

# LARVOCYSTS OF THE CESTODE *T. POLYACANTHA* (LEUCART, 1856) PARASITIZING *ORYCTOLAGUS CUNICULUS*

In October 1986 we dissected a 2.5 month-old rabbit (a cross of FS × California breed) which had died at the Bojanovice village, district of Znojmo (Czechoslovakia). The pathological-morphological finding confirmed a deteriorated state of health and nutrition, muco-purulent inflammation of the nasal mucous membrane and of the conjunctivae, blood-stained catarrhal inflammation of the trachea and a slight pulmonary oedema. Sporadic oocysts of coccidia were found in the intestines and sporadic cysticerci of the cestode *T. pisiformis* were revealed on the surface of the stomach and intestines. The liver was enlarged, with uneven surface, of a rather hard consistence. Long winding canals as wide as 1 mm (Pl. I, Fig. 1) were visible under the liver capsule. The canals were filled with a large number of larvocysts of unusual interest (Pl. I, Fig. 2). A sample of 16 larvocysts was taken from these canals and each of them was 6-13 mm long and 0.7-1 mm wide, of whitish-yellowish colour. Under scrutiny we found that the body surface of these larvae was not provided with a membrane and was slightly corrugated. The anterior part of body was somewhat expanded and contained invaginated scolex (Pl. II, Figs. 1,2). The body was tapering to posterior end, generally it was either oval or elongated. In oval forms there was a tiny conus protruding caudally from the body.

The morphology of the larvocysts found corresponds with the characteristics of cysts of the tetrathyridium type (cf. Baer, 1932: Rev. Suisse Zool. 39: 1-57; Joyeux and Baer, 1936: Fauna de France, 30, Paris), or with armatetetrathyridium (cf. Abuladze, 1964: Osnovy tsestodologii IV, Moskva).

Up to now only a single developmental stage of cestodes has been reported from the liver both in the domestic and the European rabbit. It is the cysticercus of the cestode *T. pisiformis* (Bloch, 1780), (cf. Abuladze, 1964: Osnovy tsestodologii IV, Moskva; Gvozdev et al., 1970: Opredelitel' gel'mintov zaitseobraznykh, Moskva; Murai, 1972: Miscellanea Zool. Hungarica 1: 27-44).

However, it should be noted that this localization may be only incidental or exceptional. This is evidenced e.g. by a large material examined in Czechoslovakia where not a single finding of *T. pisiformis* cysts on the liver was demonstrated (Tenora and Baruš, 1955: Folia Zoologica 4: 341-357; Erhardová, 1958: Čs. parasitol. 1: 27-103). Our results show that at present the cysticerci of *T. pisiformis* are found in the abdominal cavity, peritoneum and me-

sentarium, on the liver surface and not in the liver parenchyma.

The larval stages found by us in the winding canals of the liver parenchyma, under the liver capsule, have been recorded so far not only in these mammals, but in other vertebrates as well. After comparative studies (Baer, 1932, Joyeux and Baer, 1936, Abuladze, 1964, Murai, 1972 etc. mentioned below) we have included the said larvocysts in the species *T. polyacantha* (Leucart, 1856).

The systematic position of the species *T. polyacantha* is not yet clear. There are different opinions concerning this problem. Abuladze (1964) places this species in the genus *Tetratirotaenia* Abuladze, 1964, while Verster (1969: Onderstepoort J. vet. Res. 36: 3-58), retains it in the genus *Taenia* Linnaeus, 1758. It is a species whose life cycle had not been known for almost two centuries and was not resolved until 1932, when Baer, the Swiss parasitologist found hitherto unknown developmental stages of *T. polyacantha* in the abdominal cavity of the bank vole *Clethrionomys glareolus*. Later on these larvocysts were found in a number of small rodents living all over the territory of Holarctic region (Schiller, 1953: J. Parasitol. 39: 344-347; Rausch, 1959: Proc. Helm. Soc. Wash. 26: 125-131; Wiger et al., 1974: Norw. J. Zool. 22: 61-64; Murai, 1982: Miscel. Zool. Hungarica 1: 27-44; Genov, 1984: Helminths of Insectivora mammals and Rodentia in Bulgaria, Sofia; in Czechoslovakia e.g. Erhardová, 1958: Čs. parasitol. 5 (1): 27-103). The hosts of this species of cestodes are different species of carnivores e.g. *Vulpes vulpes*, *Alopex lagopus*, *Canis familiaris*, *Canis lupus*, *Nyctereus procyonides*. The zoogeographical distribution of the species *T. polyacantha* corresponds with the distribution of its larvocysts in rodents, the best known being the findings from Europe, Alaska and the USSR (Abuladze 1964).

As far as the findings in Czechoslovakia are concerned, the cestode *T. polyacantha* was found in carnivores very sporadically. Prokopíř (1965: Čs. parasitol. 12: 207-226) and Mituch (1972: Folia venatoria 2: 161-172) found it in *Canis familiaris*. Letková et al. (1985: Zborník Produkcia a zdravie v chove kožišných zvierat, V. Tatry, p. 110-112) report this species as a parasite of *Vulpes vulpes*. It is therefore evident that in Czechoslovakia, as in other countries, its life cycle is associated primarily with foxes and domestic dogs (as hosts) and with small terrestrial rodents (as intermediate hosts).

