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INTUSSUSCEPTION IN A FLORIDA MANATEE¹

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Abstract: An intussusception resulting from an embedded fishhook and a mass of nylon cord, monofilament line, and wire was determined to be the cause of death in a Florida manatee (*Trichechus manatus latirostris*). Pathologic findings are given along with information on bacteria (*Edwardsiella tarda*), pesticide residues (DDE, PCB's, and dieldrin), and parasites (*Chlorchis fabaceus*).

INTRODUCTION

The Florida manatee or Florida sea cow (*Trichechus manatus latirostris*) is found primarily in coastal waters, lagoons and certain rivers of Florida, Georgia, and South Carolina.² Currently this sirenian is listed as an endangered subspecies by the U.S. Department of Interior¹ with total numbers estimated as low as 600 animals.² Although some mortality data have been published,^{5,6} little specific information on diseases and parasites of Florida manatees exists.

On October 22, 1974 an adult female Florida manatee was found moribund on the shore of the Intracoastal Waterway, 29 km south of New Smyrna Beach, Volusia County, Florida. The animal measured 3.1 m in total length and her weight was estimated at 540 kg. She expired during transit to Marineland of Florida and was examined at necropsy on October 24, 1974.

This report deals with an intussusception, believed to be the cause of death, and other findings.

MATERIALS AND METHODS

A necropsy was performed following standard techniques.

Samples of liver, spleen, heart, aorta,

lungs, kidneys, small intestine, large intestine and ovary were fixed in 10% buffered formalin and later sectioned and stained with H & E following standard procedures.

Liver, heart, lungs, kidneys, small intestine, and large intestine were cultured for pathogenic bacteria following methods described by White *et al.*¹⁰

Samples of brain, liver, muscle, fat, and mammary gland were obtained and wrapped individually in aluminum foil. These were later tested for pesticide residues following methods described previously.⁸

The gastrointestinal tract, heart, trachea and bronchi were opened and the contents washed through a 100-mesh sieve. Lungs, liver and kidneys were teased and washed through the sieve. Helminths were preserved and stained following standard techniques.

POST MORTEM RESULTS

Skin along the back of the animal contained healed scars, possibly due to an injury caused by a boat propeller. No ectoparasites were found. The right shoulder was dislocated, probably as a result of handling and moving the animal after capture. The posterior end of the esophagus was swollen and contained a 20 cm

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necrotic laceration. The stomach appeared normal and was empty, indicating that the animal had not eaten recently. The small intestine had an intussusception measuring 60 cm in length with necrosis and diffuse hemorrhage of the involved area. A fishhook was embedded in this portion of the intestine and was attached to a nylon cord of several feet in length with a mass containing smaller nylon line, monofilament line, wire line and several swivels. Anterior to the fishhook were several lacerations probably representing places where the hook had attached temporarily and subsequently became dislodged in its movement down the intestinal tract. A small amount of blood-tinged fluid was present in the body cavity.

LABORATORY RESULTS

Histopathology

The liver appeared normal except for some vacuolated parenchymal cells. Hepatocytes and Kupffer cells contained large quantities of hemosiderin. The kidneys were congested, and some protein casts were present within the distal tubular segments. The lungs were severely congested. The submucosa and muscularis mucosa of the intestine were infiltrated with heterophiles, indicating an acute inflammatory response. Spleen, heart, aorta, ovary and adrenal tissues were normal.

Bacteriology

No bacteria were recovered from liver, heart and kidney samples. *Pseudomonas putrefaciens* was isolated from the lungs. *Edwardsiella tarda* was isolated from the contents of the small intestine. *Escherichia coli* and a *Pseudomonas* sp. were obtained from the contents of the large intestine.

Pesticide Residue Analysis

Traces (less than one part per million) of DDE were found in samples of liver, muscle, blubber, and brain, but not

mammary tissues. No DDD or DDT was found. Trace amounts of PCB's were found in all tissues. Dieldrin (in trace amounts) was found only in liver and brain.

Parasitology

The only parasite found was the paramphistome fluke, *Chiorchis fabaceus*. A total of 2,659 specimens were encountered. These were located as follows: posterior half of small intestine: 237, cecum: 1,668, and anterior half of large intestine: 754. Most flukes were found mixed with plant material digesta, but some were attached to the gut wall. Representative specimens, stained with Harris' hematoxylin, have been deposited in the National Parasite Collection (Beltsville, Maryland) as USNM #73784.

DISCUSSION

Although intussusceptions occur in many species,⁷ this is the first such report in a manatee. In this case the embedded fishhook and the mass of nylon cord, line and wire were believed to be the cause, leading to the death of the animal. The pesticide residues and flukes are considered incidental findings and probably were not a contributing factor. However, *E. tarda* has caused wound infections, abscesses and gastroenteritis in man⁴ and may have complicated the intussusception.

This is the first report of *E. tarda* from a free-living marine mammal. Wallace *et al.*⁹ reported this enteric pathogen from a captive California sea lion (*Zalophus californianus*) maintained in a zoological garden exhibit in Florida. White *et al.*¹⁰ have recently reported *E. tarda* from brown pelicans (*Pelecanus occidentalis*) from marine environments in Florida, but the organism appears to be more common in fresh water habitats. The pathologic significance of this microorganism to manatees remains unknown.

To our knowledge there are no other published records of pesticide residue

studies on the Florida manatee. The amounts found in this case were certainly well below the level of pathologic significance.

C. fabaceus has been reported previously from the Florida manatee⁸ but, prior to the present paper, no data have been reported on intensity of infection and the distribution of flukes in the gastrointestinal tract. The significance of this parasite as a pathogen is uncertain.

Hartman,² after a thorough study of the status and biology of the Florida manatee, concluded that the most serious threat to the survival of this unique mammal is the activities of man. He listed the mortality factors, in order of severity, as: propellers of power boats, vandalism, poaching, and habitat alteration. To this list could be added accidental ingestion of fishhooks and line as in the case reported herein.

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