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LOBOMYCOSIS IN AN ATLANTIC BOTTLE-NOSED DOLPHIN IN THE DOLPHINARIUM HARDERWIJK

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Summary

Lobomycosis was observed in a *Tursiops truncatus* (Mont. 1821) of the Dolfinarium Harderwijk, Netherlands. *Petriella setifera* was isolated from the tissue but its etiological significance is still uncertain.

Introduction

Until 1971, Lobomycosis was only known as a disease of the human skin. In that same year, however, MIGAKI et al (1971) reported a case in an Atlantic bottle-nosed dolphin *Tursiops truncatus* (Mont. 1821), captured in the intercoastal waterway of the Gulf of Mexico near Sarasota, Florida. A few weeks later a second case was observed in a dolphin of the same species kept in Marineland Research Laboratory, Marineland, Florida (WOODARD, 1972) In neither case was the etiological agent isolated so that the diagnosis could only be based on the similarity of the microscopical and macroscopical aspects of the lesions.

In May, 1971, a third case was observed in a dolphin belonging to the species *Sotalia guianensis* van Beneden which was captured in the estuary of the Surinam river (DE VRIES and LAARMAN, 1973). Two fungi were isolated from the tissue *Torulopsis haemulonii*, a true yeast, and *Glenospora graphii* Vuill., a hyphomycete with a yeast-like stage. They were not regarded to be of etiological significance.

During August, 1974, *Loboa lobo*-like fungal cells were observed in lesion material collected from an old, male dolphin *Tursiops truncatus*, (Montagu), at the Dolfinarium Harderwijk, Netherlands. After his capture off San Marco's Island, Florida, just south of the place of capture of the MIGAKI & al. dolphin, the male, Joeri, became a member of the Harderwijk dolphin „breeding group” in March, 1970. At this time he was observed to have a discoloured patch 2 cm. round above his left eye and another irregular shaped patch 2-3 cm. on the leading edge of his left flipper at its insertion. Samples were taken and studied then and at a later time, but no organisms were observed or isolated before the August sampling.

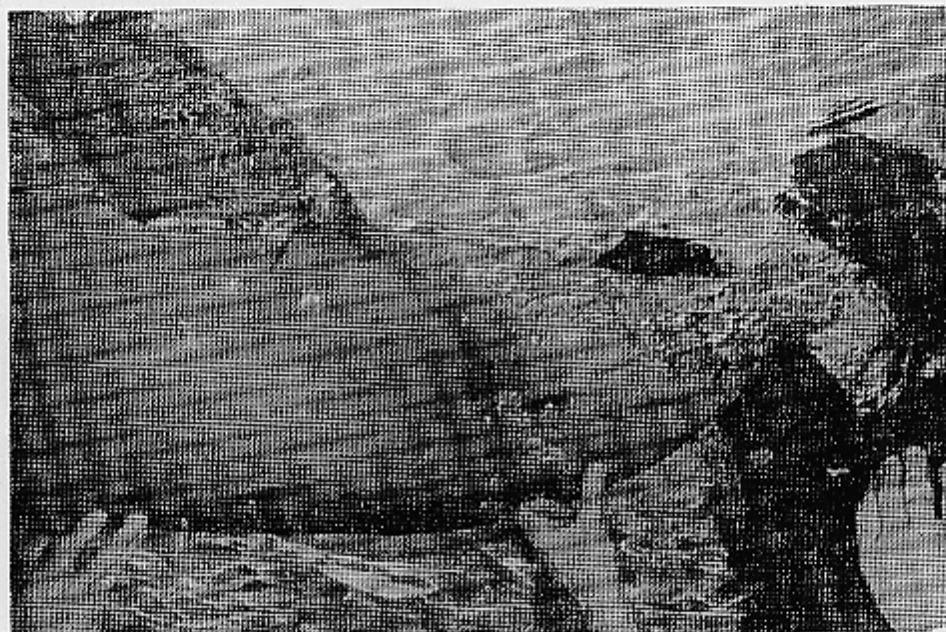


Fig. 1. Joeri's lesions in August, 1974. Verrucoid type above left eye, type on leading edge of left flipper.

