

SOME REMARKS ON THERAPY OF MYCOTIC AND BACTERIOLOGICAL SKIN DISEASES IN FRESHWATER DOLPHINS *INIA GEOFFRENSIS*.

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*Summary*

In 1975 the Zoological Garden of Duisburg/W.-Germany made an expedition to Venezuela to capture freshwater dolphins (*Inia geoffrensis*).

5 animals were brought to Germany. Shortly after arrival some pathological skin changes became apparent which are described. Instructions for treatment of the bacterial and mycotic skin disease are given.

*Zusammenfassung*

Im Jahre 1975 unternahm der Zoo Duisburg/W.-Deutschland eine Expedition nach Venezuela, um Süßwasserdelphine (*Inia geoffrensis*) zu fangen.

5 Tiere wurden nach Deutschland gebracht. Kurz nach ihrer Ankunft wurden einige pathologische Hautveränderungen sichtbar, die beschrieben werden. Es werden Hinweise zur Behandlung der bakteriellen und mykotischen Hautkrankheiten gegeben.

*Introduction*

On February 26, 1975, the Duisburg Zoological Garden led an expedition into Llanos of Venezuela which lasted until the 16th of March. The main purpose of this undertaking was to capture and bring back to Europe some living examples of the primitive freshwater dolphin, *Inia geoffrensis*, for the first time in the history of European Zoos.

Near the area named San Fernando de Apure on the Rio Apure - a tributary river of the Orinoko - the members of this expedition succeeded, under exciting conditions, in capturing 5 specimens of this mammal. These consisted of two adult females, one half grown male, and one 60 cm long baby, also a male. One of the adult females was a lactating mother. The other was a total albino example, which was already rather old, a fact not difficult to find out on examination of the almost completely worn down teeth. The five animals were first put into a small water pool for a short time to control movements and allow time for the animals to accustom themselves to captivity. They were then put into specially built transport mats which were slung in wooden crates and were promptly flown to Germany. About two hours after their arrival at Düsseldorf Airport, all five dolphins were swimming calmly in circles in the prepared Freshwater dolphin pool at the Duisburg Zoo.

During drought at the capture place the water had the following characteristics: pH = 7.0, specific gravity = 3,0, temperature = 27°C. The measurement of the fresh-

water in the dolphin pool of the Zoo showed  $\text{pH} = 7.8$ , the degree of specific gravity ranges about 15<sup>0</sup> dH. The technical installation for water treatment and circulation is similar in the main respect to that of our dolphinarium for *Tursiops truncatus*. The total capacity of the freshwater pool is about 80 m<sup>3</sup> and is completely circulated every two hours by forcing through 3 filtration towers containing gravel of different grades of sand and a film of sodium aluminate gel on top of the gravel.

Water temperature is 27°C and air temperature 29°C, the relative atmospheric humidity ranges from 60-70%. Today the pH-factor of the pool water varies between 7.0 and 7.2, while the water is totally replaced every 3 days by "topping up" with fresh water. We do chlorinate the water but only up to the minimum standard of 0,02 mg/L combined chlorine. At the time of arrival of the animals the chlorine factors were substantially higher, i.e. 0,8 - 1,0 mg/L; it became apparent very quickly that this concentration was too high for Inia. The very sensitive skin shows a prompt reaction to a higher chlorination, it becomes "dry" and cracked, and even small injuries of the body surface heal slowly. As our animals already arrived at Duisburg with scratches, the skin wounds only turned better when we ceased chlorination for 2 days in the first instance and later on did work only to the above mentioned minimum factors.

### Diagnosis

Three weeks after being put into the pool at Duisburg the first pathological skin changes became apparent on the albino female. There followed the growth of a horny lump about 3 cm wide which could be easily seen on the left side of the head. It was discovered to be a papilloma which opened on top in its advanced stages to form a crater like opening with raised edges. The whole being of a solid and firm consistency. In the following days an increasing number of these swellings appeared on the sides of the body. Similar signs were also found on the adult male dolphin. A further condition, which affected all 5 animals, was another skin change of which the symptoms were a dark grey film which covered nearly the whole body surface and which could easily be rubbed off. The first suspicions of a mycosis were not proved although signs of various single *Candida albicans* spores were found which were however present in such small numbers that they could not justify any pathological skin change. We did find a massive bacterial flora which was diagnosed as, but could not be further determined, - *Streptococcus*, *Staphylococcus aureus haemolyticus*, *Pseudomonas pyocyaneas*, *Escherichia coli*, *Aerobacter aerogenes*, and *Proteus*. The promptly introduced resistance tests showed a good to very good reaction with the antibiotic Gentamycin. A Gentamycin preparation, used also in human as well as in veterinary medicine, is available as Refobacin in the form for parenteral administration (MERCK).

