

## POTENTIAL ESTABLISHMENT OF *TAENIA HYDATIGENA* IN MALAYSIA

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**SUMMARY:** *Taenia hydatigena*, an exotic tapeworm, is capable of completing its life cycle in our domestic animals. A local puppy fed with metacestodes of *T. hydatigena* derived from Australian imported sheep produced adult tapeworms. Gravid segments when fed to a local lamb caused acute cysticercoses due to large numbers of migrating metacestodes. The gross pathological changes observed on post mortem are described.

**Key words:** *Taenia hydatigena*, puppy, lamb

### INTRODUCTION

*Taenia hydatigena*, a tapeworm of carnivores does not occur naturally in dogs in Malaysia (Lancaster 1957, Shanta 1982, Sheikh-Omar *et al.* 1985). However, in recent years its larval stage *Cysticercus tenuicollis* was reported to occur in local goats (Chooi and Sani 1985; Amin-Babjee *et al.* 1985).

Sheep imported for slaughter from Australia have been found to be infested with the metacestode of *T. hydatigena* (Mustaffa-Babjee 1984). Currently, Malaysia is importing about 10,000 sheep annually to upgrade and increase the sheep population and during the first few months of their arrival significant number of deaths due to various causes were reported by the Veterinary Division, Ministry of Agriculture. During post mortem it was common to find *Cysticercus tenuicollis* in the peritoneal cavity (Mustaffa-Babjee, 1988 personal communication). The aim of this study is to determine whether this tapeworm can complete its life cycle in our domestic animals.

### MATERIALS AND METHODS

Nine viable metacestodes of *Taenia hydatigena* were recovered from the peritoneal cavity during an autopsy of a newly imported Australian sheep which died of pneumonia. The cysticerci were kept at 4°C in the refrigerator.

The following day a local puppy about two months old was naturally fed fried fish mixed with four of the cysticerci. The puppy had been kept at the small animal clinic, Universiti Pertanian Malaysia since birth and was fed with commercial dog food (Science diet; Hill's) and milk. The puppy's faeces was examined for eggs and segments daily from day 50 post-infection. On day 67, the puppy was euthanized and a post mortem was done.

A six-month-old male lamb, born and bred locally at Universiti Pertanian Malaysia, was force fed with about 30 gravid segments containing viable eggs of *T. hydatigena* recovered from the above puppy. The lamb was slaughtered when it became very sick on day 20 post-infection.

## RESULTS

Faecal examination from day 50 to day 67 post-infection of the puppy did not reveal any egg or segment of tapeworms. However, four mature adult tapeworms were recovered in the small intestine during post mortem. The average length of the worm was 106.6 cm and from the morphology and measurements of the large and small rostellar hooks the worms were identified as *Taenia hydatigena*.

The six-month-old lamb which was apparently healthy and in good body condition became very weak, anorexic and anaemic on day 15 post-infection. By day 19 post-infection, it was in a recumbent state. During post mortem on day 20, the carcass was emaciated and the entire abdominal cavity was filled with serofibrinous fluid containing hundreds of pleomorphic transparent cyst-like structures. The liver was markedly firm, the parietal surface appeared roughened and covered by a yellowish fibrinous sheet which did not extend into the parenchyma. The visceral surface of the liver revealed numerous haemorrhagic streaks (Fig. 1) and on incision the cut surfaces showed the presence of

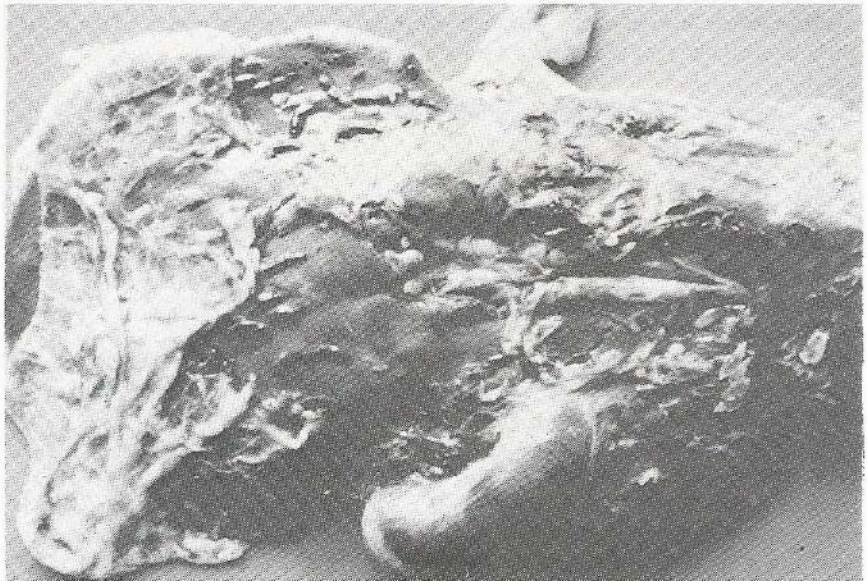


FIG. 1: The visceral surface of the liver showing numerous haemorrhagic streaks

clotted blood and cystic structures embedded in the parenchyma. The lungs had focal areas of consolidation and cyst-like structures were also found embedded in the parenchyma (Fig. 2). Several of the larger cysts from the peritoneal fluid were measured and averaged from 0.3–0.5 cm long. The scolex did not bear suckers but bear two rows of hooks. These cysticerci were still immature at this stage and morphologically they resembled *Cysticercus tenuicollis*.

