually of the right middle lobe due to obstruction with mucus will be present. Air trapping will be demonstrated by airway hyperinflation. 4. Response to therapy may be one of the most important diagnostic test that can distinguish between chronic bronchitis and asthma. Cats with asthma may stop coughing or wheezing within 10 minutes after administration of a bronchodilator. 4. Bronchiolar lavage should reveal hypereosinophilia in asthmatic cats. Controversy exists about how many eosinophils are present in normal cat lavage samples, as well as standardization techniques for collection. Lavage samples of cats with chronic bronchitis can be more variable including eosinophilia, macrophages, lymphocytes, red blood cells and mucus.

Treatment options for both conditions are primarily palliative and lifelong. The mainstay for both is corticosteroids. Inhaler therapy has become common and can be a very effective alternative to systemic corticosteroids. Fluticasone proprionate is a synthetic corticosteroid that has an 18-fold greater affinity for the corticosteroid receptor compared with dexamethasone. It is a large molecule and acts topically resulting in poor absorption and minimal systemic bioavailability. Clinically effective absorption into the airway mucosa is delayed and optimal clinical effects may not occur for up to 2 weeks. Administration more than twice a day does not appear to have increased clinical efficacy.

Albuterol is appropriate for asthma as it results in relaxation of bronchospasm when delivered by inhaler within 1-5 minutes. It can be used as needed or daily for chronic maintenance. It can also be used in emergency cases every 30 minutes for up to 4 to 6 hours.

Possible future treatment options include stem cell therapy, and identification and elimination of specific aeroallergens. Tyrosine kinases form a group of proteins which regulate cell survival, growth and differentiation. Tyrosine kinase inhibitors have recently been of interest in the treatment of asthmatic patients. One such medication is masitinib. Studies using masitinib therapy for asthmatic cats have shown significant reduction in eosinophilic airway inflammation compared with placebo and in airway hyperreactivity; however, 100% of treated cats developed proteinuria, often severe. Aerosolized 2% lidocaine nebulized TID at a dose of 2 mg/kg has also shown some improvement in airway hyperresponsiveness, but no improvement in airway eosinophilia. Omega 3 polyunsaturated fatty acids and luteolin (an antioxidant flavonoid) have shown some promise to reduce bronchoprovocation for asthmatic patients. These treatments may be helpful, but would not be suitable for monotherapy since they do not address the allergic component to the disease. Of special note, N-acetylcystine aerosolization increases airway hyperresponsiveness in all cats tested and should never be given to cats!

Our Doctors

Internal Medicine
Kelly Akol, DVM, DACVIM (SAIM)
Merrianne Burtch, DVM, DACVIM(SAIM)
Michelle Pressel, DVM, DACVIM (SAIM)

Surgery
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Tom LaHue, DVM, DACVS
Dean Filipowicz, MS, DVM, DACVS

Oncology
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Critical Care
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Lillian Good, DVM, DACVECC

Cardiology
Mandi Kleman, DVM, DACVIM(Cardiology)

Dermatology
Katherine Doerr, DVM, DACVD

Radiology (VRS)
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Mark Lee, DVM, DACVR

Emergency
Christian Robison, DVM
Kim Delkener, DVM
Mark Saphir, DVM
Jessica Kurek, DVM

Behavior
Jan Brennan, DVM (practice limited to behavior)

About Our Hospitals

Pacific Veterinary Specialists was founded to provide high quality, specialized medical care to companion animal patients. Our practice is dedicated to serving the veterinary community as a partner in total patient care. We offer comprehensive specialized services including endoscopy, Doppler ultrasound, surgery, 24-hour ICU care, and emergency and critical care. Our staff is committed to providing compassionate and thorough medical care that meets the needs of the patient, client, and referring veterinarian. In September 2011 we opened PVSM and offer internal medicine, oncology, dermatology and cardiology Tuesday through Thursday in Monterey. Behavior consultations by appointment are available on Mondays.

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