As for the morphological changes during the process of development, we state that out of the 16 larvocysts examined by us only one was noted for having bases of rostellar hooks numbering about 60 (Pl. II, Fig. 2). This fact signals that their definitive appearance (not only concerning the morphology of body, but the shape and size of hooks as well) is formed only after the definitive localization in the intermediate host's body, i.e. in the body cavities.

On the liver only developmental stages of these larvocysts are found.

Due to the number of bases of rostellar hooks (about 60) we do not identify our findings of larvocysts with the related species *T. martis* (Zeder, 1803), (cf. Wahl, 1967: Rev. Suisse Zool. 2: 129—188).

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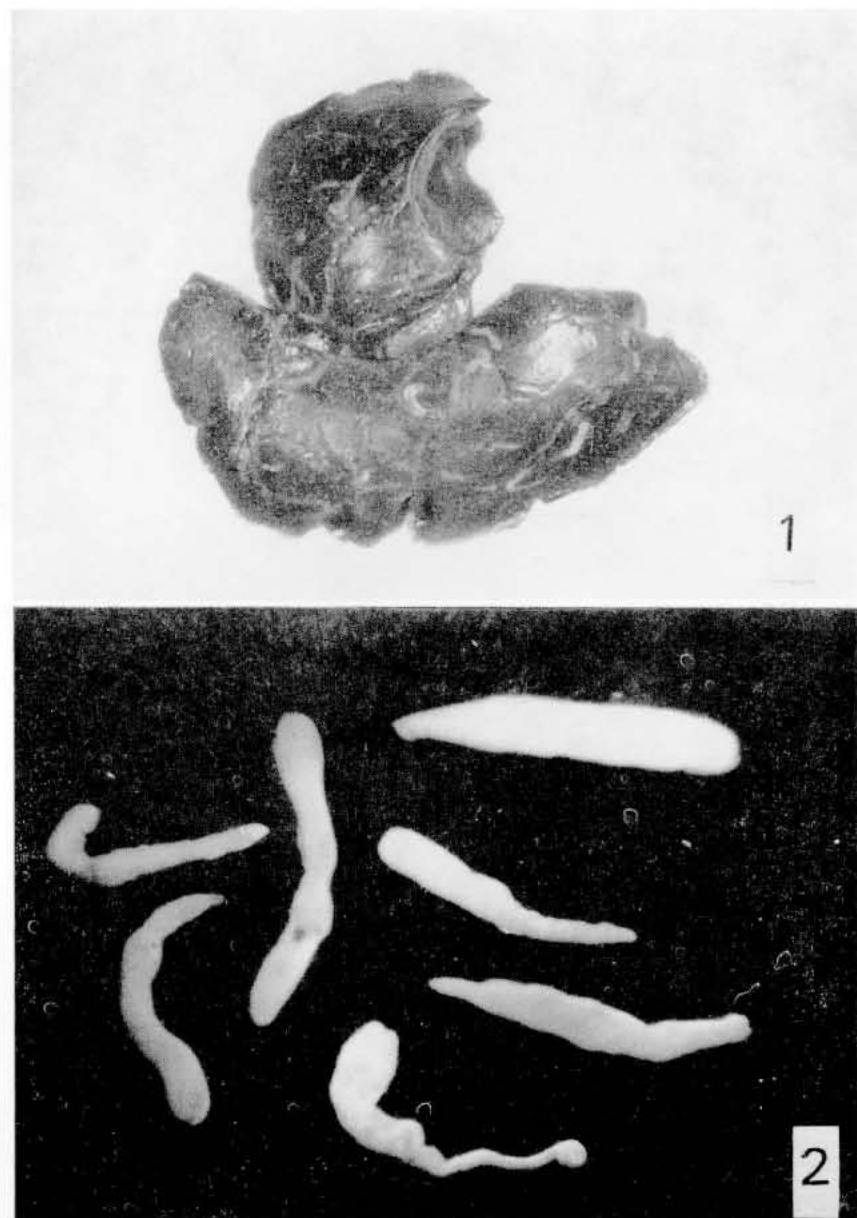
**D. Málková and coll.: Less known Arboviruses in Central Europe. Rozpravy ČSAV, řada matem. a přír. věd 96, No. 5, Publ. House Academia, Praha 1986, 75 pp., 6 Figs., 22 Tables, 8 Plates. Price 23 Kčs.**

In the investigations of arboviruses Czechoslovak scientists have already a reputable tradition lasting from the end of the forties when the first of them, the tick-borne encephalitis virus, was isolated in our country. In the following years other arboviruses were discovered, some of them as new for science. Among all these agents most studies dealt with TBE and Tšahyňa viruses. This publication in whose preparation participated three other virologists, V. Danielová, J. Holubová and Z. Marhoul, is devoted to other less known viruses.

