



TITLE: NASAL ASPERGILLOSIS IN A SIAMESE CAT

Case Report
Lisa M. Singer, VMD

REVIEWED BY
THERESA M. ORTEGA, DVM, DACVIM

Signalment: Amanda is a 13 yo FS Seal point Siamese

History: Amanda presented to her primary veterinary several months prior to referral for a long history of chronic nasal discharge and sneezing. She was previously treated with chlorpheniramine seasonally, which seemed to resolve her signs, but had no effect recently. She was then treated with a course of Clavamox and prednisone, which did not improve her clinical signs. Amanda is a rescue cat that had access to the outdoors until 6 months prior to presentation. Retrospectively, Amanda had a history of drinking from a feline water fountain that had developed a yellowish white film.



Clinical Exam: On presentation, Amanda was bright, alert and responsive. She was growling and fractious; therefore, physical exam was limited. No ocular abnormalities were noted. When she hissed, her tonsils were noted to be enlarged (right>left). Mild dental calculus and diffuse gingivitis were present with pink oral mucous membranes. No cardiac murmurs or arrhythmias were noted; bronchovesicular lung sounds were increased in all fields. Her abdomen was soft and non-painful. A soft subcutaneous mass was present on her mid dorsal and right lateral thorax (cytologically consistent with lipomas).

Laboratory Findings:

Serum Cryptococcus antigen titer- negative

Feline upper respiratory disease PCR: negative (*Chlamydomphila felis*, *Calicivirus*, *Herpesvirus 1*, *Bordetella*, *Mycoplasma felis*)

Complete blood count: lymphopenia (1,400/ul)

Serum biochemistry panel: mild increase in BUN (36 mg/dL), mild increase in total protein (8.9 g/dL)

Serum FeLV/FIV- negative

Histopathology:

-*Right nasal cavity*: moderate lymphoplasmacytic and neutrophilic rhinitis with ulceration, mild multifocal new bone formation, and mucosuppurative exudation with fungal hyphae.

-*Left nasal cavity*: marked diffuse lymphoplasmacytic neutrophilic and eosinophilic rhinitis with mucosuppurative exudate and suspected fungal hyphae

-*Nasopharynx*: fungal plaque; the morphology of the fungal hyphae may be consistent with *Aspergillus*

Cytology:

-*Nasal cavity*: septic suppurative (neutrophilic) inflammation; occasional neutrophils have engulfed rod-shaped bacteria, no fungal elements are present

Culture and Sensitivity:

-Bacterial: *Escherichia coli* 4+, sensitive to all antibiotics (penicillin, fluoroquinolones, cephalosporins)

-Fungal: *Aspergillus* species- few

Diagnostic Imaging

Skull radiographs: Decreased bone density around the right upper canine as well as increased soft tissue/fluid density in the right frontal sinus.

Thoracic radiographs: Within normal limits.

Computed tomography scan of skull: There was soft tissue/fluid attenuation in the frontal sinus and nasal cavity bilaterally with right sided nasal turbinate destruction, and a mass effect in the right nasal cavity at the level of the orbit. The retropharyngeal lymph nodes appeared normal. No other evidence of osteolysis was appreciated and the cribiform plate was intact. These findings were consistent with an aggressive disease process such as neoplasia or fungal rhinitis.

Rhinoscopy: Retroflex nasopharyngoscopy indicated white/beige caseated material/tissue in the cranial nasopharynx/back of nose. Material at first appeared to be possible foreign material, but was friable and more like caseated pus or necrotic tissue when grasped with biopsy forceps. This was collected for both cytology and cultures (see below). Right and left nasal cavity rhinoscopy found similar caseated material in the left nasal cavity, and both cavities had a large amount of mucopurulent discharge, mucosal erythema and swelling. There was evidence of turbinate destruction bilaterally. There was no obvious mass or polyp apparent.

Diagnosis: Nasal Aspergillosis with secondary bacterial (*E. coli*) infection

Treatment/Management:

Amanda returned one week following her rhinoscopy and CT scan after being treated with 62.5 mg Clavamox PO BID since discharge. She was anesthetized, had intranasal catheters placed, and was administered 125mg of clotrimazole in 12 mls PEG-200 intra-nasally over a one hour infusion (rotated through dorsal, right oblique dorsal, and left oblique dorsal positions). Her nasal cavity was drained following the infusion and she was slow to recover with marked nasopharyngeal stertor and discharge. She was placed in an oxygen care at 40% FiO₂ for several hours. She recovered uneventfully overnight and was discharged with Baytril (3.4mg/kg PO AM, 1.75 mg/kg PO PM for 4 weeks) and itraconazole (10mg/kg PO SID chronically).

