

Rounds

Animal Health
Department

Medical Rounds

"medicine for all"



Caring for Stranded Marine Animals

NATIONAL
MARINE
LIFE
CENTER

Notes

Veterinary Research
Department

Under the microscope

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Rounds Notes is a report on the health of animals at the National Marine Life Center from Sea Rogers Williams VMD for the staff, volunteers, and community of the center including professionals involved the captive care of similar species, the views expressed are not necessarily that of NMLC. Information in Rounds Notes should be considered confidential and used solely to benefit the health of aquatic animals everywhere.

August 3, 2010

Rounds Notes

10: 29-31(2010)

Headlines News: Dyskeratosis and superficial fungal keratitis

Catch22's infection gets more interesting

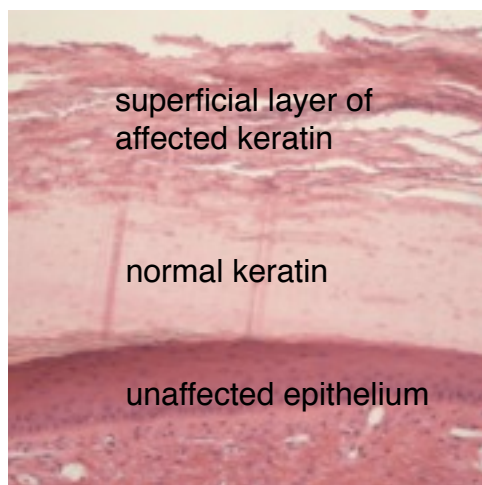
Despite meticulous attention to water quality and daily 100% water changes, a mercury-halide vapor basking light, daily scrubbing of the shell with chlorohexidine and topical terbufine,



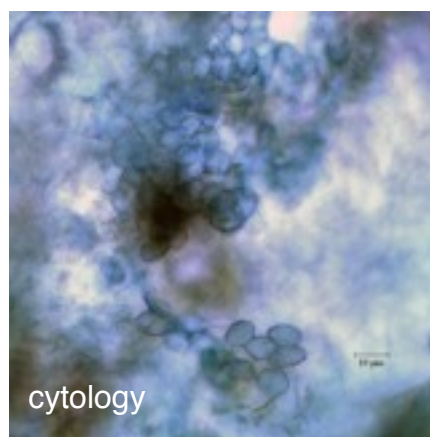
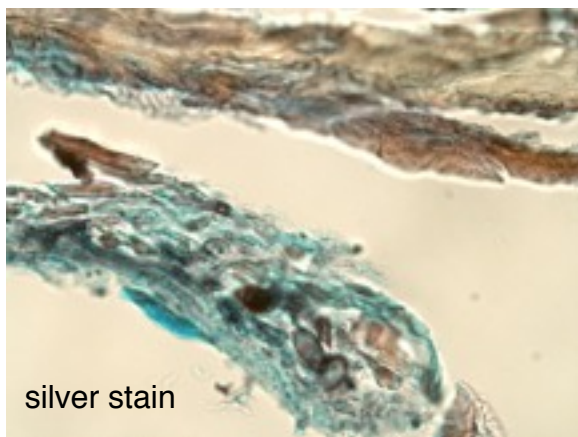
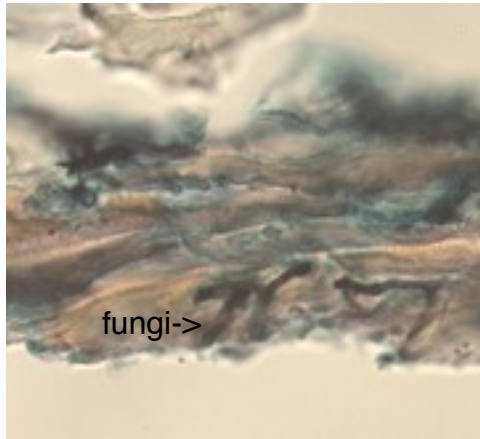
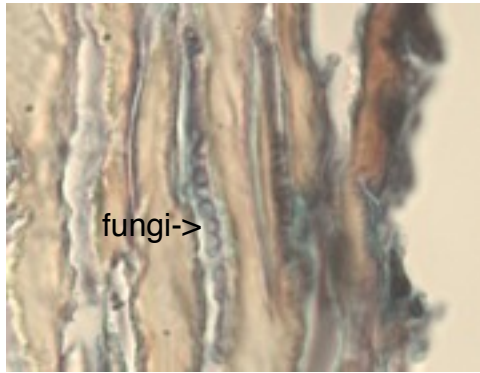
before shell scraping



after shell scraping



the white plaques are getting bigger. The cause, and perhaps the cure, are however, becoming clear. The histopathology shows superficial hyperkeratosis and dyskeratosis extending from 5% to 50% of the keratin layer with separation of the keratin by fungal elements that are interspersed within these layers. The separation of the layer is what we see grossly as opacity and the underline epithelium pigment patterns are no longer visible, just like corneal edema of the eye presenting as "greyness". The silver stain show the fungal elements clearly and the similarity to the cytology preparations. The condition is clearly fungal and invasive, but fortunately superficial.



Identification of the fungus may prove to be a little more difficult. The original fungal culture was negative. The second culture was also negative and resubmitted, where only a *Penicillium* was isolated. A new scraping was collected with aseptic technique was submitted to another fungal laboratory to confirm the finding, as *Penicillium* is often a contaminant. There are reports of *Penicillium* causing fungal diseases in reptiles and more reports an detailed species identity of isolates are needed to establish the cause and course of fungal dermatitis in reptiles. The problem is that the growth requirements in an artificial medium for many fungi are not known, and an emphasis of the fungal species of aquatic reptiles is not what drives the laboratory procedures used in most veterinary reference labs. Some estimates reports that 10% or less of infectious agents are isolated by these classical methods, there are however, alternatives.

Another approach is the use of DNA to identify infectious agents, this is possible today and will become more common in the field of infectious disease. A universal fungal primer can be used on the biopsy tissue

(already submitted) to start a PCR reaction and extract fungal DNA from the biopsy and multiply the DNA until it can be sequenced and compared to known DNA sequences from known

fungal species.

When these two approaches, traditional culture and isolation, and DNA PCR agree it is strong evidence for the diagnosis. If it turns out to the *Penicillium* the isolate needs to be identified to the species level at the fungal laboratory in Texas, and tested to see what anti fungal agents would be most promising to treat the infection. In the meantime we'll march on with the current therapy and see how the areas scraped free of fungal elements fairs. The procedure was well tolerated and kinda like scraping your fingernail with a sharp scissors.

Clinical Update: Patty's skin is changing more rapidly peeling away the old, and revealing the new

Patty continues to do well and the edema (puffiness) is resolved. The eye and limbs look great, she had excellent strength and movement in the hind legs. The tail skin has completely regenerated. The mass under the carapace is getting smaller without surgery. The surface blisters are less common, and the layers of skin are peeling away like a bad sunburn to reveal pigmented tissue underneath. The process seems accelerated over the past few weeks and I hope this represents a healing response.



Patty before debridement with gauze sponges . . . and after

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