Case of the Month June 2026

A 6-month-old spayed female Domestic Shorthair cat presented to the ER on 3/7/21 for difficulty breathing (dyspnea). About one month prior, she began hiding and showing behavioral changes, and approximately two weeks prior she developed a limp. On the day of presentation, her referring veterinarian noted a nasal mass and sneezing. Despite these signs, the cat maintained a normal appetite and water intake, with no vomiting or diarrhea reported.

Clinical description:

The dermis and subcutaneous tissues of the nasal and frontal bones, caudal to the bridge of the nose, contain a multinodular, firm, tan, 2x1x0.5 cm, raised mass that extends into and partially effaces the nasoturbinates (pyogranulomatous dermatitis). Upon cut section, moderate amounts of creamy-white, purulent material exude from the mass (pus).

Figure 1.

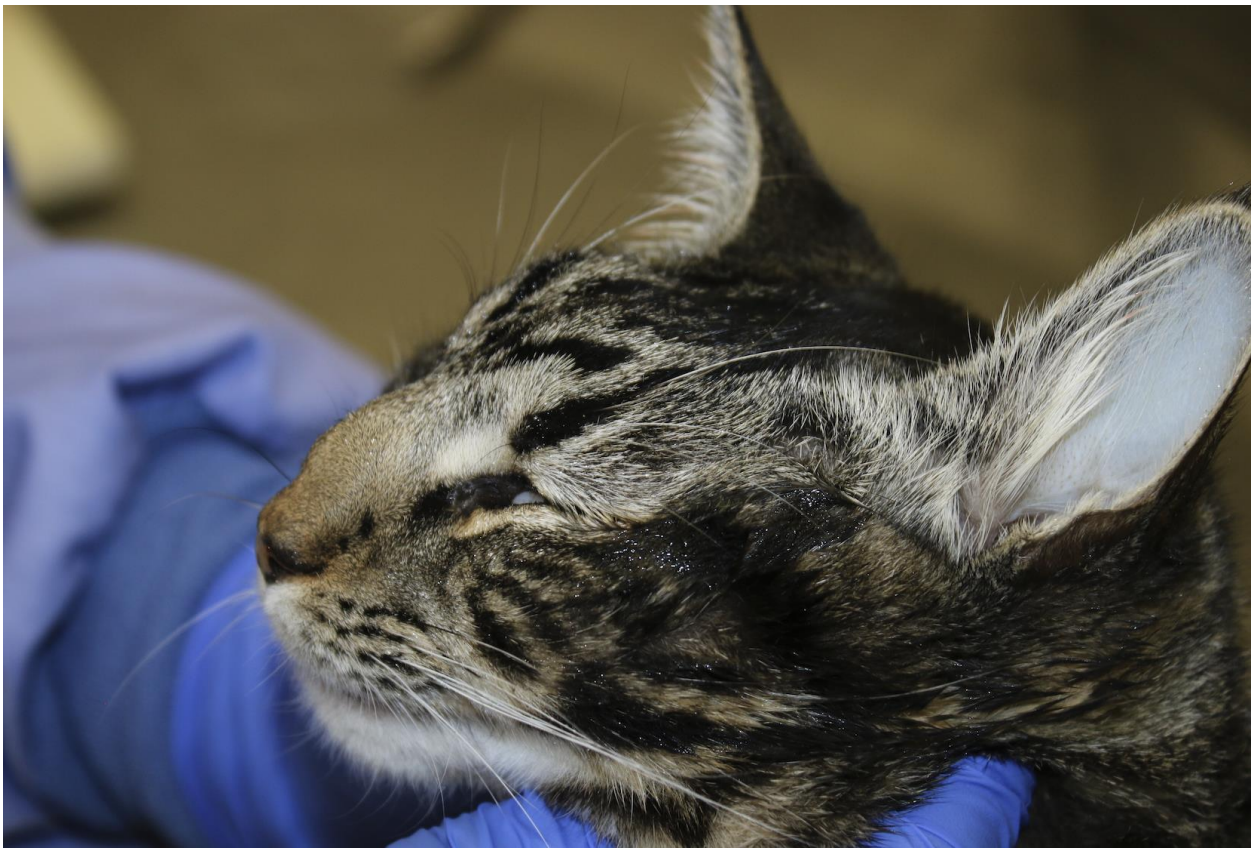


Figure 2. Diff-Quick, 400x.

