

CONTRIBUTIONS TO THE KNOWLEDGE OF PATHOLOGY OF THE SPECIES *Otaria byronia* (BLAINVILLE, 1820) - PINNIPEDIA IN CAPTIVITY CONDITIONS

CURLIȘCĂ Angelica, CAISIN Ancuța, PAPADOPOL C. Nicolae, CRISTEA Victor

Abstract. In the last years, specialists in marine mammals, especially those dealing with pinnipeds have shown an increasing interest in the diseases of the species that belong to this order. They monitored both populations in their natural habitat, as well as those in captivity. In the present paper, after specialized scientific papers consultation, authors classify the diseases reported at the two specimens of *Otaria byronia* from the Dolphinarium pools, department of the Natural Sciences Museum Complex Constanța.

Keywords: *Otaria byronia*, pinniped disease, captivity.

Rezumat. Contribuții la cunoașterea patologiei speciei *Otaria byronia* (BLAINVILLE, 1820) - Pinnipedia în condiții de captivitate. În ultimii ani specialiștii în mamifere marine, în special cei care se ocupă de pinipede, au arătat un interes crescut în ceea ce privește bolile speciilor ce fac parte din acest ordin. Au urmărit atât populațiile aflate în habitatul lor natural, cât și pe cele aflate în captivitate. În prezenta lucrare, urmărind literatura de specialitate, autorii încadrează bolile semnalate la cele două exemplare de *Otaria byronia* aflate în bazinele secției Delfinariu din cadrul Complexului Muzeal de Științe ale Naturii Constanța.

Cuvinte cheie: *Otaria byronia*, bolile pinipedelor, captivitate.

INTRODUCTION

In the specialized literature, it is specified that the diseases encountered in pinnipeds may be caused by microorganisms (viruses, bacteria, fungi), protozoa, metazoans, neoplasia, eating disorders, eye diseases, abnormalities FLEISCHMAN & SQUIRE (1970); GREENWOOD (1985); DUNN et al., (2001); GAGE (2002); GEARHART (2006); KINNE (1985).

It is necessary to consider that captive pinnipeds face two main factors that create the premises for the occurrence of infectious and parasitic diseases, present in zoos, dolphinariums/Oceanaria. We note in particular the reduction of space in captivity, in an artificial biotope, compared with the space they hold in their natural habitat.

This relational increased density of individuals per unit area, favouring successive passage of pathogens from one host to another and causing exacerbation of virulence of the strain in question, as well as the permanent contact with the same substantially limited space, makes it difficult to maintain proper hygienic conditions of the zoo conditions, resulting a massive concentration of germs per unit area and this increases the possibility of residual proportional infection.

A second determinant is made up of strong reducing capacity of resistance of animal's aggression against many and various stressful environmental factors, new or modified compared with those of the natural habitat. An additional factor is the likely absence of an acquired immune from contact potential long bio-pathogens agents found in benign conditions of captivity.

Since 1995, the Natural Sciences Museum Complex Constanța has two specimens of South American sea lion *Otaria byronia* (Pinnipedia: Otariidae).

Over time, these specimens confronted with various diseases, which we try to present below.

MATERIAL AND METHODS

The whole history of the pathology of the two *Otaria byronia* specimens kept in the basins of the Dolphinarium department from the Natural Sciences Museum Complex Constanța is found in the medical records and in the custodians' works, in the period 1995-2011. In Table 1 there are included: period of observations; diagnosis, symptoms and treatment. To the information taken from these documents, there can be added the observations made by the authors in this period.

These observations were made daily, on average once a day, which means 3,650 observations for *Arctocephalus pusillus* and 5,628 observations for *Otaria byronia*.

RESULTS AND DISCUSSIONS

It is noted the predominance of diseases caused by the state of captivity, sea water quality, obvious deficiencies in nutrition and stress isolation for these highly gregarious species.

The species in question were mainly affected by:

- **Eye diseases:** eye inflammation, conjunctivitis, keratitis, diseases that have an incidence of 40% of all reported diseases. Among the eye diseases 55% of the recorded cases were eye infections, while keratitis and conjunctivitis were reported only in 20% of cases.

