

Sonographic Identification of Intestinal Loop Inflammation and Necrotizing Enterocolitis in Cetaceans - Potential Link to Disequibrated and/or High Diet Volume

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Abstract

With the progress of medical training and access to modern diagnostical tools, the use of ultrasound has generalized, and it is now possible to identify pathologies ahead of time in marine mammal and intervene earlier.

However, there are still few publications on the assessment of the lower digestive tract, the focus being generally given to the stomachs and upper tract,^{1,2} and even fewer on the pathological changes that can occur in the intestinal loops³.

The presentation will review cases of pathological changes identified by ultrasound in the lower digestive tract of cetaceans, some of which unfortunately resulted in the death of the animals. These changes comprised liver inflammation with peri-portal cuffing and presence of venous gas, mesentery hyperechogenicity, delayed digestion, and low peristaltism, “sticky” intestinal content, ileus, tanga signs, thickened walls, enlarged to extremely enlarged loops with thinned walls, high presence of gas in the lumen, pneumatosis, mucosal breaches, intussusception, ascites with or without the presence of fibrin strains and septation. The worst changes being compatible with ulcerative colitis and necrotizing entero-colitis or even comparable to inflammatory bowel disease and Crohn’s disease in humans.⁴⁻¹⁰

These inflammations, infections, and/or pathologies were previously only identified at necropsy and often the culprit are bacteria found in the digestive system like *Escherichia coli*, *Clostridium perfringens*, or *Pseudomonas aeruginosa*, but that grew out of control and/or turned multi-resistant and went septic.

Preliminary results in this review seem to indicate that a higher food volume, disequibrated diet, and high weight gain could be linked to the observed intestinal changes in many cases. Often the animals in human care are over fed and have an inadequate/unbalanced diet. They also have access to their food only during a limited number of (staff working) hours and during only a limited number of sessions. This can result in delayed digestion because of the stomach not being able to process the volume received during the given time. The accumulation of food/feces in the lower digestive system can cause bacterial multiplication, which in turn can form gas that, because of the non-expandable cavity in cetaceans, is very uncomfortable for them. This can further evolve towards inflammation of the mucosa, entero-colitis, septicemia, septic shock, and death. Several of the animals in this review had their sonographic appearance of the lower digestive tract returning back to normal following adaptation of the diet (mixed types of fish, lower volume, drop in weight, and/or additional feeding times outside working hours). Some animals presented again the same intestinal loop pathologies when back on a higher diet volume. Some animals succumbed to volvulus or septic shock of digestive origin.

Further retrospective studies comparing the diet composition/volume and animal weight to occurrences of septic entero-colitis and/or volvulus in cetaceans would be interesting.

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SPEAKER INFORMATION

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