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This report documents the fifth reported occurrence of cerebral phaeohyphomycosis in cats. Because mycotic encephalitis was not considered in the differential diagnosis, fungal cultures were not performed. The most likely etiologic agent, based on site specificity and morphology, is Xylohypha (Cladosporium) bantiana. The most common route of transmission is by aerosol. Although rare, it should be considered in the differential diagnosis of slowly progressive neurologic disease, especially in immunosuppressed individuals.

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Diagnostic Exercise: Neurologic Disorder in a Cat

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History

An 11-month-old, intact female domestic shorthair cat was presented for right rear-leg lameness. No abnormalities were noted on physical examination. Twenty-four days later, the cat returned with neurologic deficits referable to the right cerebral cortex, including circling and lack of left foreleg and left rearleg placing reflexes. Because of a poor prognosis, euthanasia was performed. Feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) titers were negative.

Pathology

Grossly, there was a large, poorly delineated area of greenish discoloration in the right frontal lobe of the cerebrum. Bilateral corneal abrasions were the only other gross lesions noted.

Microscopic examination of the cerebrum revealed a focally extensive area of inflammation, rarefaction, and necrosis, involving both gray and white matter (fig.1A). There was marked pyogranulomatous inflammation with many Langhans' and foreign body-type multinucleated giant cells (fig.1B). Prominent perivascular infiltrates of lymphocytes, plasma cells, and macrophages were common within the affected neuropil, as well as in the meninges overlying the affected neuropil. Free within the neuropil, as well as within giant cells, were moderate numbers of golden-brown, septate fungal hyphae. The hyphae were 3-6 μm wide, with nonparallel walls, non-dichotomous branching, and occasional mildly bulbous swellings (fig.1C).

No significant lesions were present in other organs.

Question

What is the diagnosis? What is the most likely etiology?

Diagnosis and Discussion

This condition is called cerebral phaeohyphomycosis (cerebral chromomycosis, cerebral dematiomycosis), and Xylohypha bantiana (synonyms: Cladosporium bantianum, C. trichoides, Torula bantiana) (1) is the most probable etiologic agent. Other dematiaceous fungi affecting the brain include the genera Phialophora.

Cerebral phaeohyphomycosis is a rarely encountered condition reported only in man(1)(2), dogs(3)(4)(5), and cats(3)(6)(7). The disease is caused by various pigmented, septate fungi. Most of the etiologic agents of phaeohyphomycosis are saprophytes and infections are usually opportunistic(2). In cases in which fungal cultures were performed, the most commonly isolated agent was Xylohypha bantiana, a highly neurotropic fungus(2). Immunosuppression may be a predisposing factor, although cases have been reported in which known predisposing factors were not present(2)(3)(5)(6). No predisposing illness or immunosuppression was noted in this case.

The route by which the fungus gains access to the brain is unknown. It has been speculated that hematogenous spread occurs in systemic infections following traumatic inoculations or inhalation(2). The history of lameness 24 days prior to euthanasia may support this hypothesis; the failure to detect a wound on physical examination, failure to detect lesions in the lungs and other organs, and the unlikely possibility that the animal was immunosuppressed, argue against it.

It is interesting that in most cases of cerebral phaeohyphomycosis, the frontal lobes of the cerebrum are principally involved(8) suggesting the possibility of an ascending infection from the nasal cavity. Unfortunately, the nasal cavity was not available for examination to support or disprove this hypothesis. Immunosuppression might have contributed to the susceptibility to infection by this route, however, negative FeLV and FIV titers diminish the likelihood

of this possibility. A definitive route of the infection, in this case, was not ascertained.

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Figure 1. (A) Extensive rarefaction of the neuropil with pyogranulomatous inflammation, prominent perivascular infiltrates (cuffs). Hematoxylin and eosin, bar = 1 mm. (B) Abundant neutrophils with admixed foreign body-type multinucleated giant cells containing pigmented fungal hyphae. Hematoxylin and eosin, bar = 100 μ m. (C) Fungal hyphae with nonparallel walls, frequent septa, and irregular branching. Note the budding yeast-like cells (arrowhead), and thick-walled, chlamydoconidium-like cells (arrow). Periodic acid-Schiff, bar = 50 μ m.