

What is aspergillosis?

- Aspergillosis is caused by *Aspergillus* spp., saprophytic fungi that sporadically cause mycosis in birds and in mammals.
- The infection is not considered a zoonosis, because humans, like cats, usually acquire infection through environmental contamination.
- In cats, aspergillosis is relatively uncommon and less common than in dogs.

Infection

- *Aspergillus* spp. are ubiquitous in soil and decaying vegetation.
- Infection usually occurs through the accumulation of *Aspergillus* spp. in pet food or litter.
- The spores are inhaled and deposited in the sinonasal cavity. The fungus adheres to the respiratory epithelium, penetrates it, destroys surrounding cells and resists phagocytosis.
- Infections are common in cats that have predisposing local or systemic factors, such as brachycephalic respiratory tract (especially in Persian and Himalayan cats) or innate defects of mucosal immunity or previous viral upper respiratory tract infections.

Clinical signs & laboratory findings

- Feline aspergillosis occurs as chronic fungal rhinosinusitis, in two main forms, sinonasal aspergillosis (SNA) and sino-orbital aspergillosis (SOA).
 - SNA is characterized by local signs of chronic nasal infection
 - SOA is the invasive form, characterized by signs of orbital and surrounding tissue invasion
- Invasive pulmonary aspergillosis (IPA) is rare and can occur as a focal infection or as a part of disseminated invasive aspergillosis (DIA).
- Laboratory abnormalities are non-specific and the result of chronic inflammation. Hyperglobulinaemia is the most frequently reported abnormality.

Diagnosis

- Diagnosis is confirmed by histology and detection of the organism in biopsy samples obtained by rhinoscopy
 - Advanced imaging techniques (CT or MRI) before taking biopsies are helpful to assess disease extension and to find the best location for obtaining diagnostic samples.
 - Samples should be taken from a deep layer of affected areas.
- Cytological examination of mucosal swabs, brush specimens, nasal biopsies or retrobulbar masses can demonstrate fungal hyphae. However, a negative result does not rule out aspergillosis.
- Commercial fungal agars, such as Sabouraud's or malt extract agar, can be used for culture of biopsy samples. A single positive culture from swabs or nasal secretions is not diagnostic.
- For definitive identification of the *Aspergillus* spp., such as *A. felis*, *A. fumigatus* and *A. udagawae*, PCR is required.
- Antigen or antibody detection assays can be useful as supportive tests, but are not confirmatory for diagnosis due to the possibility of false negative and false positive results.

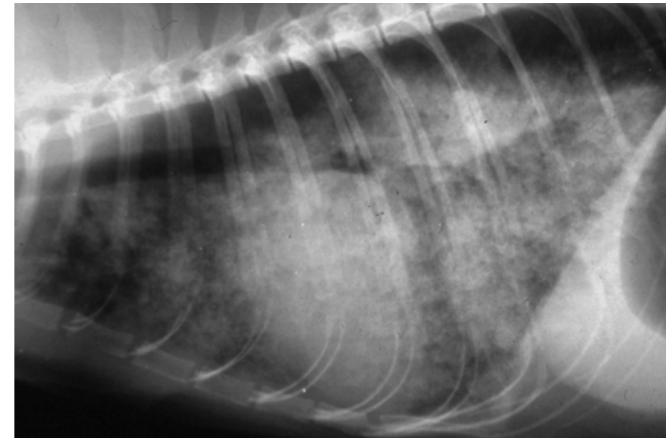
Disease management

- Prognosis in cases of SNA is good with intensive and long treatment, but less good in cases of invasive SOA. In cats with DIA, prognosis is generally poor.
- In cats with SNA, treatment of choice is endoscopic debridement of mucosal fungal plaques and local therapy using clotrimazole or enilconazole as intranasal infusions under general anaesthesia, in combination with systemic antifungal treatment over several months.
 - Best choices for systemic treatment are itraconazole (5 mg/kg q 12 h PO) alone or in combination with amphotericin B or posaconazole (15 mg/kg loading dose PO, followed by 7.5 mg/kg q 24 h PO).
 - Systemic treatment without local infusions is not as successful.

- In cats with SOA, additional surgery might be necessary. Drugs suggested for systemic treatment include posaconazole or itraconazole as monotherapy or in combination with terbinafine and/or amphotericin B for at least 6 months.
 - Antifungal susceptibility testing is recommended (if available).
 - If only the cornea is involved, local treatment alone with 1% voriconazole solution can be successful.

Prevention

- Due to the ubiquitous occurrence of *Aspergillus* spp., specific prophylaxis is not possible.
- Keeping immunosuppressed cats indoors minimizes the risk of exposure.



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- Thoracic radiographs (latero-lateral view) of a cat with pulmonary aspergillosis, diagnosed at necropsy.



Image courtesy of Vanessa Barrs, University Veterinary Teaching Hospital, Sydney Australia

- Exophthalmos of the left eye in a cat with a left retrobulbar fungal granuloma (sino-orbital aspergillosis). There is prolapse of the third eyelid. A partial lateral tarsorrhaphy was performed to prevent exposure keratitis.



Image courtesy of Vanessa Barrs, University Veterinary Teaching Hospital, Sydney Australia

- Right exophthalmos, third eyelid prolapse and oedema and swelling of the right side of the face in a cat with a right retrobulbar and paranasal fungal granuloma.