Case of the Month January 2026

A 7-year-old spayed female Labrador Retriever presented for evaluation of multifocal to coalescing pustular, ulcerative, and crusting skin lesions affecting the trunk (Figure 1) and distal limbs (Figure 2). Some lesions exhibited a foul odor and extended into the subcutis. Skin biopsies were submitted for diagnostic evaluation. The dog had a documented history of pemphigus foliaceus diagnosed several months earlier and was managed by a dermatologist. Long term immunosuppressive therapy included oral prednisone and cyclosporine, with intermittent dose adjustments based on clinical response. The dog also had recurrent deep pyoderma caused by methicillin resistant *Staphylococcus* spp. and episodes of hepatopathy attributed to chronic medication use.

Figure 1

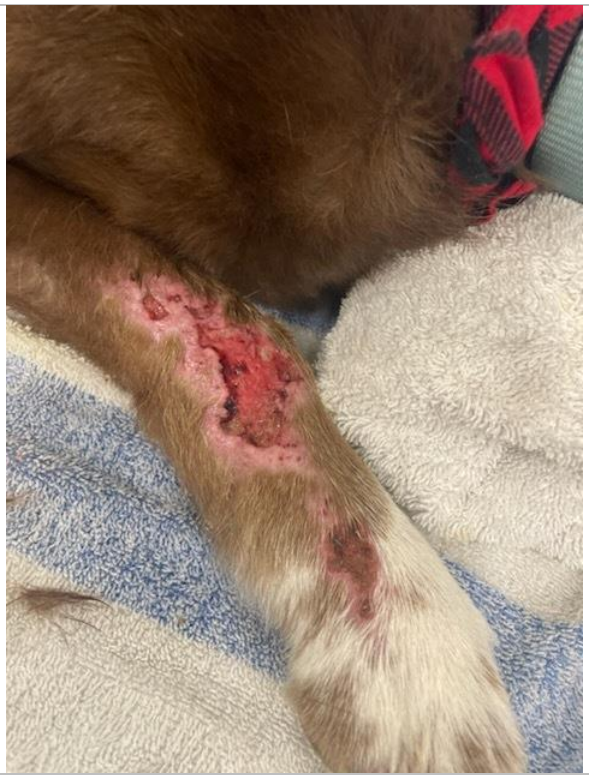


Figure 2

Figure 3. H&E, 40x magnification.

