



Feline chronic small airway disease (feline asthma)

Feline chronic small airway disease comprises a spectrum of conditions involving the small airways (bronchioles) within the lungs. The condition is also known as chronic bronchitis, allergic airway disease, allergic bronchitis and asthma.

Some cases bear similarities to asthma in humans, hence it is frequently known as 'feline asthma', however the majority of cases are not proven to have an allergic cause. Inhalation of irritants such as pollens, cigarette smoke, dust and household cleaning sprays is sometimes implicated.

The airways respond to an irritant by contraction of the bronchial smooth muscle in order to prevent the irritant from moving deeper into the lung, production of mucus to trap the irritant and initiation of a cough to expel the irritant. Contraction of the smooth muscle, mucus production and airway inflammation all contribute to narrowing of the airways which results in difficulty breathing.

Can any cats develop the condition?

Cats of any age, breed or sex can develop chronic airway disease, however young to middle aged cats are most frequently affected. Siamese cats appear to be particularly predisposed.

What clinical signs do cats show?

Signs vary from chronic coughing and/or wheezing to the development of sudden onset laboured breathing without any prior clinical signs. An increase in respiratory rate (>30-40 breaths per minute) or effort (particularly expiratory effort) may also be noticed. Symptoms may come and go or may be so mild that they go unnoticed by owners for some time.

How is it diagnosed?

Other diseases such as bacterial infections, foreign bodies, heart disease, airway parasites and lung cancer can present with similar clinical signs and therefore these all need to be eliminated before a diagnosis of chronic small airway disease can be made.

X-rays of the chest are required and usually demonstrate evidence of thickening of the bronchial (small airways) walls and air trapping within the airways. Air trapping occurs because when the airways have constricted, inspired air cannot be exhaled. The lungs therefore appear larger than normal on X-rays, as they are over-inflated. The diaphragm may seem flattened due to this over-inflation. Not all cats however will have these changes; X-rays can appear normal.

Another diagnostic technique that can be useful is bronchoscopy. This is a technique whereby a fiberoptic endoscope is passed into the airways to enable direct visualisation of the airways. Excessive mucus, and roughening and reddening of the airways may be seen in cats with chronic airway disease, although again the gross appearance can be normal in some cats. Very small endoscopes are required to examine the airways of cats and therefore this procedure is most frequently carried out at specialist institutions.

Airway washes (bronchoalveolar lavage) can also be collected and examined under a microscope for the presence of inflammatory cells, bacteria and cancer cells. These washes can also be cultured to assess



whether bacteria are present within the lungs. Lots of inflammatory cells are usually evident in washes taken from cats with chronic small airway disease.

How is small airway disease treated?

1. Anti-inflammatories

Reducing the inflammation within the airways is the most important part of treatment. Corticosteroids are potent anti-inflammatories that are used to achieve this. This treatment can be administered in different ways:

- *Systemically* - in the form of tablets (eg, prednisolone) or injections (eg, dexamethasone)

In the past corticosteroid tablets or injections have been used to treat the condition. However, treatment is required for life and long-term treatment with these drugs can result in side effects such as increases in appetite and thirst, weight gain, diabetes mellitus, and thin fragile skin.

- *Inhalational* (eg, fluticasone)

More recently inhalational steroids have been used for treatment, with the big advantage that the drug is delivered directly to the lungs where it is required, but is not absorbed into the body therefore avoiding side effects with long-term use.

2. Bronchodilators

Drugs to help dilate the airways are usually used in conjunction with corticosteroids. These can also be given in the form of oral or injectable medication (eg, terbutaline) or by inhalational treatment (salbutamol).

3. Mucolytics

In some cats excessive production of mucus can be a problem. Adding a mucolytic powder (eg, bromhexine) to the food can help in these cases.

4. Reducing exposure to irritants

Some actions can be taken in the home to reduce the severity of the signs, namely avoidance of smoking and the use of household sprays around the cat. Using a low dust type of litter may also help.

The feline inhaler

A special 'spacer' has been designed for the delivery of inhalational drugs to cats (for more details see www.aerokat.com). One end of the spacer is made to fit the inhaler, whilst a facemask is attached to the other end. One to two puffs are administered into the spacer chamber and then the cat's face is held in the facemask for 7 - 10 seconds. This is usually performed twice daily. Cats tolerate the procedure surprisingly well and with the majority of cats it is easier than administering tablets.



What is the prognosis?

The prognosis for this condition depends on the severity of the disease and on the time delay before treatment is initiated. Whilst the majority of cats respond well to treatment, acute severe attacks can prove fatal if treatment is not initiated promptly. In addition, if the condition is chronic and treatment has been delayed, irreversible fibrotic changes within the airways can occur.

How is inhaled treatment used in cats?

To administer a dose of inhaled therapy to a patient:

1. Attach the metered dose inhaler (MDI) to the AeroKat unit
2. Hold the unit over the cat's face
3. Actuate a dose (press down the MDI) to supply drug to the spacer chamber
4. Allow the cat to take 10 - 15



breaths

Some cats dislike having the face mask on when the dose is actuated and in this case, the dose can be actuated and then the mask placed over the cat's face. This is thought to result in a lower dose reaching the airways so, in some cases, a second dose may be needed to provide sufficient drug.



In cats needing two puffs of treatment, this should be given as two separate administrations (ie, follow steps 1 to 4 and then repeat).

What medications and dosing regime?

1. Bronchodilator therapy: Beta 2-adrenergics such as salbutamol and albuterol are most commonly used. They have a rapid speed of onset (5–10 minutes) and relatively short duration of action (2 – 4 hours) meaning that they are suitable for use 'as needed' including in emergency situations. Some longer acting preparations of bronchodilators (eg, salmeterol – onset of action 15 –30 minutes, duration greater than 12 hours) are also available and can be helpful treatments in those cats benefiting from long-term bronchodilator therapy.

2. Glucocorticoid therapy: Fluticasone propionate given twice daily is a commonly recommended glucocorticoid, having high potency but virtually no systemic absorption and therefore no systemic side-effects. Cheaper glucocorticoids (eg, beclomethasone dipropionate) can also be used but at high doses may have systemic effects. High strength MDIs of these products (generally 200-250 mg/actuation) have been used in cats (1-2 doses twice daily) but this can be reduced according to response.

Suggested dosing regimes:

- Mild cases: Fluticasone (110 µg/puff strength MDI) one puff twice daily with salbutamol (100 µg/puff strength) given as needed.
- More severely affected cases: Fluticasone (250 µg/puff strength) one puff twice daily with salbutamol given as needed. When starting therapy, it can be helpful to also give oral prednisolone (starting at 1- 2 mg/kg/day and weaning off therapy over a two week period) as the inhaled glucocorticoid therapy can take some time to become fully effective.
- Emergency cases: oxygen therapy, intravenous glucocorticoid (eg, prednisolone sodium succinate 30 mg/kg) and terbutaline (0.01 mg/kg).

Side-effects are very rare when using these agents. Beta 2-adrenergics can be associated with causing excitability, anorexia and muscular twitching.

Where can AeroKat units be obtained?

AeroKat units are made by Trudell Medical in the US. They are available in the UK through BreathEazy Ltd, www.breatheasy.co.uk

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