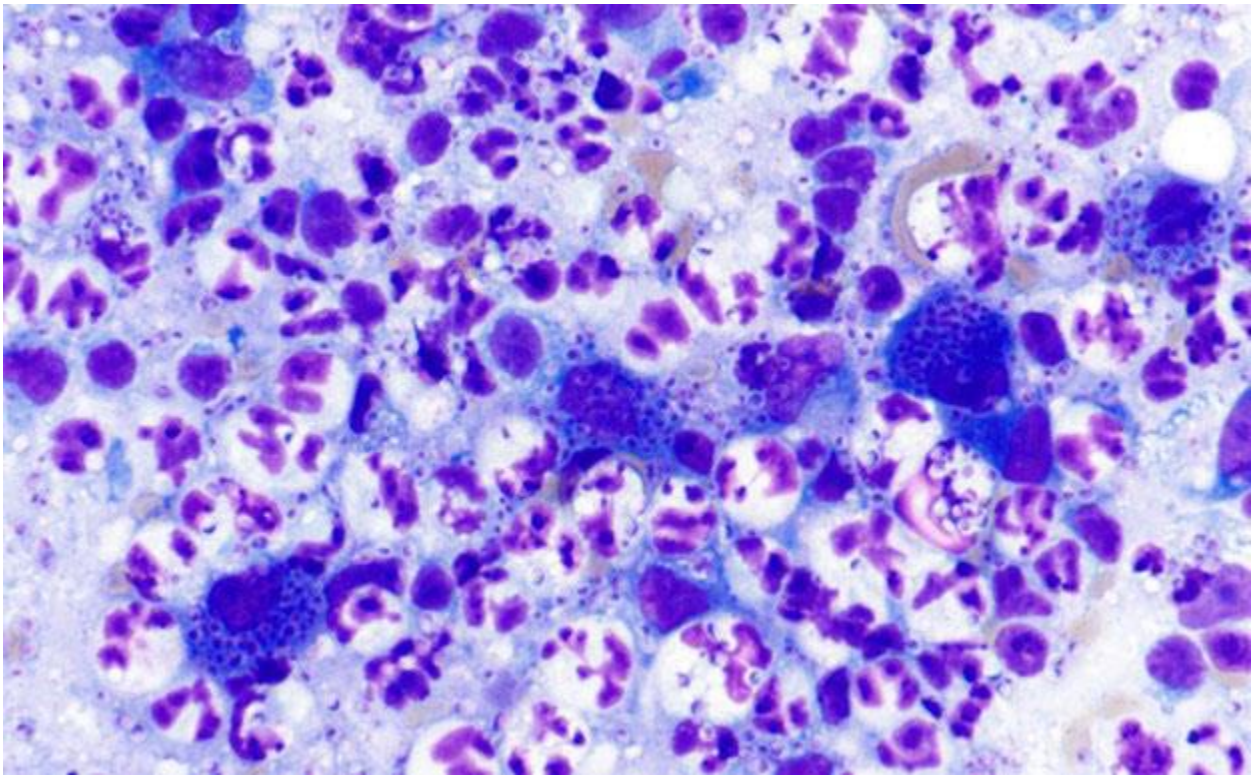


Figure 3. Diff-Quick, 400x.