### Therapy

Before going into the therapy undertaken with Refobacin I would like to mention that we naturally also took steps against the condition of *Candida albicans* however small. A resistance test showed a good reaction against Amphoterecin, which is available in tablet form as Amphomoronal and can be given through adding to fish food. The dose was 200 to 400 mg to each animal depending on size, and treatment lasted a little over 14 days. After this no more signs of *Candida* spots were seen.

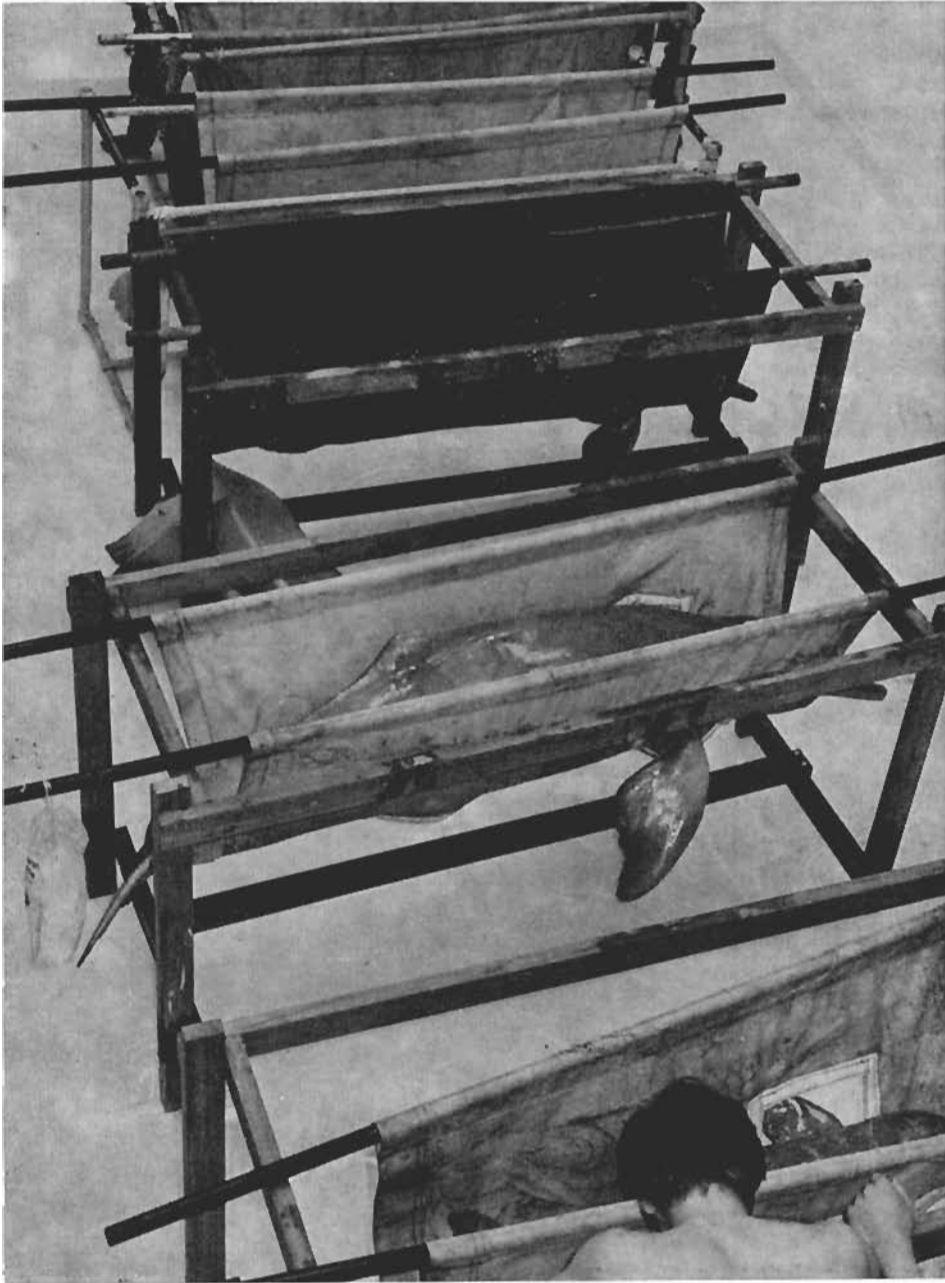


Plate 1 : Inias lying in slings which are suspended in frames for treatment.



Plate 2 : Frontal view of the described bacterial and mycotic (*Candida albicans*) skin lesions of our half grown male.



Plate 3 : A local section of *Candida albicans* infection.

Returning to the mixed bacterial infection, the animals during this time were taken out of the water daily for 5 days and were suspended in mats specially prepared for this treatment.

Every day the whole body surface was rubbed with a sodium iodine solution (10 g Na I to one litre of water). After a pause, to allow this solution to enter the skin and to start developing its antibacterial properties, the skin was again smeared this time with a Borax Glycerine mixture to work against the degreasing effect of the iodine. While allowing about half an hour for this mixture to sink into the skin, every animal was injected deep in the dorsal muscle with Refobacin. For the adult animals, which reach an average weight of 70 kilos, 80 mg of Gentomycin a day is enough to ensure successful treatment. Naturally the smaller animals were given less Refobacin according to their lighter weights. On the first and third day of this treatment we additionally gave the animals Paratopen and, on one day only, an injection of Vit. D<sub>3</sub>. When the Borax



Plate 4 : The injured tip of the "beak"-shaped snout which we covered with the inner tube of a bicycle (see text).

Glycerine mixture had disappeared into the skin a further film of a home made Gentamycin ointment was applied. This ointment consisted of the following:

As an ointment base 1 kg Vaseline to which 10% 5-Fluorocytosin (available as Ancotil of La Roche) and 2% Gentamycin was added and well mixed. This ointment was left to work into the skin for 2 hours.