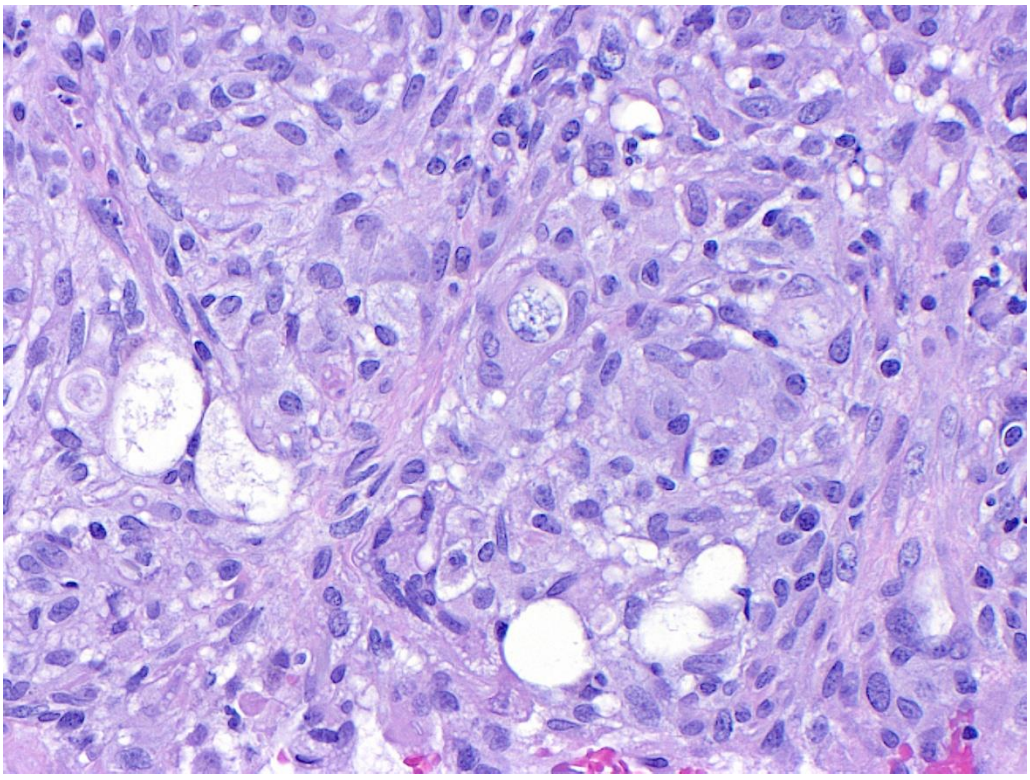


Figure 4. H&E, 40x magnification.

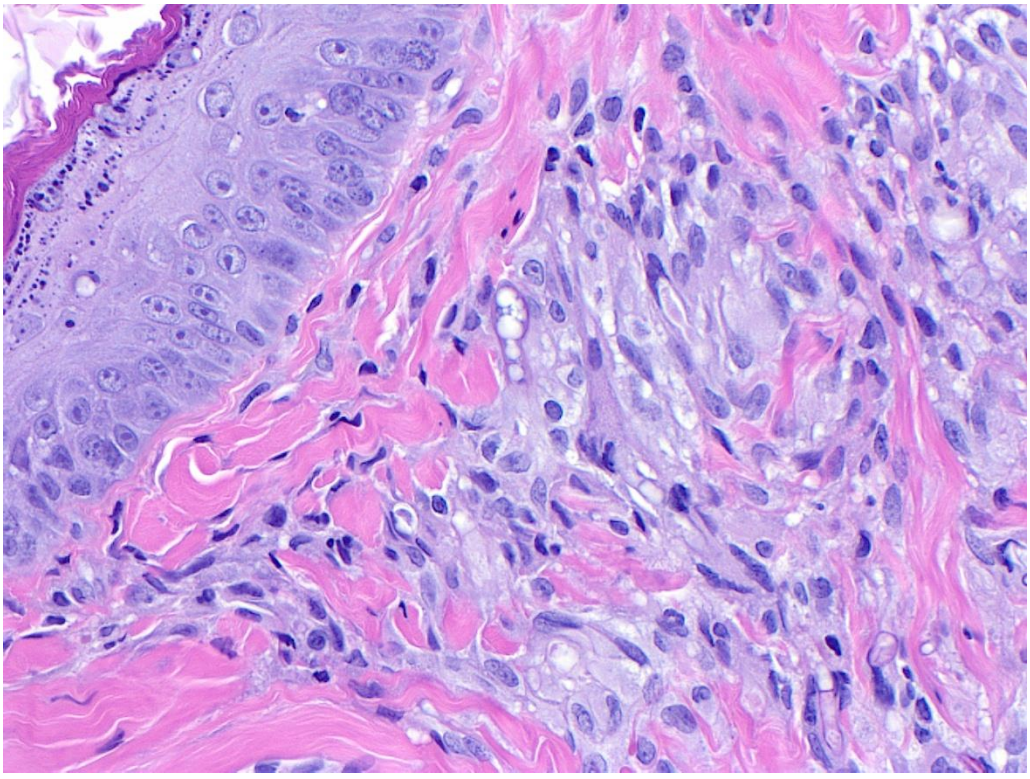
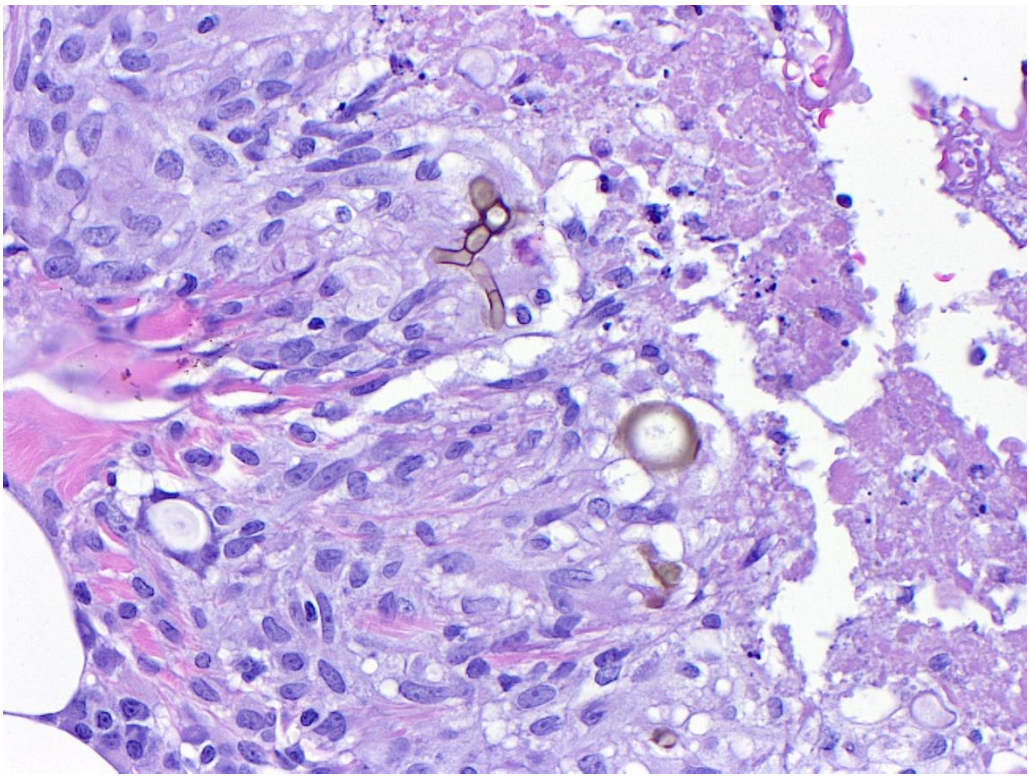


