



# Severe multiple infestations of a stranded adult male of *Stenella Coeruleoalba*

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## INTRODUCTION

*Stenella coeruleoalba* is an extensively studied dolphin and the most common species of our seas. Parasitism, especially of the respiratory or gastrointestinal system, is relatively common in stranded cetaceans and has been documented in animals from the North Sea, eastern Pacific Ocean, Atlantic Ocean and Mediterranean Sea. Lungworm infections associated with stranding or mortality have been documented in some species including *S. coeruleoalba*. This report describes the lesions found in an adult male of *S. coeruleoalba* stranded along Falconara Marittima coasts (Ancona, Italy) trying to clarify the role of high parasitism in stranding and mortality.

## MATERIALS and METHODS

One adult male of *S. coeruleoalba* were found moribund and died shortly after being recovered. A full necropsy examination was promptly carried out to make an accurate diagnosis of death. Representative tissue samples were removed and fixed in 10% neutral buffered formalin for routinely histological examination. 5- $\mu$ m-thick sections were obtained and stained with haematoxylin and eosin, P.A.S., Wilson Disease Stain for copper and Perl's iron stain.

Specimens were also aseptically collected for bacteriological examinations. Parasites were collected during the necropsy for identification. PCR-RFLP was also performed to identify the *Anisakis* spp. Tissues samples were also examined for dolphin morbillivirus (DMV) nucleic acid by reverse transcription-PCR (RT-PCR). In the end, Inductively Coupled Plasma Mass Spectrometry (ICP-MS) and Atomic Absorption Spectroscopy (AAS) were performed for cadmium, copper, lead and mercury respectively.

## RESULTS

At necropsy, *S. coeruleoalba* showed a multiple infestations with different anatomic sites. In lung, multifocal small white-greyish nodules were found. Lungworms consistent with the family Pseudalidae were observed in multifocal granulomatous eosinophilic lesions. Macroscopic examination of forestomach showed a large chronic gastric ulcers with several adults and L4 larvae of *Anisakis pegreffii* (Fig. 1a, 1b). In the second chamber of the stomach, multiple nodules into the gastric wall were registered (Fig. 2a, 2b). Microscopically, gastrointestinal helminths consistent with digenea trematodes and thousands eggs were found into the gastric muscle layers surrounded by severe granulomatous reaction. Moreover, numerous cysticerci referred to as *Monorygma grimaldi* were found as nests of 12 retroperitoneal cyst 30 to 40 mm in diameter on the abdominal wall (Fig. 3). In addition, areas of demyelination in the white cerebral matter and mild diffuse hepatocellular degeneration associated with copper deposits were found. Bacteriological exam and PCR analysis for DMV were negative. Results of heavy metal analysis are reported in table 1.

## DISCUSSION

As previously suggest, certain environmental organochlorine pollutants, as well as heavy metals are responsible for a decreased immune response to foreign antigens triggering secondary viral, bacterial and/or parasitization. The results of chemical analysis showed the high level of heavy metals. These values are similar to those found by other authors in organs of *Stenella coeruleoalba* dolphins stranded on the Mediterranean coasts.

In conclusion, the striped dolphin stranding may be caused by debilitation due to severe multiple infestations which could be secondary to the depressed immune response of animal caused by high pollutants concentrations found in the tissues.

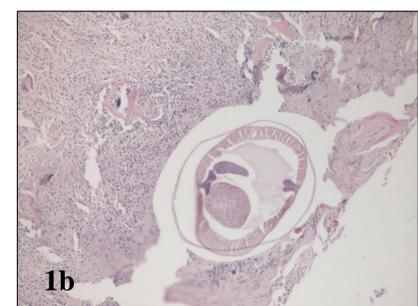


Fig.1a Forestomach with large chronic gastric ulcer with several worms. Fig. 1b Focal ulcerative gastritis associated with *Anisakis pegreffii*

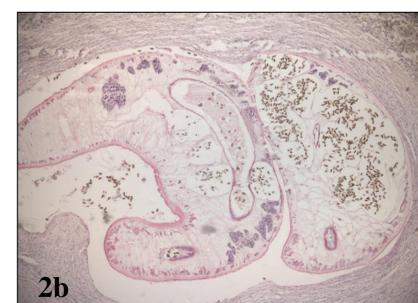


Fig.2a Second chamber of the stomach with multiple nodules into the gastric wall. Fig.2b Granulomatous gastritis associated with digenea trematodes.



Fig. 3 Retroperitoneal cysticercosis

Table 1. Results in  $\mu$ g.g<sup>-1</sup> dwt. Concentrations of mercury (Hg), lead (Pb), cadmium (Cd), copper (Cu), and in liver and kidney tissue samples.

	Hg	Pb	Cd	Cu
Liver	163,8	0,025	4,623	7,7
Kidney	6,546	< loq 0,015	4,639	3

## REFERENCES

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