## DISCUSSION

*Cysticercus tenuicollis* is a very common parasite in all states in Australia (Seddon 1967) and about five percent of livers of sheep are condemned annually due to this cause

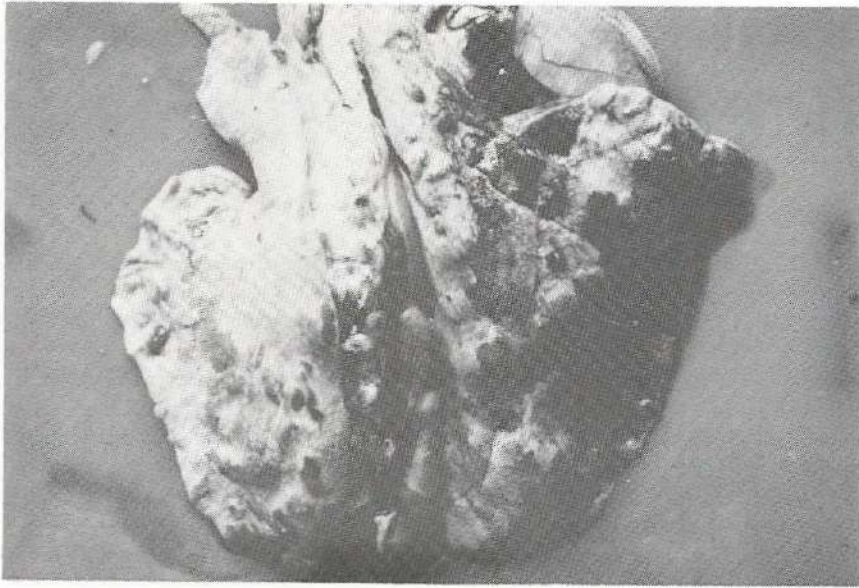


FIG. 2: Cyst-like structures found in the lungs

alone (Arundel 1972). Importing large number of sheep annually from Australia will undoubtedly introduce parasites which are foreign to Malaysia. Species of tapeworms such as *Cysticercus ovis*, *C. tenuicollis* and hydatid cysts of *Echinococcus granulosus* which is of public health importance in Australia may get established in our local animals. At least one of the above parasites *T. hydatigena*, as shown in this study, can complete its life cycle in our domestic animals. With increasing number of imported sheep from Australia and with the common occurrence of potential definitive hosts (feral and stray dogs), this parasite may establish itself in this country. Although only one viable cyst of *T. hydatigena* was recovered from one local goat each by Chooi and Sani (1985) and Amin-Babjee *et al.* (1985), this indicates that the parasite has been successful in completing its life cycle between our local goats and dogs.

It is not surprising that the lamb showed severe clinical signs from day 15 post infection because of the massive dose of viable eggs used for the infection. Even feeding one gravid segment of *T. hydatigena* to sheep and pigs can lead to death due to traumatic hepatitis (Sweatman and Plummer, 1957).

The immature metacestode recovered from the lamb on day 20 post-infection does not mean that the parasite could not develop fully to be infective because it has been shown that complete rostellar development and infectivity occurred between day 34–53 post infection (Sweatman and Plummer, 1957).

Before this potential parasite gets established in our dog and ruminant hosts, proper control measures should be taken immediately. Feral and stray dogs should be eradicated especially those found in sheep and goat rearing areas. Raw offal from intermediate hosts should not be accessible to dogs.

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## RINGKASAN

## POTENSI PENETAPAN TAENIA HYDATIGENA DI MALAYSIA.

*Taenia hydatigena*, cacing pita eksotik boleh menyempurnakan kitaran hidupnya dalam ternakan tempatan. Seekor anak anjing tempatan diberi makan metasesstoda *T. hydatigena* berasal dari bebiri yang diimport daripada Australia, menghasilkan cacing pita dewasa. Segmen-segmen matang apabila diberi makan kepada seekor anak bebiri tempatan menyebabkan penyakit cystisercosis yang teruk akibat daripada metasesstoda yang banyak. Perubahan patologi kasar yang dilihat semasa penghijaran post mortem diuraikan.