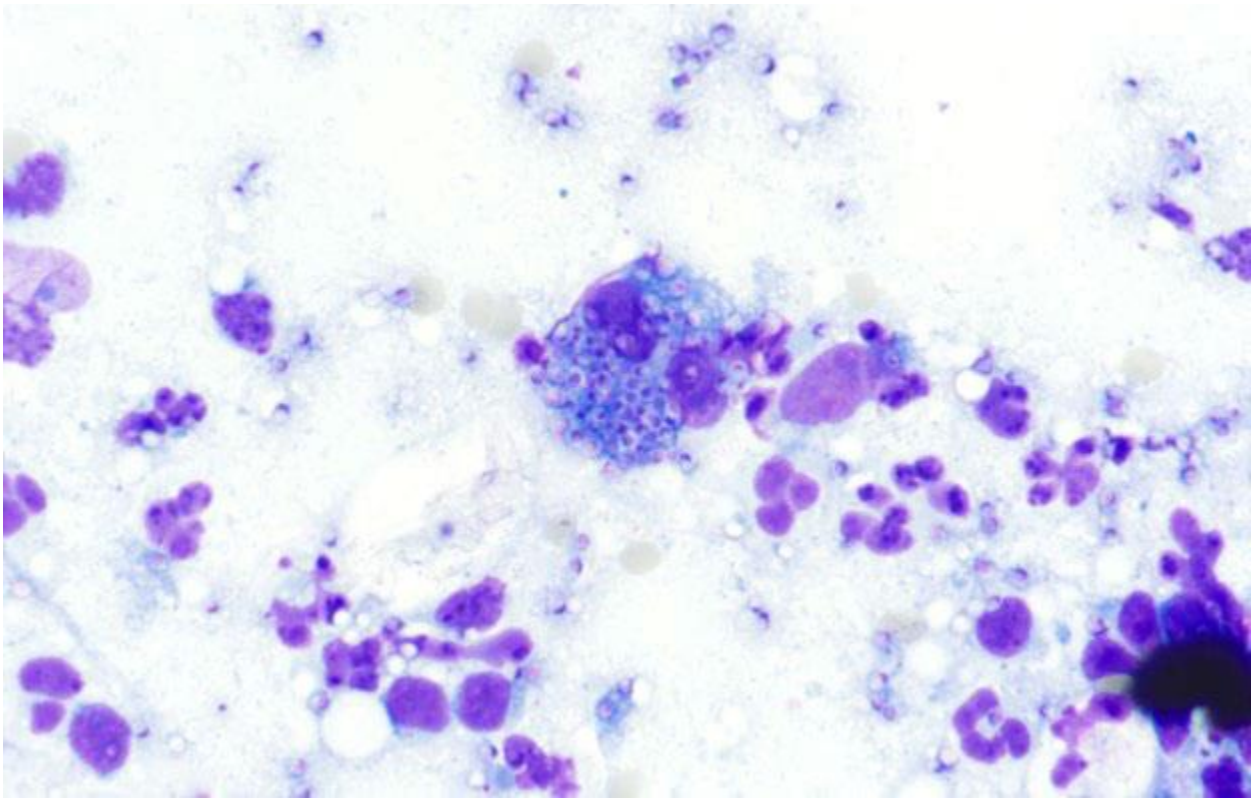


Figure 4. H&E, 20x magnification.

