

LETTER TO THE EDITOR

ON THE PRESENCE OF A *TAENIA SAGINATA*-LIKE PARASITE IN A TODDLER IN THAILAND

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Dear Editor

A case of *Taenia saginata* infection in a 14-month-old toddler was recently published in this journal (Sitcharungsi and Watthankulpanich, 2016). We would like to contribute to this case report with the aim of clarifying questions related to the life cycle of the human parasites belonging to the genus *Taenia* and, in turn, to achieve a better understanding of the probable etiology of the parasite involved in this case.

The presence of the intestinal adult stage of tapeworms belonging to the genus *Taenia* is known as taeniasis. Three species, *T. solium*, *T. saginata* and *T. asiatica* are human parasites. From a morphological point of view, *T. saginata* and *T. asiatica* gravid proglottids are practically indistinguishable, so that only after employing molecular methods, for instance multiplex PCR (Jeon *et al*, 2009), both species can be differentiated in the diagnostic process.

Human *Taenia* tapeworms have a life cycle that involves two hosts, *ie*, humans as the only definitive host, and pigs (*T. solium* and *T. asiatica*) and cattle (*T. saginata*) as intermediate ones. Humans harbor the intestinal adult stage and pigs and cattle

develop the extraintestinal larval stage, the cysticercus, after ingesting the eggs shed in feces by humans. The presence of the larval stage in the intermediate hosts is known as cysticercosis. When humans ingest raw or poorly cooked pork or beef containing the cysticerci they become infected by taeniasis, as the case reported by Sitcharungsi and Watthankulpanich (2016). When humans accidentally ingest *T. solium* eggs that contaminate water or food, they develop cysticercosis since humans act not only as the definitive but also as the intermediate host for this species. In Thailand, where the case was detected, the three human *Taenia* species coexist (Anantaphruti *et al*, 2007).

According to the case report, the authors performed only a morphological study of the gravid proglottids expelled by the toddler. Apparently, the pattern and the number of lateral branches of the uterus were the only criteria for the specific diagnosis. However, as above mentioned, *T. saginata* and *T. asiatica* have practically the same uterus morphology, therefore the species involved could be either *T. saginata* or *T. asiatica*. In agreement with the life cycle of both species, the source of human infection is beef containing the cysticerci in the case of *T. saginata*, and infected pork in the case of *T. asiatica*. In the words of the authors of the article, 'The toddler's parents denied consumption of beef by the family, but the child could have chewed on minced

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pork'. In that case, the species involved would definitely be *T. asiatica* instead of *T. saginata*.

Related to one of the possible sources of the toddler's infection, the authors suggest the accidental ingestion of drinking water containing the cysticerci of *T. saginata*, ie, *Cysticercus bovis*. Cysticerci are not free-living parasites, they are parasite larval stages living exclusively in the tissues of the intermediate host, so that it is impossible to get infected by means of drinking water. The authors also state that the child could have become infected by the parasite eggs which can be transported by insects or by means of thumb sucking or nail biting. It is relevant to clarify that the ingestion of *Taenia* eggs causes cysticercosis, not taeniasis (Galán-Puchades, 2016). The only way the toddler could have been infected is by means of the ingestion of meat containing viable cysticerci.

Therefore, according to the information given, if the toddler had eaten minced pork, the species involved would be *T. asiatica* and not *T. saginata*, as long as the

number of the uterine branches in the gravid proglottids were between 18-22 as pointed out in the article. However, if the number were lower, the species involved could also be *T. solium* and then if the toddler had discharged *T. solium* eggs, she, as well as her family, could have been at risk of acquiring cysticercosis, a sometimes fatal disease when the cysticerci are located in the central nervous system (neurocysticercosis).

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