

DISEASES OF AXOLOTLS IN THE AMPHIBIAN COLONY
OF THE HUBRECHT LABORATORY, UTRECHT, THE
NETHERLANDS, IN THE PERIOD 1974 - 1980

7

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Our general experience with Axolotls is that in most cases a disease, once externally detected, proceeds rapidly.

One of the most common findings at autopsy is anemia. Sometimes the animals are somewhat paler and thinner than normal and one will find secondary symptoms, such as small gills attacked by fungus or limbs bitten by other animals present in the same tank. In albino Axolotls the symptoms of this disease are much clearer and appear some days before death: they have a yellowish appearance and the gills are very pale-red. Such an animal can then be removed from the tank.

We encounter this disease regularly and throughout the colony. Only once has it been epidemic in nature. During the Spring of 1975 the class of 1-year old Axolotls was severely afflicted. Although many other Axolotls were kept in the same room, under the same conditions but in different tanks, only this one group, distributed over five tanks, fell victim to the disease. Research at the Veterinary Faculty of the University of Utrecht revealed the presence of a Salmonella species. For five days, every 24 hours 1 gr. of Terramycin was added per 100 liters of water in the tanks. Next the salt concentration of the water was increased to 6‰ for six weeks. This whole treatment was repeated once. A drawback of the terramycin treatment was the development and rather extensive spreading of Trichosporon spec. in the water of the tanks during the second period of treatment.

About half the number of animals could be saved, but one year later another type of disease became manifest in the same group, and then again only in this group. Animals were discovered swimming round and round. They were not able to stretch normally. Gradually they became thinner and thinner, then started to die one after the other. It seemed as if the brain and/or the central nervous system was affected. The Veterinary Faculty investigated several specimens and concluded that the symptoms were caused by encephalitis. No therapy was available; 15 animals were lost in this way. Later we have again encountered this syndrome from time to time, but only in individual cases scattered among different groups of animals.

Our feeling is that the class reared in 1974 was extraordinarily susceptible to bacterial infections. This specific susceptibility might be due to a genetic defect. It is unknown whether there is any connection between the two diseases.

Frequently autopsy shows one or more foci of inflammation in one or more organs, particularly the stomach, liver, intestine, oviducts or testes. Often these animals show the same external symptoms as described above. (anemia) Such inflammations were found in individuals scattered over all tanks and all age classes. Thus there is no evidence that this type of disease is contagious. Nevertheless, precautions are taken such as careful disinfection of instruments used for cleaning the tanks.

Another symptom we encounter quite regularly is oedema. The trunk of the animal is more or less heavily ^{distended} and sometimes the lower jaw and the limbs are also swollen. The musculature is spongy and the abdominal cavity is filled with a yellowish, somewhat viscous fluid. The impression is that this disease is not contagious.

In December 1979 we were confronted with a disease completely new to us. Dead animals seemed in good condition externally. The only symptom was an oedematic cloaca. Blood showed under the skin around the cloaca, giving it a reddish appearance. At autopsy a (very) big spleen was found; it showed a mottled appearance and its structure was spongy. Part of the intestine was filled with a bloody fluid, which exerted so much pressure on the wall that it was stretched to become very thin. The spleen and intestine contained large amounts of Escherichia coli, Aeromonas hydrophila and Pseudomonas spec. The abdominal fluid was very rich in Escherichia coli.

This disease was very contagious: within two weeks all the animals in the tank were dead. Spreading of the disease to other tanks did not occur because very strict measures were taken with regard to cleaning and manipulation, in order to keep the affected animals isolated.

Whenever at autopsy a tumour is found, it is fixed and sent to the National Museum of Natural History, Smithsonian Institution, Washington D.C., where Dr. J.C. Harshbarger performs a histological analysis. During the last few years the following tumours of Axolotls of our colony have been registered:

- a bacterial granuloma of the liver
- a cholecystitis
- a retroperitoneal infectious, abscess-like granuloma
- two granulomas of helminthologic etiology.

As a prophylactic measure against bacterial diseases the salt concentration of the water in all the tanks is increased to 6‰ for a period of six weeks in the autumn.

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