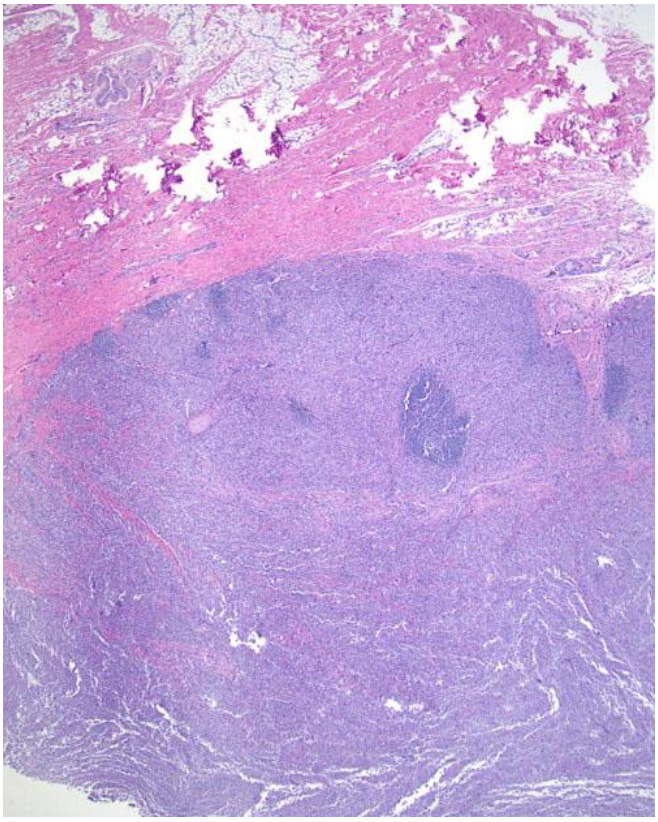
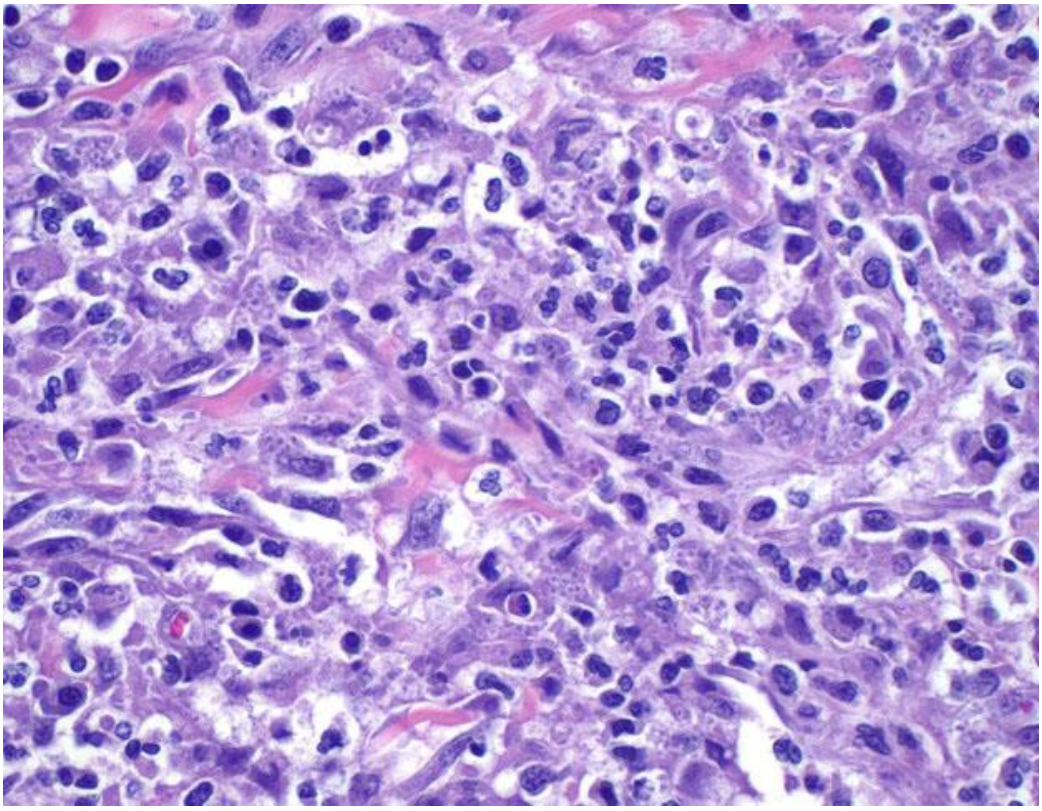


Figure 5. H&E, 400x magnification.



What is the most likely etiologic agent?

1. *Histoplasma capsulatum*
2. *Cryptococcus neoformans*
3. *Blastomyces dermatitidis*
4. *Coccidioides immitis*

Histopathologic description

Markedly infiltrating the soft tissue of the face are large numbers of macrophages and neutrophils intermixed with fibrous connective tissue (fibrosis), extravasated erythrocytes (hemorrhage), and pyknotic and karyorrhectic debris (necrosis). Frequently within the macrophages are numerous, often clustered, small, 4-9 µm in diameter, round, circular yeast with a central nucleus. The yeast are occasionally extracellular.

