HYDATIGERA TAENIAEFORMIS (BATSCHE, 1786) AS THE CAUSE OF MASS DEATHS OF MUSKRATS

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Abstract. *Hydatigera taeniaeformis* was found to be the cause of mass deaths of *Ondatra zibethicus*. Questions of epizootologic and epidemiologic significance of this cestode species are discussed.

*Hydatigera taeniaeformis* Batsch, 1786 is a geopolitical species of cestodes and in our country it is a widely distributed parasite of cats, particularly of stray cats (Prokopič 1958; 1965, Prokopič and Jaroch 1961, Prokopič et al. 1973, Svatoš 1963). The larval stage, *Strobilocercus hydatigerae-taeniaeformis* parasitizes the rodents. Several authors have recorded *H. taeniaeformis* from *O. zibethicus* in our country (Erhardová 1958, Madžen 1953, Prokopič 1972, Tenora 1956a, Vanátko 1969, Vanček 1967 and others). Tenora and Baruš (1955) reported on a strong lethal infection of muskrat with strobilocerci. In South Bohemia, Tenora (1956b) found *H. taeniaeformis* in 5 of 30 muskrats examined; the intensity of infection was 1—4 specimens.

In January 1980, mass deaths of muskrats occurred in the brook at Studená in Jindřichův Hradec district (South Bohemia). Six animals were examined in order to detect the cause of their death.

MATERIAL AND METHODS

Six of the dead muskrats were subjected to pathological-anatomical dissection. Neither bacteriological nor virological examinations revealed the cause of their death. The only pathological findings in the animals were changes in liver caused by strobiocerci which were determined as *H. taeniaeformis*. In addition to the determination of strobiocerci, also epizootologic studies were carried out in the region. In the village Studená, 12 domestic cats were epidemiologically examined by flotation method and 30 samples of cat faeces collected were examined for the presence of parasites. Eggs of *H. taeniaeformis* and *Toxocara cati* were detected in 90 % of the samples.

RESULTS AND DISCUSSION

In search of the cause of mass deaths of muskrats in the brook at Studená near Jindřichův Hradec only pathological changes in liver (Fig. 1) induced by larval stages of *H. taeniaeformis* were found. The intensity of infection was 10—20 strobiocerci of the size of bean to walnut. The foci covered the whole surface of liver making them unable to perform their function. The cysts contained typical strobiocerci measuring 4—12 cm in length. The epizootologic studies showed that the cats at Studená freely ran in the village and contaminated the lower part of the brook which spreaded and formed a swamp (Fig. 2). The muskrats in search of food moved from the upper part of the brook (Fig. 3) to the swampy lower part, where, in our opinion, they became infected with the cestode eggs.
A similar case of strong H. taeniaformis infection in muskrat was recorded by Tenora and Baruš (1955), who found 315 strobilocerci in one specimen of O. zibethica and supposed them to cause the death of the muskrat.

More than 40 species of rodents have been known to serve as intermediate hosts of H. taeniaformis. In an urbanized region the most important in the circulation of this cestode from the definitive host, domestic cat, to the intermediate hosts are synanthropic rodents (Mus musculus, Rattus norvegicus, R. rattus). Particularly the mice and small rodents play an important role for stray and domestic cats and other free-living carnivores. According to several authors (Erhardová 1956, 1958, Erhardová and Ryšavý 1955, Holšová and Kočičí 1970a, b, 1972, Prokopíč and Genov 1974, Tenora 1956a, 1963, 1964, 1967, Tenora and Baruš 1955, Tenora and Tománek 1963), the strobilocercus of H. taeniaformis was found in Czechoslovakia in the following intermediate hosts: Apodemus agrarius, A. flavicollis, A. sylvaticus, A. microps, Apodemus agrarius, Cricetus citellus, Cricetus cricetus, Clethrionomys glareolus, Micromys minutus, M. agrestis, Ondatra zibethica, Pitymys sibiricus, P. taticus, Rattus norvegicus, R. rattus, Sciurus vulgaris, Talpa europea.

Maderl (1953) and Vaňatka (1969) found 8–90% incidence of S. hydatigenae in H. taeniaformis infection in O. zibethica. Prokopíč (1972) registered this parasite in C. glareolus (0.6%), M. arvalis (2.3%), M. agrestis (2.4%), A. terrestris (3%) and O. zibethica (6.3%). The last three species of rodents, which live in moist and water biotopes, are usually more infected than those living in dry biotopes. This seems to be related with the fact that the eggs of H. taeniaformis are viable for a longer time in the moist environment and thus endanger the intermediate hosts for a long time. Since O. zibethica is a sensitive intermediate host and usually is not preyed by cats, the cysts may occur in a large number and reach a relatively great size. This results in hindering the function of liver and in death of the muskrat.

On the other hand, the small rodents easily become a prey of cats and other carnivores and therefore represent a source of infection for these animals. H. taeniaformis was recorded in Prague in 3 of 13 cats examined (Prokopíč 1958), in Albania in 2 of 4 cats examined (Prokopíč 1959) and in Czechoslovakia in 64% of the examined cats (Prokopíč 1965). The same percentage (64%) of infection in cats was found in South Slovakia (Prokopíč et al. 1973). In our country, Mituch (1964) found H. taeniaformis in 49.4% of domestic cats in Slovakia, Štaněk (1963) in 9 of 16 domestic cats and in all of 8 wild cats and Švatoš (1963) in all of 10 wild cats examined. Prokopíč and Lorenzo (1971) recorded H. taeniaformis in 42% of the examined domestic cats in Cuba.

A special case was reported by Ryšavý (1973), who recovered a strobilocercus...
of *H. taeniaformis* from the liver of *Phasianus colchicus*. Štěrba and Baruš (1976) found *H. taeniaformis* strobilocercus in the liver of a 77-year-old man in Pilsen hospital (West Bohemia). *H. taeniaformis*, as a geopolitical species and a widely spread parasite of domestic cat in Czechoslovakia, thus gains the epizootologie and epidemiologie significance.

**HYDATIGERA TAENIAEFORMIS** (BATSCH, 1786) KAK PRIČINA MÁSSCOVÍ GIBELÍ ONDATÉR

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Rezume. Pri dovedeni masové gigeli ondatér (*Ondatra zibethica*) bylo obzvláštněno, že příčinou je řídící druh *Hydatigera taeniaeformis*. V práci jsou uvedeny další výsledky z epizootologie a epidemiologie, a to v českých a slovenských oblastech.

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