In the winter of 1973-1974, the nature of these patches changed, enlarged, spread, became more verrucoid, and partly depigmented (fig. 1). A small verrucoid lesion appeared on the upper right mandible, and an extensive verrucoid lesion covered the trailing edge of the right fluke (Table 1). In the summer of 1974, the verrucoid cutaneous lesion of the flipper developed ulcerative, soft, friable, necrotic centre (fig. 2). Material from the center of this lesion was collected and taken to the Department of Special Animal Pathology, Utrecht. This material contained numerous branching chains of globose to subglobose cells characteristic *Glensporella (Loboa lobo)* (fig. 3) which stained readily with Giemsa, Periodic Acid-Schiff (PAS) and Gomori Grocott methenamine silver (GMS).

An incisional biopsy was taken from the verrucoid edge of the ulcer of the flipper. Sections of the edge showed a thickened epidermis without fungi. In the granulomatous tissue of the dermis numerous branching PAS-positive, and GMS-positive fungal cells were located within macrophages, giant cells, and in the intercellular spaces. Other

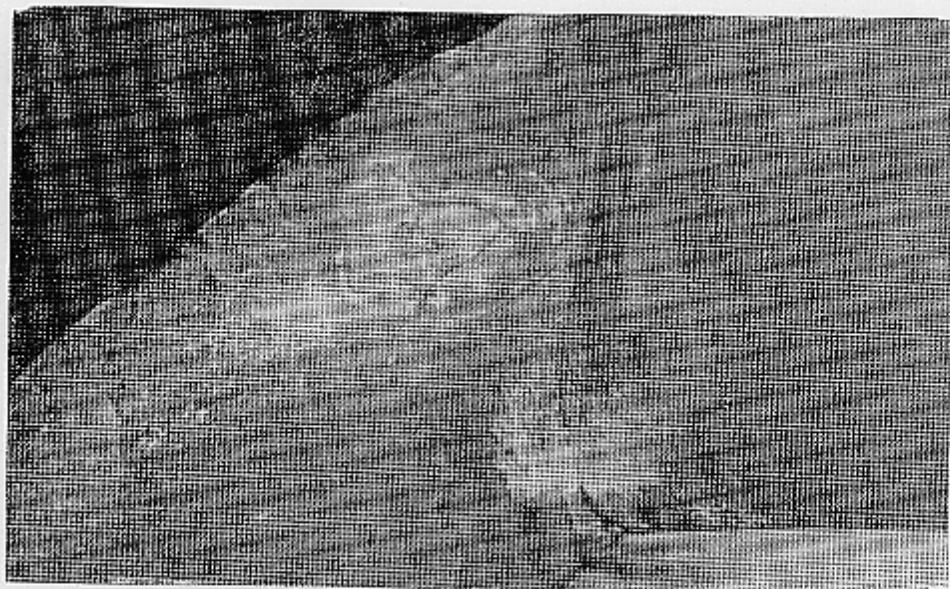


Fig. 2. Lesion on leading edge of left flipper with ulcerative, soft, friable, necrotic centre. August, 1974.