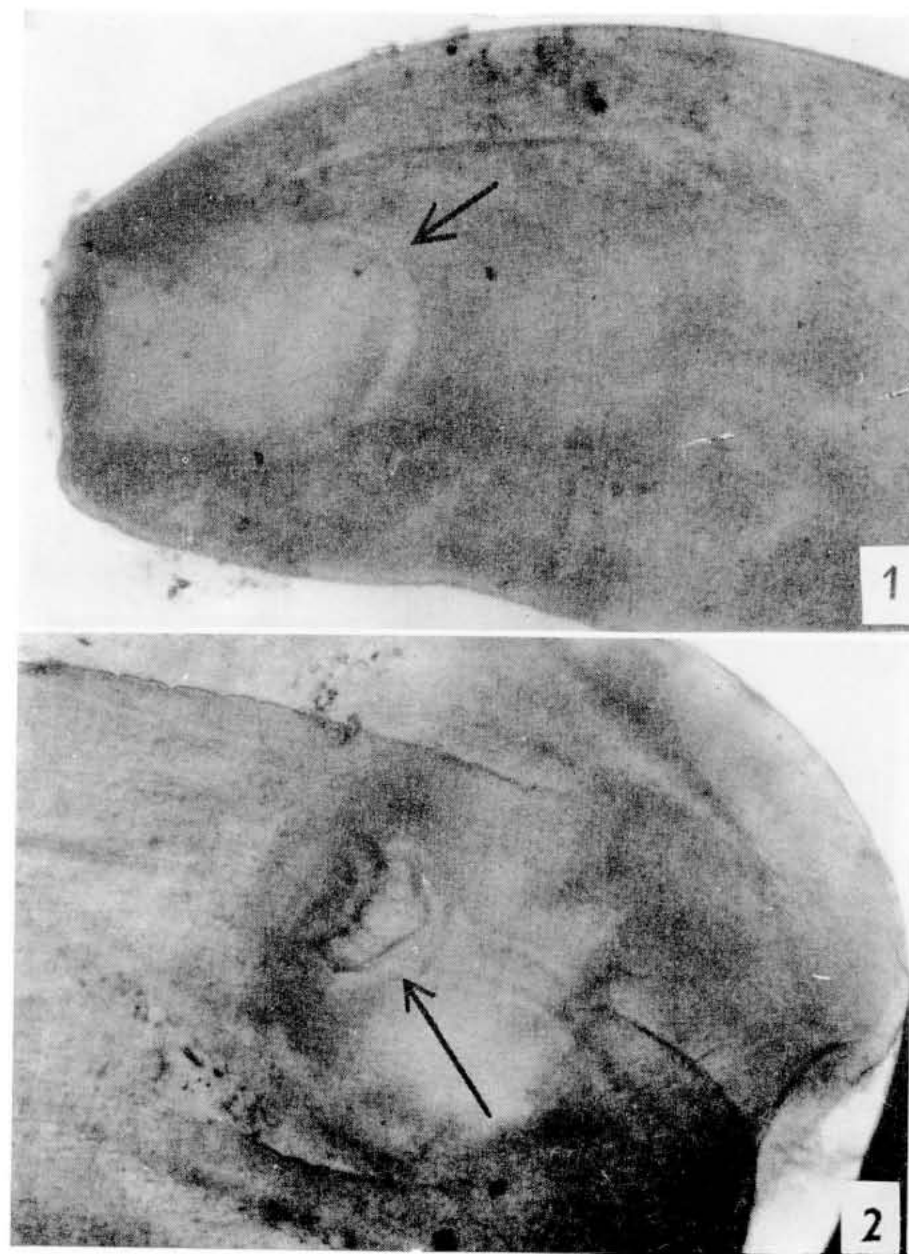
The first part brings information about four tick-borne viruses, Tribeč, Uukuniemi, Eyach and Bhanja, and three mosquito-borne viruses, Čalovo, Sindbis and West Nile. Data on isolation, identification, physico-chemical and biological properties, diagnostic methods, circulation

in nature, geographic distribution and health risk significance are given for each of them. The mosquito-borne Lednice virus — isolated and studied by the authors — is dealt with in more details in the second part and the text devoted to it nearly equals that devoted to the previous seven viruses. It contains an analogical arrangement of individual sections including an additional section concerned with the virus focus in Southern Moravia, its natural conditions, vector and hosts. The literature is presented separately for each virus. The text concludes with a Russian summary. The authors gathered the most important and substantial facts and data concerning the mentioned viruses. Their publication will find undoubtedly a wide acceptance among all who are interested in the problems of natural focus diseases.

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**Fig. 1.** A section of liver with winding canals in the liver parenchyma. **Fig. 2.** A sample of larvocysts of the cestode *T. polyacantha*.



**Fig. 1.** Pre-invasion stage of the cestode *T. polyacantha* — invaginated scolex still without hooks. **Fig. 2.** A later developmental stage of the cestode *T. polyacantha* — invaginated scolex with bases of hooks already developed.