Figure 5. H&E, 40x magnification.



Which of the following is the most appropriate diagnosis?

A. Pythiosis

B. Blastomycosis

C. Dermatophytosis

D. Hyalohyphomycosis

E. Phaeohyphomycosis

Histopathologic description

Multifocally, markedly expanding the dermis through the panniculus are numerous foamy to epithelioid macrophages and neutrophils with fewer multinucleated giant cells, which frequently form discrete nodular aggregates characterized by peripheral palisading of epithelioid macrophages surrounding central accumulations of neutrophils (granulomas). Numerous plasma cells surround areas of granulomatous inflammation as well as blood vessels within the mid to superficial dermis. In one section, the inflammation opens to the epidermal surface and is particularly severe. In this area, there are numerous fungal organisms composed of fungal hyphae with occasional septation and nonparallel walls and many round, yeast-like structures that have a thin golden wall and measure up to 30 µm in diameter. Rarely, fungal cell walls contain distinct brown pigmentation (melanin). Fungal organisms are frequently observed

extracellularly and within the cytoplasm of multinucleated giant cells. Overlying this severe area of inflammation is a thick serocellular crust composed of numerous degenerate neutrophils, abundant necrotic cellular debris, compact orthokeratotic keratin, large numbers of bacterial cocci, and occasional fungal organisms. The epidermis overlying inflamed regions is moderately and irregularly hyperplastic and covered by mild compact parakeratotic hyperkeratosis admixed with degenerate neutrophils and necrotic debris, forming small serocellular crusts. Hair follicles overlying and adjacent to areas of inflammation are frequently moderately to markedly atrophic, with mild hyalinization of surrounding collagen. Occasional follicles are moderately distended by orthokeratotic keratin (follicular keratosis).

Morphologic diagnosis
Marked, multifocal to coalescing, chronic, pyogranulomatous dermatitis and panniculitis with follicular atrophy and intralesional pigmented fungi (phaeohyphomycosis).