Follow up care:

Amanda was rechecked at 3 and 6 weeks, and at 3, 5 and 6 months following her initial topical clotrimazole therapy. After her first therapy, her nasal signs resolved for one month, and then recurred at a less severe level. She was treated with oral Baytril, which did not resolve her signs, and 3 months following her initial treatment, a second rhinoscopy showed persistent fungal plaques, so a second intranasal topical clotrimazole therapy was administered. This resolved her nasal signs again for approximately one month, so two months following the second topical clotrimazole therapy, rhinoscopy was again performed (showed no fungal plaques), but she was treated a third time (increased dose of topical clotrimazole 200 mg in 20ml polyethylene glycol 200 infused identical to previous treatments). Following this third infusion, she did not have any clinical improvement and still continued to sneeze and have nasal discharge. *Pasteurella multocida* and *Aspergillus niger* were cultured from her nasal discharge and she was treated with a course of Baytril (3.5 mg/kg PO AM, 1.75 mg/kg PO PM for 14 days). She continued to have nasal discharge and was treated with Clavamox (62.5 mg PO BID for 21 days); her nasal discharge completely resolved but she became anorexic. Clavamox was discontinued and her antibiotic therapy changed to azithromycin (30mg PO SID for 7 days). Since that time (three months to the present), Amanda's nasal signs have resolved to occasional minor serous nasal discharge.

Discussion:

Common causes for sneezing and nasal discharge in cats include viral rhinitis, neoplasia, tooth root abscessation, fungal (*Cryptococcus*) infection, trauma and foreign bodies. (1). Feline nasal Aspergillosis is extremely rare in the cat. At this time, only 13 cases of feline nasal Aspergillosis have been reported in the veterinary literature. Persian cats have an increased incidence for this disease, possibly due to decreased mucosal clearance and impaired nasal airflow (1). Cats with nasal Aspergillosis have presented with a history of nasal discharge, epistaxis, sneezing, epiphora, and anorexia. Physical exam findings have included: unilateral or bilateral mucopurulent nasal discharge, mandibular lymphadenopathy, exophthalmos, and a single report of anterior uveitis (2). There are several reports of orbital involvement presumed to have originated from the sinuses. The majority of cats with confirmed nasal Aspergillosis did not have any consistent changes on complete blood count (other than an occasional leukocytosis), chemistry panel, urinalysis, and were FeLV/FIV negative. Serology has been used as a diagnostic test for Aspergillosis in cats using agar gel immunodiffusion (AGID), counterimmunoelectrophoresis (CIE) and enzyme-linked immunosorbent assay (ELISA) to detect fungal-specific antibodies, but results have been negative (in two cats) and positive (in three cats) when fungal hyphae have been documented on histopathology. CT findings have shown nasal cavities that are fluid filled, devoid of turbinates, and/or fluid filled sinuses. Rhinoscopy has inconsistently shown white/gray fungal plaques. Treatment options include: oral antifungals (itraconazole 5-10 mg/kg or fluconazole 10mg/kg beyond resolution of clinical signs), topical clotrimazole infusions +/- frontal sinus trephination, and rhinotomy. Potential side effects of systemic antifungal therapy include anorexia and hepatotoxicity, and medication was discontinued in several cases due to development of these problems. A single intranasal infusion of 1% clotrimazole was curative for one cat. Sinus trephination and 1% clotrimazole was performed in another cat with nasal, orbital, and sinus involvement, but the outcome was not published for review. Cats are usually treated for concurrent secondary bacterial infections with broad spectrum antibiotic therapy. The majority of reported cats have responded well to a variety of treatments including systemic antifungal therapy, clotrimazole infusion, and trephination. However, with few published reports, more information is needed regarding treatment success before any decisive conclusions can be made.

While Amanda's rhinoscopy, histopathology, and cytology showed abundant fungal organisms, her fungal culture showed few *Aspergillus* species. Amanda's CT was consistent with previously reported findings; although she had overt sinus involvement, no orbital involvement was noted. Serum *Aspergillus* titer was not performed. Amanda improved following each successive topical clotrimazole infusion but her clinical signs returned approximately 3-4 weeks following the first two infusions; it has been 3 months since her third clotrimazole infusion and she is relatively symptom free. Lack of clinical resolution in cats with feline nasal Aspergillosis may be due to resistance to topical clotrimazole or systemic itraconazole, or both. Currently the University of Texas, San Antonio, has anti-fungal sensitivity assays of multiple different antifungal agents, (including clotrimazole but not including enilconazole which is used in dogs with Aspergillosis). Treatment with oral itraconazole may be a lifelong therapy for Amanda.

References:

- 1) Davies C, Troy G *Deep mycotic infections in cats*. Journal of the American Animal Hospital Association (1996)32, 380-391
- 2) Whitney B., Broussard J, Stefanacci J. *Four cats with fungal rhinitis*. Journal of Feline Medicine and Surgery (2005) 7, 53-5
- 3) Tomasa K, Gluas T, Zimmer C, Greene C. *Fungal rhinitis and sinusitis in three cats*. Journal of the American Veterinary Medical Association (2003) V 222, 10, 1380-1384
- 4) Sharp NJH. *Infectious Diseases of the Dog and Cat In: C. E. Greene, ed. Infectious Diseases of the Dog and Cat. 2 ed.* Philadelphia: W.B. Saunders, 1998;404-409.
- 5) L. R. Johnson, T. L. Drazenovitch, M. A. Herrera, et al. *Results of rhinoscopy alone or in conjunction with sinuscopy in dogs with aspergillosis 46 cases (2001-2004)* Journal of the American Veterinary Medical Association 2006 Mar 1;228(5):738
- 6) Mathews KG, Davidson AP, Koblik PD et al *Comparison of topical administration of clotrimazole through surgically placed vs. non-surgically placed catheters for treatment of nasal aspergillosis in dogs : 60 cases (1990-1996)* Journal of the American Veterinary Medical Association (1998) 213 (4) 309-319