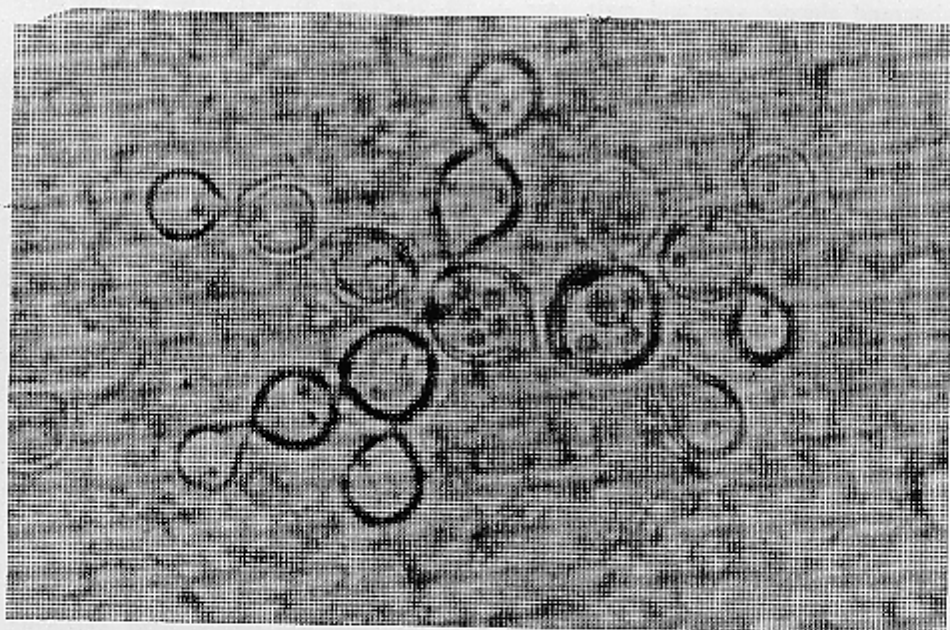


Fig 3. *Glenosporrella* (*Loboa loboi*) Squash preparation (unstained) showing characteristic long branching chains of cells from scrapping of soft friable centre of flipper lesion (x 1000). (Courtesy of Dept. of Special Animal Pathology, State University, Utrecht.)

TABLE 1.

Observations of the changes in Joeri's lesions, March, 1970 to August, 1974.

Location of lesion	March, 1970	nature	August, 1974	nature
left flipper	2-3 cm	small, closed, discoloured patch	3 x 4 cm	Ulcer with a verrucoid edge, and a soft, friable, necrotic center
left eye	2 cm	circular, closed, patch	3 x 4 cm	verruroid type
right mandible	x	x	2 x 4 cm	verruroid type
right fluke	x	x	7 x 12 cm	verruroid type

samples from the flipper and above the eye were taken to the Centraalbureau voor Schimmelcultures, Baarn. There a great variety of media inoculated with small fragments of the hard tissue and scrapings of the soft lesion was incubated at different temperatures. After 6 days fungus colonies grew from the soft material on Sabourand glucose agar and malt agar + 5% NaCl at 20-25°C. Two strains were isolated.

Morphologically they were similar to the *Glenospora graphii* isolated from *Sotalia guianensis* showing a coremial form with conidiophores in brush-like bundles (Graphium-, Dendrostilbella- or Sporocybe-state) and a non-coremial form with isolated conidiophores (Scedosporium- or Monosporium-state).

On oatmeal agar at room temperature they produced perithecia with red ascospores with germ pores at both ends. They were classified as *Petriella setifera* (Schmidt) Curzi. The *Glenospora graphii*-isolate from *Sotalia* has not yet produced an ascospore stage. Its final classification will have to wait until later.

The two *Petriella* strains as well as the *Glenospora graphii* were all able to produce under special cultural conditions branched chains of globose to subglobose, thin-, later thickwalled cells, that multiply by uni- or bipolar budding.

At the moment a definitive proof that *Petriella setifera* is the etiological agent of Lobomycosis in dolphins, a secondary invader or merely a contaminant can not be given.

A second bottle-nosed dolphin in Harderwijk, observed to have lesions, was a female named Mama. She had been caught on the east side of the Florida peninsula near Fort Lauderdale and arrived in Harderwijk on 2 July 1965, without any lesions. During the late spring and early summer of 1974, Mama developed typical hard, verrucoid type lesions on the leading edge of her dorsal fin and a long lesion along her left

side. Since sexual activity was at a peak during this period little was thought about these „scratches“ until the lesions became more open instead of healing in the normal manner of such a wound. Samples were also taken from Mama's lesions, but no chains of globose cells were found in nor were any organisms isolated from this material.

Acknowledgement

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UNDERWATER VISUAL ACUITY IN THE BOTTLE-NOSED DOLPHIN

Tursiops truncatus (Mont.)

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Summary

A female bottle-nosed dolphin (*Tursiops truncatus*) was trained to select a grating pattern, which consisted of black and white lines of equal width, over a flat gray pattern. Its performance was measured against the line width of the grating. From the 75% performance level a minimum angle of resolution was computed of 27 minutes of arc at a viewing distance of 1 meter and of 26 minutes at 4 meters. Artificial light was used for illumination, which was 400 lux, measured in the horizontal direction. The experiment was carried out under water.

Introduction

When observing dolphins in captivity, it seems very unlikely that they use only