

GA 1383

Daniel F. Cowan, M. D.

Professor of Pathology

The University of Texas Medical Branch

dcowan@utmb.edu

A Note from the Director:

This month's Pathologist's Report involves a dolphin that died with bacterial sepsis ("blood poisoning") associated with two pathogenic organisms, both of which have been associated with human disease. Currently in UTMB hospital is a patient with a profound, life-threatening infection with the so-called "flesh eating" bacteria, *Vibrio vulnificus*, acquired through a cut while fishing. We have recovered that organism from dolphins on a number of occasions. It is unusual for a completely healthy person to become infected with any of these organisms, which are ubiquitous in the marine environment. Anyone swimming or fishing is likely frequently exposed. Those people at risk of infection typically have some underlying problem, such as diabetes, liver disease or any form of immune system suppression. This is the reason we have to be very stringent in our screening of volunteers who want to participate in live rehabilitations and help with necropsies. While we don't want to have to exclude anyone, for safety's sake we must. There are however, many things to do with the Network that do not involve direct contact, and we can use all sorts of interests and skills in the program. Cases such as these cited serve to remind us that we must be careful and attentive at all times.

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GA 1383, a 229 cm long male bottlenose dolphin, *Tursiops truncatus*, was recovered dead from Jamaica Beach, Galveston County, on January 30 2007. He had been seen and photographed alive around 8:30 AM. By the time TMMSN

recovery team arrived he was dead. He was brought to the facility at Moody Gardens, for necropsy that afternoon. The animal was emaciated, with no external wounds and only a few rake marks. The blubber was smooth and firm, a bit thicker than expected from the wasted appearance. Flipper joints all normal. The body cavities contained a normal amount of fluid. The lungs were pink, mottled white, with a moderate number of firm palpable nodules. These were the usual inflammatory masses associated with lung worms, with some that were overt abscesses. There were many fine, hair-like lung worms of the type common in our waters. The airways are normal. There was no abnormality of the heart or aorta. The stomach and intestines were essentially empty. Liver was unremarkable, as were all the other abdominal organs. The testes small and immature. The spinal fluid volume seemed excessive; 20 ml easily aspirated, with still more available. The fluid was yellow tinged, and a bit hazy. The general impression from the gross examination was pneumonia, and probable meningitis and hydrocephalus.

This was a chronically ill, wasted animal, with no apparent serious visceral abnormality apart from the lungs. Bacterial cultures were made of the blood and the spinal fluid. From the blood were recovered gram negative bacilli identified as *Aeromonas veronii biovar sobria*; *Clostridium perfringens*; *Fusobacterium* species. Similar organisms were recovered from the spinal fluid. Microscopic examination showed bacterial abscesses in the lungs and mild angiomas. Surprising was the finding of amyloidosis of the kidneys. Our final diagnoses were: a young (immature) male; chronically ill; chronic pneumonia, or at least long enough to develop fibrosis; abscesses; angiomas in lungs and lung-related lymph nodes; amyloidosis of the kidneys. Death is attributed to pneumonia and sepsis. The angiomas, universal in our bottlenose dolphins, was too mild to have been a problem. Comment: This animal is a bit unusual, in that because he was quite fresh when the necropsy was done, we were able to get reliable bacterial cultures. The organism *Aeromonas veronii biovar sobria*, like all members of the group *Aeromonas* are inhabitants of fresh and sea water,

where they commonly infect cold-blooded animals. They are also found in sink traps and drains. The organism *Clostridium perfringens* is commonly associated with gas gangrene, but we have over the years identified it in the intestines of dolphins often enough that I have come to think of it as being a (probably) normal inhabitant of the dolphin gut. Like many organisms in the body, so long as they stay where they belong, they are no trouble. If they get into the tissues they can cause disease.

Not much is known about *A. veronii*; it can invade cells in culture, and can produce a cholera-like toxin that causes diarrhea. I don't know what it does to dolphins, but it can't be good. Those most at risk from these organisms are the immune-impaired, and those with wounds of various sorts. This animal has two other problems; chronic pneumonia associated with lung worms, and amyloidosis. Most of our dolphins are able to live with a lung worm infestation many years without much trouble. This one had persistent active infection with lung abscesses. Amyloidosis occurs in about 15% of our stranding necropsies. I believe that our cases are the only ones in the world dolphin literature. The most common form of amyloidosis in man appears as a complication of chronic infection, such as tuberculosis and osteomyelitis (bone infection) or in long-term inflammatory diseases such as rheumatoid arthritis. If it occurred in this animal as a complication of chronic lung disease, it would have been an unusually fast presentation. In summary, what I think happened is that this was just a not very robust animal who was not able to manage lung worms pneumonia very well, which led to lung abscesses and seeding of the blood (and spinal fluid) with pathogenic organisms, notably *Aeromonas veronii*. He died of bacterial sepsis.