5-year-old European male cat with swelling of dorsal skin of nose partially involving nasal phytrum. Which of the following is the most likely disease?

1. Chromoblastomycosis
2. Mucormycosis
3. Phaeohyphomycosis CORRECT
4. Aspergillosis
5. Hyalohyphomycosis

**Signalment and history:** A 5-year-old European male cat was examined for a swelling of the dorsal skin of the nose partially involving the nasal phytrum. The mass was focally ulcerated. The cat was in good general condition. Antibiotic therapy did not result in the lesion resolution, so a biopsy and a swab for mycological culture were taken.

**Histopathologic description and additional tests:** The histopathological examination revealed the presence of a multifocal to coalescing, nodular to diffuse granulomatous and pyogranulomatous dermatitis. The inflammatory infiltrate was characterized by the presence of neutrophils, numerous macrophages, giant cells and yeast-like fungal elements with pigmented walls (Medlar bodies), sometimes organized in chains of elements (figure 3, 4). Occasionally short non-branched hyphae with rare chlamydoconidia were observed. The overlying epidermis was moderately hyperplastic. The swab taken from the lesion was plated on Sabouraud agar and incubated at 30°C. On the 6th day numerous small, velvety, dark green colonies appeared, with little tendency to grow. Microscopic preparations (with scotch technique and microcultures) revealed fusiform conidia arranged in long chains and poorly differentiated hyphae (Figure 5). Based on macroscopic and histologic features, the isolate was identified as *Cladophialophora bantiana* (de Hoog et al., 1995).

**Morphologic diagnosis:** Dermatitis and panniculitis, granulomatous and pyogranulomatous, multifocal to coalescing, severe, with intralesional dematiaceous yeast and hyphae

**Name the condition:** Feline phaeohyphomycosis

**Clinical evolution:** The cat was treated with itraconazole 5mg / Kg BID for three months with improvement of the skin lesions. Due to the onset of severe gastrointestinal disorders, the therapy was interrupted and the first recurrence occurred. The animal was then treated with fluconazole 2.5mg / Kg per os BID for 5 days and 2.5mg / Kg per os BID for 3 months and lesions significantly improved. The owner spontaneously discontinued the therapy after two months and a second relapse was observed. The lesions completely regressed following further fluconazole therapy at the same doses.

**Comment:** Phaeohyphomycosis is a fungal infection caused by ubiquitous saprophytes, following skin’s inoculation of the fungus through contaminated wounds. Isolated fungi belong to various taxonomic groups, such as *Alternaria* spp., *Bipolaris* spp., *Cladosporium* spp., *Curvularia* spp., *Drechslera* spp., *Exophiala* spp., *Moniliella* spp., *Ochrconis* spp., *Phialomonium* spp., *Phialophora* spp., *Pseudomicrodochium* spp., *Scolecosabidium* spp., *Staphylotrichum* spp., *Stempyllium* spp., *Fonsecaea* spp., and *Cladophialaphora*, all sharing the characteristic formation of pigmented hyphae. Cutaneous and subcutaneous phaeohyphomycosis has rarely been reported in dogs and cats or wild felids and usually the infection is limited to the skin; however, central nervous system or systemic dissemination may occur, often in association with immune compromise. Lesions are characterized by dermal and subcutaneous, sometimes pigmented nodules which have a firm to fluctuant consistency and can ulcerate and form fistulous tracts. Lesions are primarily located on the face or distal extremities. Histological examination reveals a nodular to coalescing granulomatous/pyogranulomatous dermatitis and panniculitis. The demonstration of pigmented yeast and hyphae in tissue sections is diagnostic for phaeohyphomycosis;
however, histopathology cannot differentiate these organisms and fungal culture is required. Hyphae are septated, of irregular width, branched and unbranched. However, while these fungi always form pigment on culture, this may not be present in all tissue sections and special stains (Masson-Fontana) can be necessary (i.e. Alternaria). Melanin synthesis in cell walls is thought to be the main virulence factor being able to protect the organism from oxidative burst and to elude the host immune response. The remarkable resistance to the antifungal drug therapy of phaeohyphomycosis compared to other superficial fungal infections due to dermatophytes requires a careful etiological diagnosis, which must necessarily use cytological/histopathological and mycological examination. Skin biopsy is of particular importance in cases where differential diagnosis is required for other clinically similar lesions such as granulomas due to foreign bodies, bacterial granulomas, and to exclude the possibility of neoplastic lesions such as squamous cell carcinoma, which is frequently described in this location. Cladophialophora bantiana has also been isolated from brain lesions both in humans and in the cat and seems to have a marked neurotropism compared to other genres. Due to the fact that in human beings cerebral abscesses and chronic meningitis associated with infection seem to result from spore inhalation, a special attention should be paid to the nasal localization also in the cat as a possible portal of entry for more severe cerebral lesions.

References:


Miller WH, Griffin CE, Campbell KL. In: Muller & Kirk’s Small Animal Dermatology, 7th Ed, Elsevier, 2013: 253-255.


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Figure legend:

**Figure 1:** 5-year-old, male, European cat. Multifocal nodular and blackish lesions on the back of the nose and left nostril.

**Figure 2.** 5-year-old, male, European cat. In the dermis there is a granulomatous and pyogranulomatous dermatitis consisting of neutrophils, macrophages and multinucleated giant cells. In the cytoplasm of macrophages pigmented yeasts and hyphae with short branching are present (HE).
Figure 3. 5-year-old, male, European cat. Same section of Figure 3 showing the positive staining of yeasts and hyphae (Grocott’s methenamine silver stain).

Figure 4. 5-year-old, male, European cat. Microscopic culture preparation, not stained. There are relatively long chains mainly formed by fusiform conidia originating from poorly differentiated hyphae.