PI 093

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PI 093 was a 250 cm long 129 kg female bottlenose dolphin recovered alive from the beach 1/2 mile north of Brazos Santiago Pass, Cameron County Texas, August 1, 1996. The information provided us was that she was first seen swimming toward the beach. Large wounds were observed on the tail stock and ventral side, and cookie-cutter shark bites appeared fresh and were still bleeding. She was retrieved on a stretcher, and taken by truck to the Coastal Studies Laboratory. She was named "Miss Kitty" by the volunteers. Dr. Michelle Frahm, veterinary from the Gladys Porter Zoo looked after her, but because of the extensive wounds and her failure to progress, Miss Kitty was euthanized on August 16, 1996. Necropsy was done the next day by Dr. Frahm.

Clinical and necropsy notes indicate that this animal's teeth were very worn down in the front, progressing to sharper teeth in the rear. There were cookie cutter wounds below the left eye and at the left base of the fin. There was a 16 cm wide, 41 cm long loss of blubber and muscle to the bone beginning 23 cm caudal to the trailing edge of the flipper. There was an old scar and rake marks 10-15 cm caudal to the blow hole. Three large gashes were present on right ventral aspect of the body. There was little abnormal noted on internal examination. There were whitish patches in the lungs, and reddish plaques in the trachea and bronchi. Tissues collected in formalin were sent to Galveston for processing and interpretation in our laboratory.

The heart showed the very common muscle cell degeneration we see in stranded animals. The plaques noticed in the trachea and bronchi were areas of ulceration, inflammation and invasion of the mucosa by a fungus, probably

Aspergillus sp. There were patches of pneumonia in the lungs, and a roundworm was found in a lung-associated lymph node. The main findings were infiltration of the meninges (coverings of the brain), liver and lymph nodes by abnormal blood cells. The piece of rib provided us did not contain bone marrow to evaluate. Our histological diagnosis is lymphoproliferative disorder, either leukemia or lymphoma.

Leukemia and lymphoma are both malignant proliferations of blood cells. Leukemias arise in the bone marrow, and may involve any of the blood cell lines, while lymphomas arise in the lymph nodes, and derive from lymphocytes. Either may involve infiltration of other tissues and organs by malignant cells, as in this case. In the dolphin, the bone marrow is almost entirely in the spine, which was not sampled. Therefore, while we know we are dealing with a malignant tumor of the white blood cells, we can't be entirely sure of where in the complex system the tumor originated. There are so few cases of leukemia/lymphoma reported in dolphins that revealing patterns of disease have not been established.

Comment: This class of disease is damaging in two ways. The malignant cells infiltrate tissues and organs and interfere with their function, and, the malignant cells are not able to carry out their own normal function of maintaining immunity to infection. This is why patients with these diseases so often die of infection. We can take the infection of the trachea and bronchi by a fungus as evidence of impaired resistance to infection, and the presence of a nematode in a lymph channel (unique in our experience) can be interpreted in the same way.

In man and experimental animals, evidence indicates that lymphoproliferative disorders may be associated with exposure to certain toxins, to radiation, and to virus infection. The cause of most individual cases is not known. Like most malignancies, the incidence of these diseases rises with age. Miss Kitty appears to be an old animal.

We can reconstruct a history of Miss Kitty's last days. A likely story would be that she developed the disease some weeks or months before her death. She would have been gradually weakened by it, and because of the infiltration of the coverings of the brain by malignant cells, may have behaved abnormally. This would have attracted the attention of predators, who tend to focus on impaired animals. While a normal dolphin could probably evade sharks, Miss Kitty couldn't, and was severely bitten. This brought her to the beach where she was found.

Miss Kitty once again illustrates a point we have made several times about the importance of careful examination of stranded marine mammals. The causes of disease and death reflect environmental influences on living animals, and tell us something of the life history. Post-mortem examination is really the only way to improve our knowledge of the life history of wild dolphins. Without the interest and involvement of volunteers, and the collection of observations and tissues, Miss Kitty could have been just another shark-bitten dolphin, instead of an important contribution to our knowledge of these most interesting creatures.