

GA 535

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GA 535 was a young, 216.5 cm long female *Tursiops truncatus* recovered dead from the Terrebon Beach/Bay Harbor area, near San Luis Pass, Galveston Island.

The animal did not look quite like a code 2 initially, but provided some very interesting findings. The abdomen was blotchy purple or violaceous. She had a fluid-filled abscess and bony enlargement of the tail section, as well as bony deformity of the rostrum (upper jaw.) This looked as if the beak had been jammed upward and to the left a long time ago. Some of the teeth were missing from this part of the jaw. There were no signs of recent injury.

The tail stock seemed unusually slender. The bony mass was evident on the left side on the line defined by palpable lateral spinous processes. It measured 8 x 4 cm through the skin. Similar but smaller bony swellings were palpable on the right side, one overlapping but posterior to the one on the left, and a smaller one caudal to that.

The abscess was quite large, measuring 13 x 11 cm, and was located on the left side above the lateral center line, halfway between the trailing edge of the fin and the front border of the fluke. There was no mark on the skin over the abscess. The abscess was strictly under the skin and separated from the muscle by the fascia layer. It was encapsulated, and filled with material resembling a mixture of cottage cheese and buttermilk. An unfamiliar anaerobic bacillus was cultured from the abscess and from the blood.

The left humeroscapular (flipper) joint was abnormal. The cartilage was reddish instead of white, the joint surface rough and the synovium thickened. The joint space contained a dense gelatinous material. The right flipper joint was normal.

The atlanto-occipital joint, that is, the joint between the first cervical spine segment and the base of the skull was deformed. The left condyle was flattened and reddish, not white, with a corresponding defect on the atlas. The cartilage surface was rougher than the right, which was not entirely normal. The articular surface seemed smaller than usual.

The major internal abnormality was diffuse enlargement of the lymph nodes. This was especially evident in the nodes of the neck, the mesenteric nodes (pseudopancreas), the pelvic nodes, and the pad between the diaphragm and the pericardium. In particular the mesenteric nodes were very large, bulging, firm, and fleshy.

One kidney had a small abscess. All the other internal organs were normal, except for the lungs, the brain, and the liver which was very congested. The right lung showed patchy pleural thickening. Both lungs had worm granulomas and mild pneumonitis or pneumonia. The brain appeared normal before cutting. The coverings or meninges were congested. At the upper angle of the right lateral ventricle was a flat cavitation with a granular surface. This appeared to be an old lesion. It is about 3 mm anterior to the origin of the acoustic nerve, which appeared to be normal. This is the sort of lesion we would associate with *Nasitrema* infestation, but no evidence of the worm was found in the brain.

Comment: The combination of findings for this animal was very unusual. The major finding is a diffuse meningitis involving the brain and spinal cord. This has the pattern of a viral disease. This is not expected, as there is ample evidence of a bacterial infection elsewhere in the body. We have no explanation for the

cavity, as it is not the sort of thing associated with meningitis. It may be a residue of the same injury that caused the bone deformities. There is also a relatively acute pneumonia, associated in some areas with fresh lungworm. This case was examined with the possibility of morbillivirus disease in mind, but it does not have the typical features of that disease. Either the meningitis, the abscess, or the arthritis could be the cause of beaching. We favor the meningitis, since the abscess and the arthritis have been there for a while.

The deformity of the tip of the beak is an old process, and may reflect an old injury. The striking arthritis of the atlanto-occipital joint, one humero-scapular joint and of a segment of the spine are probably related. We can only speculate that at some time in her young life she collided with something very hard, enough to break the tip of her beak and jam the neck joint. The spinal deformity is caused by an overgrowth of bone of the sort usually attributed to injury. There was no evidence of active infection of the joints on microscopic study. The large abscess of the tail stock was probably the source of the bacteria that seeded out in the kidney and was recovered from her post-mortem blood culture. Although our laboratory is very experienced, and has grown literally dozens of different bacterial species from dolphins, this one could not be identified.

This was a young animal, based on lack of development of the ovarian follicles, and on an open growth plate in the spine. This case could be interpreted as an example of the toughness of the dolphin, able to cope for at least a time with three serious diseases. It could as well be taken as evidence for the harsh conditions under which wild animals live in nature. GA 484, a 219 cm long female *Tursiops* was recovered dead, Code 2, from Emerald Beach Island, 9.8 miles E of the ferry landing (8.53 NM east) 29° 26' 8" N, 94° 38' 7" W, in February 1993. She was estimated to be about 6 years old. Externally, she was in very good condition, with only a few small pits in the epidermis. All the joints were normal.

On internal examination, the lungs were dark, suggesting congestion, with a few white patches which later proved to be focal pneumonia. A few nodules typical of old worm lesions were also present. The heart and coronary vessels, and the aorta were normal. The stomach and liver were adherent to the diaphragm, suggesting healed inflammation. The liver also was congested. Yellowish material was present in left mammary gland. All the muscles seemed drier than usual.

The second chamber of the stomach contained a few stomach flukes, *Braunina*. There were extensive erosions and ulcerations in this portion of the stomach, and whitish patches suggesting fibrinous exudate. The mucosa of the 4th chamber was thick and wrinkled. This is not the usual appearance in *Tursiops*. The remainder of the intestine was normal.

All the other organs, including the brain and spinal cord, appeared normal, except for the kidneys, which were paler than usual, and slightly granular in texture. One calyx was dilated.

Cartilaginous growth plates were present in the vertebral bodies, consistent with the estimated age of the animal.

This is remarkably little to find on gross examination. We did our usual extensive sampling of tissues for microscopic study, and also collected blood for bacterial culture. Microscopy was much more revealing. All the lymph nodes were reactive, as if to some infection, and there were minute abscesses in a few of them, especially those associated with the lungs and the intestine. We grew several enteric organisms from the blood, including *Xanthomonas maltophila*, and there was an abundant growth of *Vibrio damsela* in the stool, but it was not recovered from the blood.

The most striking and unusual finding was the deposition of a proteinaceous material in several organs, especially the kidneys, mucosa of the second chamber of the stomach, the mesenteric lymph node, the arteries of the spleen, the thyroid gland, and the oral mucus glands. The heaviest deposition was in the kidneys, where it was present in all renculi examined. In a few areas, there was also some scarring. This material, amyloid, is well known in human and veterinary medicine. In man, it is recognized in several patterns and associations, some with chronic suppurating disease, such as long-established bone infections; some is hereditary, and some is idiopathic, meaning we don't know the cause. In veterinary medicine it may be best known in horses that have been used for a long time in the production of vaccines; "horse serums". It interferes with the nutrition of tissues, as it tends to be deposited between the capillary blood vessels and the tissues they supply.

To date, we have found five cases of amyloid disease, or amyloidosis in Tursiops. As far as we have been able to determine, these are the only cases known of this disease in any cetacean. Another interesting thing about the disease is that the cases we saw appeared over a period of just two years, 1991-1993 or so, and we have not seen any for the past two years. This clustering may be a coincidence, but then maybe not.

We attribute death to natural causes. This animal has a chronic disease, amyloidosis. We cannot pinpoint it as cause for stranding on any particular day. It is something that the animal has been tolerating for a while. The microabscesses in the lymph nodes suggest that the animal was septic, which is the likely cause of stranding.

A notable feature in this case is that the animal is young, to judge from the active

spinal growth plate. I do not believe that human interaction was involved in this animal's death.