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HYDATIGERA TAENIAEFORMIS (BATSCH, 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 zibethica*. 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 Jaroš 1961, Prokopič et al. 1973, Svatoš 1963). The larval stage, *Strobilocercus hydatigerae-taeniaeformis* parasitizes the rodents. Several authors have recorded *H. taeniaeformis* from *O. zibethica* in our country (Erhardová 1958, Madlen 1953, Prokopič 1972, Tenora 1956 b, Vaňátko 1969, Vaněk 1967 and others). Tenora and Baruš (1955) reported on a strong lethal infection of muskrat with strobilocerci. In South Bohemia, Tenora (1956 b) 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 strobilocerci which were determined as *H. taeniaeformis*. In addition to the determination of strobilocerci, also epizootologic studies were carried out in the region. In the village Studená, 12 domestic cats were coprologically examined by floatation 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 strobilocerci 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 strobilocerci 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. taeniaeformis* 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. taeniaeformis*. 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, Holišová and Kočiš 1955, Prokopič 1970a, b, 1972, Prokopič and Genov 1974, Tenora 1956a, 1963, 1964, 1967, Tenora and Baruš 1955, Tenora and Tománek 1963), the strobilocercus of *H. taeniaeformis* was found in Czechoslovakia in the following intermediate hosts: *Apodemus agrarius, A. flavicollis, A. sylvaticus, A. microps, Arvicola terrestris, Citellus citellus, Cricetus cricetus, Clethrionomys glareolus, Microtus arvalis, M. agrestis, Ondatra zibethica, Pitymys subterraneus, P. tatricus, Rattus norvegicus, R. rattus, Sciurus vulgaris, Talpa europaea.*

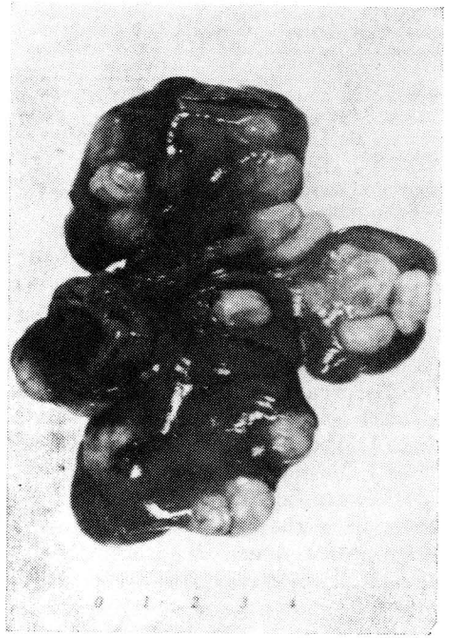

Fig. 1. Strobilocerci of *H. taeniaeformis* in the liver of *O. zibethica.*

Madlen (1953) and Vaňatka (1969) found 8—90 % incidence of *S. hydatigerae-taeniaeformis* infection in *O. zibethica.* Prokopič (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. taeniaeformis* 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. taeniaeformis* was recorded in Prague in 3 of 13 cats examined (Prokopič 1958), in Albania in 2 of 4 cats examined (Prokopič 1960) and in Czechoslovakia in 64 % of the examined cats (Prokopič 1965). The same percentage (64 %) of infection in cats was found in South Slovakia (Prokopič et al. 1973). In our country, Mituch (1964) found *H. taeniaeformis* in 49.4 % of domestic cats in Slovakia, Staněk (1963) in 9 of 16 domestic cats and in all of 8 wild cats and Svatoš (1963) in all of 10 wild cats examined. Prokopič and Lorenzo (1971) recorded *H. taeniaeformis* in 42 % of the examined domestic cats in Cuba.

A special case was reported by Ryšavý (1973), who recovered a strobilocercus

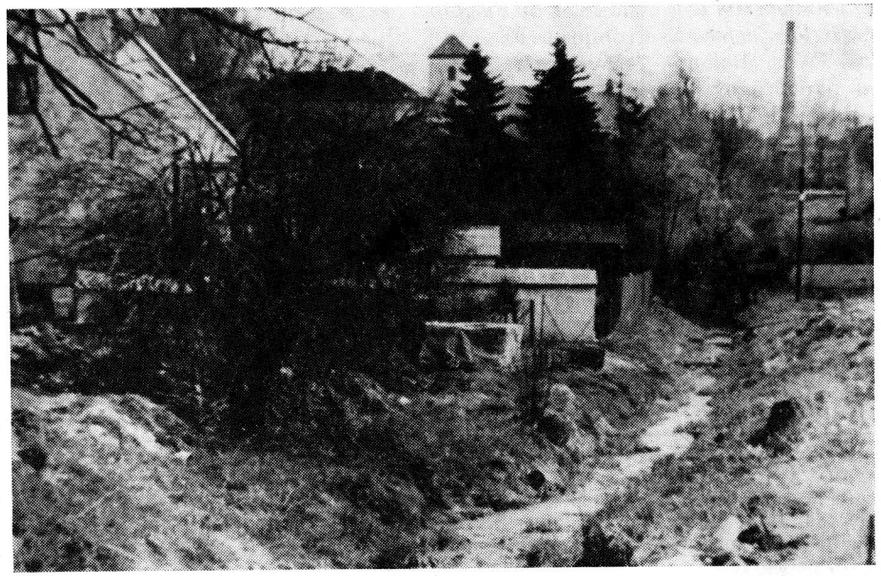

Fig. 2. Locality of *O. zibethica* — upper part of the brook at Studená.

Fig. 3. Locality of *O. zibethica* — muddy lower part of the brook, the focus of *H. taeniaeformis* infection.

of *H. taeniaeformis* from the liver of *Phasianus colchicus*. Štěrba and Baruš (1976) found *H. taeniaeformis* strobilocercus in the liver of a 77-year-old man in Plzeň hospital (West Bohemia). *H. taeniaeformis*, as a geopolitical species and a widely spread parasite of domestic cat in Czechoslovakia, thus gains the epizootologic and epidemiologic significance.

HYDATIGERA TAENIAEFORMIS (BATSCH, 1786) КАК ПРИЧИНА МАССОВОЙ ГИБЕЛИ ОНДАТЕР

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Резюме. При исследовании массовой гибели ондатер (*Ondatra zibethica*) было обнаружено, что причиной являлась цестода *Hydatigera taeniaeformis*. В работе обсуждаются также вопросы эпизоотологеческого и эпидемиологического значения этого паразита.

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