- **Enteritis** is another category of bacterial infections, relatively common in the dolphinarium (approx. 20%), the contributory factor consisting in lower quality food.

- **Respiratory problems** (acute bronchitis, lung congestion, microbronchitis) are also relatively frequent; the specimen *Arctocephalus pusillus* died from pneumonia, according to the necropsy report presented by the veterinarian. These problems are caused either by an inadequate microclimate, high concentrations of chlorine, or bad ventilation in indoor premises. Bronchitis was diagnosed in approx. 40% of cases, and was accompanied in 25% of them by cough with expectoration.

The other problems have had a secondary effect, but were not neglected. There were carefully observed:

- musculoskeletal disorders appearing from trauma to overwhelm joints (dislocations, sprains);

- avitaminosis caused by stress are very frequent at the end of each summer.

It is noted, given the small number of sea lions and dolphins, the good quality of the frozen fish that was also rigorously controlled, which led to the avoidance of certain diseases caused by metazoa.

In Table 1 there are presented in a summary, the main results of the undertaken investigations.

CONCLUSIONS

From the data presented in the table above it can be concluded the following:

- the most frequent diseases recorded on our investigated specimens are the eye diseases: eye inflammation, conjunctivitis, keratitis (GREENWOOD, 1985; STOSKOPF et al., 1983; GAGE, 2002). It is possible that the factor that triggers them to be the presence of sodium hypochlorite in pools water (in excess of 0.1 mg / l free chlorine) and exposure to flashes of cameras and bright light during the summer.

COLITZ et al., 2010, mentions in his book that Otariids keratitis clinically is a progressive disease with unknown etiology, which affects both juveniles and adults (Photo 3). An enclosure away from strong light and with shadow seems to slow the disease progression and prevents the occurrence of relapse as often.

Bacterial infections - Enteritis - are another category of relatively common disease in the dolphinarium - Oceanarium. The etiologic agent belongs to the genus *Pasteurella* BOGATU & MUNTEANU (2008). The contributory factor is poor quality food. This condition is accompanied by loss of appetite, feeding, malnutrition; respiratory diseases (acute bronchitis, lung congestion, microbrochitis) are also relatively common.

We should also mention the musculoskeletal disorders arising from trauma (dislocations, sprains).

Also, they note that at the end of each summer season the animals are physically exhausted and that for a period they receive: Polivitaminizant S, Vit E, Spirulina.

In conclusion we can say that the diseases recorded to *Otaria byronia* specimens present in the basins of Dolphinarium are common diseases for captive pinnipeds. Unlike other Oceanaria/Aquariums holding such marine mammals, in our case there were not recorded metazoans related illnesses in the investigated period.

Table 1. The main problems reported in *Otaria byronia* from the pools of the Natural Sciences Museum Complex Constanța, period 1995-2011 - multi-data. / Tabel 1. Principalele afecțiuni semnalate la exemplarele de *Otaria byronia*, din bazinele Complexului Muzeal de Științe ale Naturii Constanța, perioada 1995-2011 - date multianuale.

Period	Diagnosis	Symptoms	Treatment
August 1995 - December 1995	Eye diseases	Inflammation of the eyelids	Eye ointment
	Erythema	Inflammation around whiskers muzzle, mucous membranes and skin	Vitamin A, Polivitamin + application of propolis ointment to the affected areas
	Loss of appetite, malnutrition	Loss of weight	Vitamin E, Vitamin B1 and polivitamins
1996 - 2011	Anorexia – infection and intoxication with gram +	Symptoms of anorexia (loss of appetite, excessive weight loss)	Ephicilin capsules 500 mg, Ampicillin capsules 100 mg Polivitamins
	Eye Infection	Ocular inflammation with eye leaking	Vitamin E capsules, Retinol
	Enteritis	Soft faeces	Anti-diarrheal capsules Neo-me-vit and a veterinary antidiarrhoeal (Bmix)
	Keratitis (Photo 4)	Inflammation of the right eye	Eye ointment, Vitamin A forte Vitamin E forte
	Chronic Keratitis	Chronic inflammation of the right eye, chronic turbidity	Instillation in the lacrimal sac of the right eye with Vitredent (vitreolent) drops
	Acute Bronchitis		Antibiotics: doxycycline-pills, Supradin, Vitamin E forte, Vitamins B1, Vitamin B6
	Left dislocation fin (male John)		
	Bronchopneumonia	Cough	Doxycycline
	Conjunctivitis	Watery secretion, purulent around the eyes	Kanamycin, vitamin B6, Neoxigal
	State of intoxication with chlorinated rubber and thinner vapours, with inflammation of the nasal airways before and nasal secretions	Cough straight (forced diaphragm apnoea), a state of apathy and prostration	Doxycycline, Polivitaminizant, Vitamin A forte, Vitamin C200, Sicovit A+D2, E Fortex, Ca lactic
Infection of urogenital organs	Loss of appetite, chills, high temperature	Doxycycline; Erythromycin, Polivitaminizant, Sicovit, E fortex	