After this "mammoth procedure" the Inias were lifted out of the mats and returned to the water without removing the ointment. The entire 5 days treatment was repeated 3 times in all at intervals of one week. Additionally during this treatment the water in the pool was completely changed daily and a "chlorine stock" of 1 mg/L combined chlorine was added for 6 hours on the last day of treatment.

All symptoms of illness disappeared after two months, calculated from the first antibiotic cure. All other skin wounds also healed. The fact that until now no more signs of bacterial or mycotic illnesses have been seen has been traced back to the diminished chlorine content of the water and the daily change of fresh water besides on the part of the animals their acclimatisation to captivity. The same reasons are the cause of the disappearance of the skin wounds which had healed so badly before.

Finally I would like to turn to a special case of possible injuries with Inias which occur because of the long, pointed beak like formed skull. In situations of shock or stress it may occur that an animal, for a short time, loses its space orientation and in panic bangs against the sides of the pool at high speeds and literally "breaks his beak." This was the case with our old albino female a short time after being put into the pool after arrival. The animal had already shown signs of a nose injury on capture in Venezuela and this grew worse in Duisburg. All skin and connective tissue on the outer tip of the snout had been destroyed. To eliminate infection and necrosis we smeared the wounded area with Refobacin ointment and covered this with Althosol spray. We removed damaged pieces of skin with scissors and a scalpel. To prevent further mechanical injuries occurring we pulled over the beak a 10 cm long piece of a bicycle's inner tube, which was glued together at one end. To allow water to get to the wounded area the tube was punctured in several places. This very simple appliance proved effective with the result that the wound ceased to spread and finally healed completely. Situations in which the animal could become disturbed were strictly avoided as the dolphin showed signs of shock even after this treatment and swam into the sides of the pool.

To close, just a few words on the use of iodine in various solutions as a means of disinfectant: All preparations with a strong iodine content proved to be a failure. On application, cracks in the skin appeared which healed badly. There are however several types of other solutions available as a disinfectant for the body surface, which are also to be found used in paediatrics.