

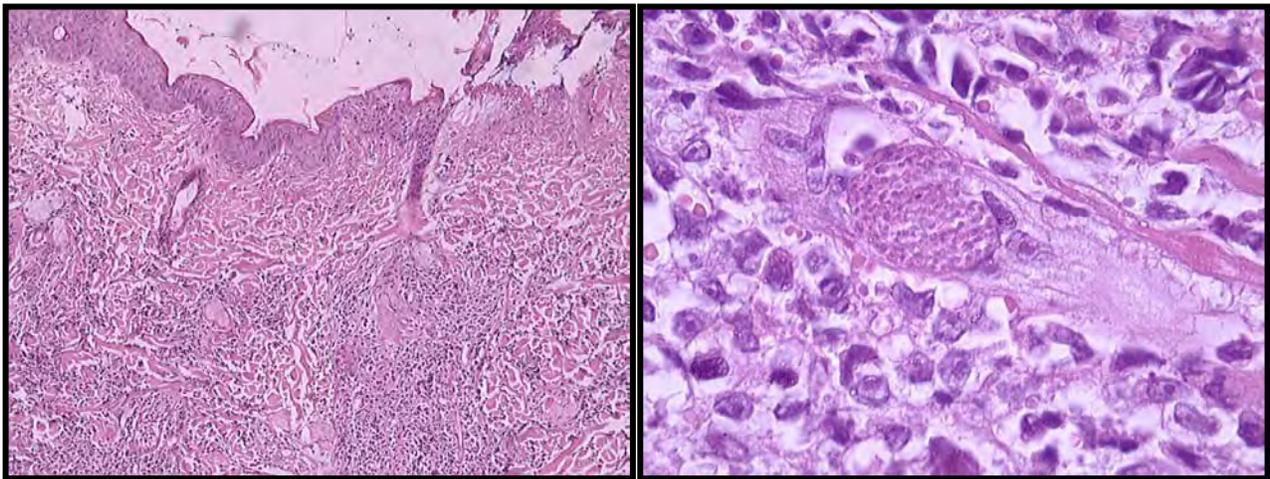
# Latin Comparative Pathology Group

## The Latin Subdivision of the CL Davis Foundation

### Diagnostic Exercise

Case #: 6 Month: February Year: 2011

*Answer Sheet*



(H&E; 10X and 40X respectively)

#### **Morphologic Diagnosis:**

Haired skin (nose): Multifocal-coalescing granulomatous necrotizing dermatitis, with intralesional protozoal zoites (*Toxoplasma gondii*), domestic short hair, feline.

This is a systemic protozoan infection, most likely *Toxoplasma gondii*, in which the main clinical expression was the lesion of the nose. There was a nodular to diffuse swelling of the tip of the nose and the soft tissue around it, spanning the right side of the face. The skin was nodular, alopecic, eroded and crusted. This lesion is grossly similar to the ones caused by *Cryptococcus neoformans* so that was one of the differentials that was excluded because no organisms were found in cytology and histopathology, even in samples using PAS staining.

Histopathology showed a multifocal, moderate to severe, inflammatory infiltrate that affected the superficial and deep dermis, mainly around what's left of follicular structures. The infiltrate consists mainly of macrophages, epithelioid cells, lymphocytes and plasma cells. There are some neutrophils also. Within macrophages there are occasional oval structures, ranging 30–40 µm in diameter, protozoan cysts, filled with bradyzoites. The main differential diagnoses for these cysts are *Toxoplasma gondii*, *Neospora caninum*.

*Leishmania sp.* and *Histoplasma capsulatum* at times resemble the non-cystic forms of *T. gondii*. However, *Histoplasma* have a unique clear halo while *Leishmania* amastigotes contain kinetoplasts.

**Typical Gross findings:** This is an atypical finding for this disease. In cats, toxoplasmosis usually produces interstitial pneumonia, lymphadenitis, non-purulent meningoencephalitis, focal hepatic necrosis, and myocarditis. Skin lesions have been reported in few cases (see discussion).

**Typical Microscopic findings:** Typical microscopic findings are foci of coagulative necrosis with variable presence of a mixed (mononuclear and neutrophilic) inflammatory infiltrate, bradyzoites and tachyzoites within macrophages or other cells, and cysts in the vicinity of the areas of necrosis.

**Typical Ultrastructural findings:** Tachyzoites (4–6 µm diameter) are separated from the host cell by a parasitophorous vacuole and contain an anterior apical complex. Important organelles in the tachyzoite are the conoid, micronemes, rhoptries, nucleus, and dense bodies. After entry into the host cell, the structures of the tachyzoite are retained within a parasitophorous vacuole.

**Discussion:** Cats are unique in that they can serve as both the intermediate host (extraintestinal life cycle) and the definitive host (intraintestinal life cycle). The cutaneous presentation of toxoplasmosis in cats has been previously reported. There is no clear tendency for anatomic localization or characteristic macroscopic appearance. Reports describe lesions ranging from multiple cutaneous nodules in the trunk, a single subcutaneous mammary nodule, or skin wounds that are unresponsive to treatment. Disease is more severe in young animals and immunocompromised hosts; such as FIV+/FAIDS cats, patients under prolonged steroid administration, or undergoing chemotherapy. The definitive diagnosis of cutaneous toxoplasmosis can be approached with the use of electron microscopy and PCR. Immunohistochemistry has low sensitivity, since there is a possibility for cross-reactivity of antibodies against *Toxoplasma* and *Neospora*. The cat was euthanized 2 months later because of his poor condition and a necropsy was

conducted. Additional lesions were found in the liver and brain; matching the ones described earlier, and including the presence of protozoan cysts.

**References and Recommended literature:**

Anfray, P., C. Bonetti, et al. (2005). "Feline cutaneous toxoplasmosis: a case report." *Vet Dermatol* **16**(2): 131-136.

Park, C. H., H. Ikadai, et al. (2007). "Cutaneous toxoplasmosis in a female Japanese cat." *Vet Pathol* **44**(5): 683-687.

Spada, E., D. Proverbio, et al. (2010). "Pituitary-dependent hyperadrenocorticism and generalised toxoplasmosis in a cat with neurological signs." *J Feline Med Surg* **12**(8): 654-658.

VSPO AFIP - Online at [[http://www.vspo.us/vspo/show\\_page.php?id=578](http://www.vspo.us/vspo/show_page.php?id=578)] on 01/22/2011

Please send your comments/questions to the whole LCPG list by hitting "reply to all".

C. L. Davis Foundation - LCPG - [http://www.cldavis.org/lcpg\\_english.html](http://www.cldavis.org/lcpg_english.html)