Morphologic Diagnosis:

Skin: Severe pyogranulomatous dermatitis with numerous intrahistiocytic yeast consistent with *Histoplasma capsulatum*

Comments:

Histoplasma capsulatum can cause systemic fungal disease in cats. *Histoplasma* is a dimorphic fungus with a free-living mycelial stage that produces microconidia, which are primarily found in soil (particularly within organic matter enriched with bird or bat feces). Transmission occurs through inhalation or ingestion of microconidia, which are subsequently phagocytosed by macrophages. Within phagosomes, the microconidia germinate into yeast forms and disseminate through the lymphatic and vascular systems. Within the United States, histoplasmosis is commonly found in the Ohio River Valley; however, its distribution has progressively broadened, with cases commonly seen further west, including in Texas and Oklahoma.

Numerous mammalian species may be infected, although disease is most frequently reported in dogs and cats. When ingested, microconidia reach the lower respiratory tract, followed by an incubation period of 12-16 days, during which the spores transform into the parasitic yeast phase and reproduce by narrow-based budding. A similar process occurs within the gastrointestinal tract following ingestion of spores. The host immune system responds by phagocytosis of the yeast via macrophages and monocytes, within which the yeast replicate. Subsequently, hematogenous dissemination can result in systemic disease with possible

cutaneous involvement. In cats, the most commonly affected organ systems are the respiratory tract, lymphatics, eyes, and skin. Rarely, *Histoplasma spp*. can be introduced into the skin directly through wound inoculation. In this case, histoplasmosis lesions were disseminated throughout the spleen, lungs, skin, and multiple other organs.

Skin lesions can appear as nodules or multifocal, ulcerated or alopecic areas most commonly around the face and ears. Local lymph nodes are commonly enlarged. An important clinical differential in cases involving the face is cryptococcosis (*Cryptococcus neoformans*), which classically causes skin lesions in the facial/nasal region of cats, resulting in a characteristic "Roman" nose appearance.

Histologically, *Histoplasma* yeast are characterized by their uniform size (2–9 µm), basophilic center, and surrounding clear halo artifact. Narrow-based budding may also be identified. Granulomatous inflammation is commonly associated with the organisms, which are best highlighted with GMS or PAS stains. *Sporothrix schenckii* yeast appear similar, although they typically exhibit a more elongated, "cigar-shaped" appearance. While *Cryptococcus neoformans* yeast usually have a thick, clear capsule resembling a "soap bubble," an atypical form of cryptococcosis has been described in cats in which yeast are capsule-deficient and may closely resemble *Histoplasma*. *Blastomyces dermatitidis* yeast are larger (5-20 µm) with a double contoured wall and broad-based budding, in contrast to the narrow-based budding of *Histoplasma*. *Coccidioides immitis* spherules are larger (20-80 µm) with a double contoured wall and exhibit endosporulation. *Leishmania mexicana* is endemic to Texas and can cause cutaneous lesions in cats, frequently restricted to the pinnae and/or muzzle. Numerous 2x3 µm protozoal amastigotes with a rod-shaped kinetoplast oriented perpendicular to the nucleus are observed within macrophages. *Leishmania* may be confused with *Histoplasma* based on their similar size and the difficulty in visualizing the kinetoplast on H&E; however, amastigotes will highlight with Giemsa but will be negative with GMS, in contrast to *Histoplasma*.

References:

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2. Brömel C, Sykes JE. Histoplasmosis in dogs and cats. Clin Tech Small Anim Pract. 2005 Nov;20(4):227-32. doi: 10.1053/j.ctsap.2005.07.003. PMID: 16317912.
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4. Maxie MG, ed. *Jubb, Kennedy, and Palmer's Pathology of Domestic Animals*. 7th ed. St. Louis, MO: Elsevier; 2026. Vol. 2, Respiratory System and Alimentary System chapters.

5. Myers A, et al. Atypical cutaneous cryptococcosis in four cats in the USA. Veterinary Dermatology. 2017; 28(4): 405-e97.

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