AMPHIBIAN CHYTRIDIOMYCOSIS & MYXOSPORIDIOSIS (*Litoria caerulea*) (CASE 1500.1)

CASE HISTORY

An adult, male green tree frog (*Litoria caerulea*) was euthanased after the sudden onset of inflamed ventral skin, accompanied by depression and dehydration. The frog did not respond to antibiotic therapy and focal white lesions developed on the thickened and red/brown abdominal skin.

HISTOPATHOLOGY

Lesions are not evident within the lung.

Testicle: The tissue is segmentally autolytic. The bulk of the spermatic cords are inactive and there are abundant interstitial mononuclear cells**.** There are multiple sub-capsular connective tissue encircled cysts that are filled with oval, refractile organisms **(Fig 1)**. These organisms are acid fast, and have two tear shaped polar bodies evident upon ZN stained sections. The organisms are lightly PAS positive, and have a single PAS positive internal structure. The two polar bodies within organisms stain darkly within tissue Gram stains and Giemsa stains **(Fig 2)**. These organisms are also evident within the **spleen**.

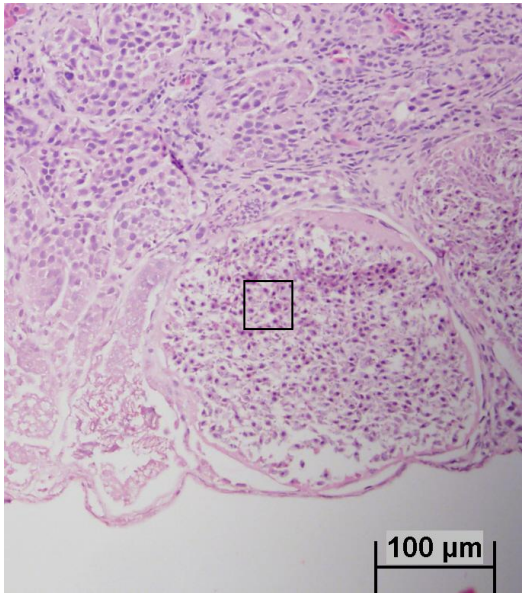
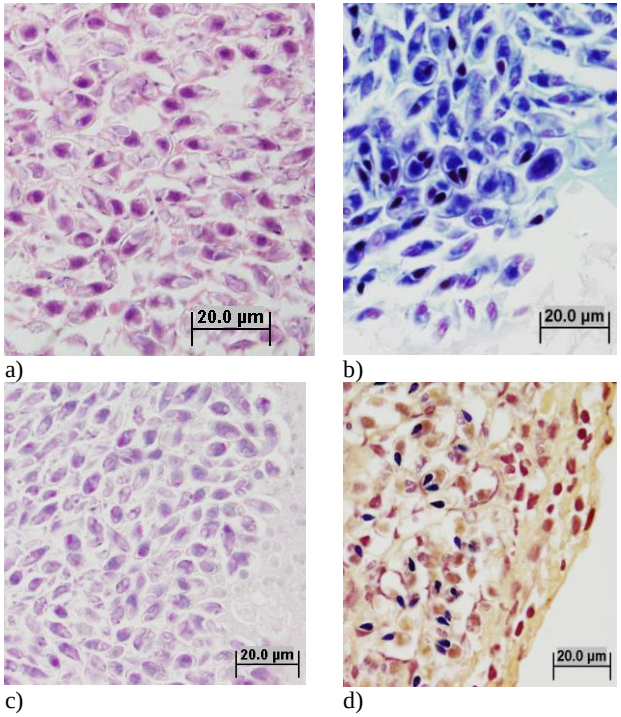


Fig 1. Testis. H&E 100x

Skin: There is marked hyperkeratosis of the epidermis and refractile oval spheres containing round, small basophilic spores are prevalent within the keratin layer **(Fig 3, 4**). Septate fungal hyphae and bacterial colonies are also present within the keratin. There is moderate intercellular oedema and scattered leukocytes within the epidermis. Patchy mononuclear cell infiltrates are scattered throughout the dermis.



a) b) c) d)

Fig 2. Staining characteristics of organisms from inset Fig1. 1000x. a) H&E; b) Giemsa; c) PAS; d) Brown and Brenn Gram's.

Skeletal muscle: Scattered myocytes exhibit contraction band formation.