Comments
Cutaneous phaeohyphomycosis is an opportunistic fungal infection caused by a heterogeneous group of dematiaceous fungi characterized by cell walls containing melanin. Reported genera implicated in veterinary species include *Alternaria*, *Bipolaris*, *Cladophialophora*, *Cladosporium*, *Curvularia*, *Exophiala*, *Fonsecaea*, and *Phialophora*. These organisms are ubiquitous environmental saprophytes and are typically introduced through traumatic inoculation, with disease manifestation strongly influenced by host immune status.

In dogs, phaeohyphomycosis is most commonly reported in association with iatrogenic immunosuppression, particularly in patients receiving glucocorticoids and calcineurin inhibitors for immune-mediated diseases. The present case follows this pattern, with prolonged immunosuppression for pemphigus foliaceus likely serving as a major predisposing factor. Glucocorticoids impair innate immune responses and macrophage function, while cyclosporine suppresses T cell mediated immunity, together facilitating persistence and proliferation of opportunistic fungi within the dermis and subcutis.

Dematiaceous fungi exhibit several histologic features that allow reliable classification on routine sections, including septate hyphae or yeast-like forms with nonparallel walls and variable brown pigmentation attributable to melanin. In the present case, pigmentation, although not abundant, was readily appreciable on hematoxylin and eosin-stained sections. Therefore, additional histochemical stains, such as Fontana-Masson, were not performed. Melanin is considered a key virulence factor, conferring resistance to oxidative killing and contributing to the chronicity and treatment resistance often observed in these infections.

The marked follicular atrophy observed in this case is interpreted as secondary to the severity and depth of the pyogranulomatous inflammation, resulting in localized ischemia and compression of adnexal structures rather than a primary follicular disorder. Occasional foci of vascular necrosis are present; however, these changes are confined to vessels immediately adjacent to areas of intense inflammation. As such, vascular alterations are interpreted as bystander effects within a fungal driven inflammatory process rather than evidence of a primary vasculitis, an important distinction in dogs with underlying autoimmune disease.

Pyogranulomatous dermatitis with intralesional fungi encompasses several categories of deep mycoses that are distinguished primarily by fungal pigmentation and tissue architecture. Phaeohyphomycosis is defined by dematiaceous fungi with pigmented hyphae or yeast-like elements. Hyalohyphomycosis is caused by nonpigmented filamentous fungi with parallel walled hyphae. Eumycotic mycetoma is characterized by compact fungal grains often associated with draining tracts, and chromoblastomycosis is defined by muriform or sclerotic bodies representing a distinct tissue form of melanized fungi. Oomycetes such as *Pythium* and *Lagenidium* may also produce deep cutaneous lesions but exhibit distinct morphologic and staining characteristics.

Phaeohyphomycosis has been reported across a wide range of domestic and nondomestic species. Cats more commonly develop localized cutaneous or subcutaneous lesions following traumatic implantation, often in the absence of overt immunosuppression, although disseminated or central nervous system involvement has been reported. A case report in a cat with phaeohyphomycosis was previously reported as a Case of the Month in August 2017. In horses, dematiaceous fungi are associated with phaeohyphomycotic dermatitis and keratomycosis, typically following environmental exposure and cutaneous injury. Reports in cattle are rare and include granulomatous dermatitis and mycotic mastitis. In avian species, phaeohyphomycosis more frequently manifests as respiratory or systemic disease. Zoo and exotic species, including reptiles and nondomestic mammals, are increasingly recognized as susceptible, particularly under conditions of captivity or stress. Across species, the consistent histologic hallmark remains the presence of pigmented fungal elements within granulomatous or pyogranulomatous inflammation.

Following histopathologic diagnosis, antifungal therapy with ketoconazole was initiated, and gradual clinical improvement was noted over subsequent weeks. Immunosuppressive therapy was carefully adjusted to balance control of pemphigus foliaceus with management of the opportunistic fungal infection. At follow up, the cutaneous lesions had markedly regressed approximately two months after diagnosis.

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