Period	Diagnosis	Symptoms	Treatment
	Infection with <i>Proteus</i>	Loss of appetite, chills, high temperature and agitation, anorexia	Doxycycline, Erythromycin, Polivitaminizant, Sicovit, E fortex, Kanamycin 25%; Dexpirano
	Congestion of the lungs	Runny nose, spit	Doxycycline, Sicovit C, Vitamin A Forte, Vitamin E Forte, Polivitamins
	Acute bronchitis with chronic tendency	Cough, nasal discharge with scarlet red, spit	Miofilin
	Microbronchitis	Sero – sangvinolent sput	Doxycycline, Sicovit C
	Physical exhaustion	Tiredness	Polivitaminizant S, Vitamin E
	Right Fin - straight dislocation (female Lorry) + Arthritis (Photo 1, Photo 2) and possible possibly associated with a benign tumour such as a fibroma.		Ketonal, Artrostop, Gastrofit

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Curlișcă Angelica, Caisin Ancuța, Papadopol Nicolae C.
 Natural Sciences Museum Complex Constanța, Bv. Mamaia
 No. 255, 900552, Constanța, Romania
 E-mail: angysan2002@yahoo.com
 E-mail: ancacaisin@yahoo.com

Cristea Victor
 University "Dunărea de Jos" Galați
 Faculty of Food Science and Engineering
 Str. Gării, No. 61-63 body A, Galați, Romania
 E-mail: victor.cristea@ugal.ro

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Photo 1. Right Fin - straight dislocation (female Lorry).
Foto 1. Luxație la înotătoarea dreaptă (femela Lorry) (foto: Curlișcă Angelica).



Photo 2. Right Fin - straight dislocation + Arthritis possibly associated with a benign tumour such as a fibroma. (female Lorry).
Foto 2. Luxație la înotătoarea dreaptă agravată de artrită și o posibilă tumoare /fibrom (femela Lorry) (foto: Curlișcă Angelica).

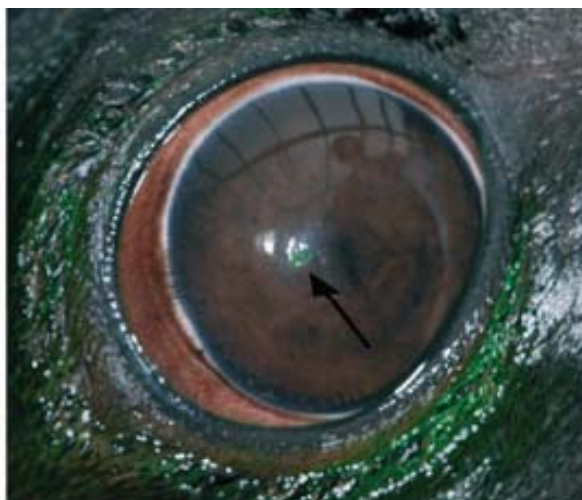


Photo 3. Stage 1 Otariid Keratitis ("Characterization of progressive keratitis in Otariids"- COLITZ et al., 2010).
Foto 3. Keratita Otariidelor - Stadiul 1 (COLITZ et al., 2010).



Photo 4. Stage 1 Keratitis (male John).
Foto 4. Keratita - Stadiul 1 (masculul John) (foto: Curlișcă Angelica).