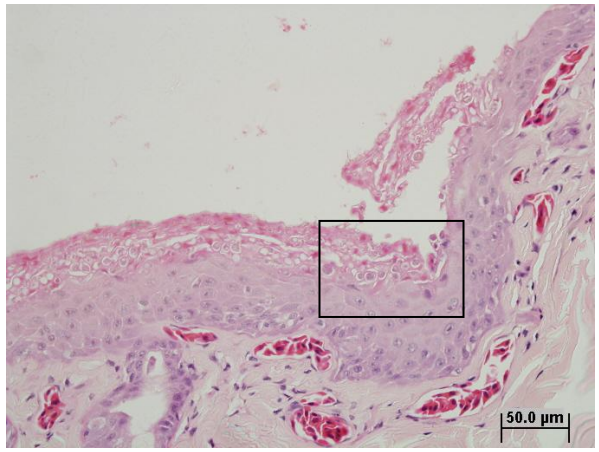


Fig 3. Skin, hyperkeratosis, H&E, 400x

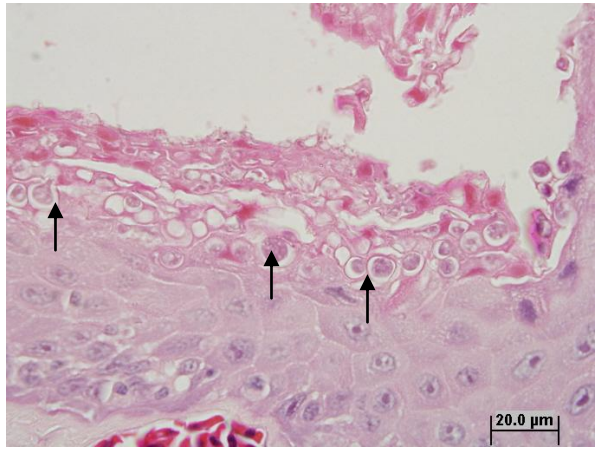


Fig 4. Skin (Inset Fig 3), fungal elements (arrows), hyperkeratosis and intercellular oedema. H&E 1000x

Kidney: Small numbers of renal tubules are distended with eosinophilic fluid.

Small intestine: The intestinal lumen contains large numbers of cross sections of nematodes.

Case interpretation: Karrie Rose. Case construction: Damien Higgins

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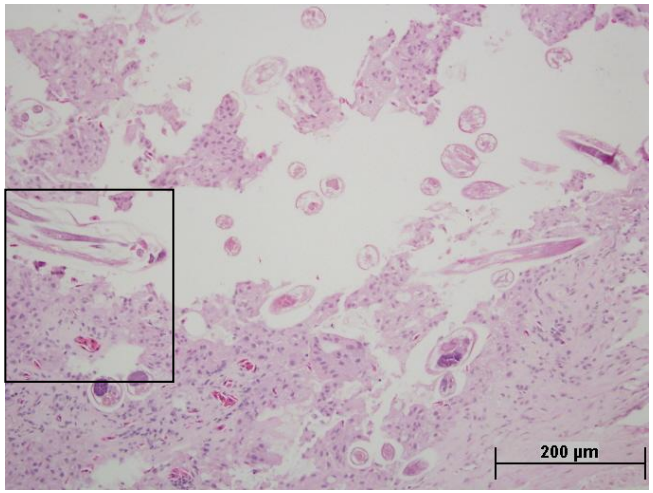

Fig 5. Small intestine. H&E 100x

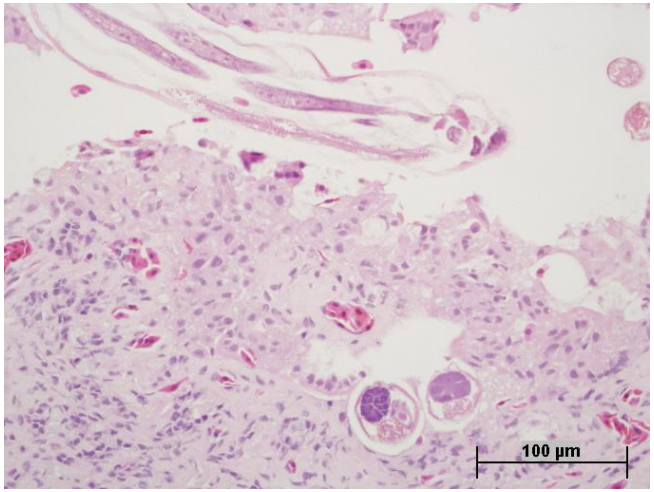

Fig 6. Small intestine (Inset Fig 5). H&E 400x

MORPHOLOGICAL DIAGNOSIS

Euthanasia
Marked and extensive mycotic epidermitis - Chytrid and other fungi
Intestinal nematodiasis
Splenic and testicular protozoal infection

COMMENTS

The frog's debilitated state most likely resulted from the extensive Chytrid fungus infection. It is suspected that Chytrid fungi may release a neurotoxin, since many infected frogs show evidence of paresis/paralysis.

The intestinal and splenic parasitism is an interesting finding. The morphology of these protozoa is most consistent with Myxosporidia. Special stains demonstrated internal polar bodies that are characteristic of Myxosporidia. These organisms are not common, but do occur within the urogenital tracts of fish, amphibians and reptiles. Infection with these organisms is usually subclinical, but there have been cases of infertility associated with their presence. Given the proportion of the testes affected with this infection, it is possible that the parasite could have contributed to infertility in this frog.

REFERENCES

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http://www.jcu.edu.au/school/phtm/PHTM/frogs/otherdiseases-parasite.htm

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