

**GA 705**

**Daniel F. Cowan, M. D.**

**Professor of Pathology**

**The University of Texas Medical Branch**

GA 705 was a 210 cm male *Tursiops* weighing 96.8 G that had been recovered alive from the surf at Galveston Island, Wednesday June 7. This was a slender, immature male, estimated to be about 3 years old, possibly an off shore animal, suggested by the contrast markings, and a number of *Xenobalaenus* attached to the trailing edge of the flukes. He had been extensively bitten by sharks. All wounds, while extensive, were confined to the blubber, except for one which entered the right flipper joint. He was placed in the stranding network recovery tank at Texas A&M University at Galveston, where he was treated with antibiotics and tube fed. He was named "Nick" by the volunteers. He was never very active, but he was thought to be improving, slowly. The day of his death he became distressed, later very active, and swam around and around the tank very quickly. He abruptly stopped and settled to the bottom of the tank, dead. He had survived three days.

Necropsy revealed early healing of the bites. The tip of the fin had been bitten cleanly off, and one of the flukes has lost about the outer 1/3 or so. A few rakes were present. He was slim but not wasted. His blubber was soft, as if there has been some recent weight loss. All teeth were erupted, but small and not worn. There was still some marginal papillation of the tongue. He was estimated to be about 3 years old.

Internal examination showed general pallor of the tissues, consistent with blood loss, atrophy of the body fat. The trachea was filled with dense watery white foam, which we interpret as evidence of fluid in the lungs from heart failure. A few lung worm nodules were present. The only other gross abnormality as stuffing of

the pancreatic ducts with flukes, well into the smaller branches. There were heart muscle changes attributable to stress.

The stomach was empty of food, but there were several dozen *Braunina* attached to the walls of the third and fourth chambers. The cartilage of the atlanto-occipital joint, (the joint between the base of the skull and the first neck vertebra) was eroded on one side, typical of early arthritis.

The most important finding was in the brain. While it looked normal from the outside, the interior spaces (ventricles) were enlarged, and filled with cerebrospinal fluid. This was not associated with any obstruction to fluid circulation that we could demonstrate. This particular form of ventricular enlargement, or internal hydrocephalus, is associated with shrinkage of the brain, and the fluid just fills the empty space.

We attributed death to heart failure resulting from the effects of shark bite, blood loss and stress.

It seems likely that Nick was attacked by sharks because they detected something in his behavior that suggested he was vulnerable. Sharks are great opportunists, and like most all predators, probably do not readily accept the risk and energy cost of attacking vigorous and healthy large animals. The hydrocephalus is likely the cause of some functional impairment. The fact that Nick was well developed otherwise, and did not show signs of long-term weight loss, implies that he was functional enough to catch fish. In animals stranding on California beaches, brain damage ("strokes") caused by parasites is common, and those animals survive long enough for the brain lesions to scar. They still end up on the beach, however.

The problem in this case is the cause of the hydrocephalus. The brain was

normally developed, and so we think this was an acquired problem and not a birth defect. Our microscopic study showed a chronic meningitis, or inflammation of the coverings of the brain, and so we are inclined to attribute the hydrocephalus to virus infection. We are planning further studies to identify a particular virus.

The arthritis of the atlanto-occipital joint is probably infectious as it is localized to that joint only, and involves both surfaces. We are finding a surprising amount of arthritis in our stranded dolphins. We have not been able to identify an infectious agent yet. Infestation of the pancreatic ducts with flukes is not common in our animals. This may relate to Nick's being an off-shore animal.