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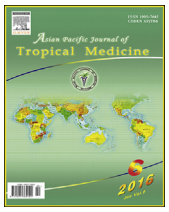

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# Taeniasis *vs* cysticercosis infection routes

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*Dear Editor,*

Rizvi *et al.* have recently published an article related to human neurocysticercosis (NCC) [1], an infection of the central nervous system (CNS) caused by *Taenia solium* (*T. solium*). According to the authors, NCC is considered a neglected disease. However, although cysticercosis is considered neglected, *T. solium* life cycle has been well known for more than two centuries. Humans are the only definitive host harbouring the intestinal adult stage of *T. solium* (taeniasis) (Figure 1). The eggs shed in faeces contaminate the environment, as well as drinking water, vegetables, dirty hands *etc*. The eggs contain a larval stage, the oncosphere or hexacanth embryo, measuring approx. 20 μm. When pigs (the intermediate hosts) ingest the eggs, the released oncospheres penetrate the intestine and become cysticerci, a larval stage measuring approx. 1–2 cm, in various organs or viscera (cysticercosis). When humans ingest raw or undercooked infected pork, the cysticerci turn into adults in the intestine causing taeniasis. Unfortunately, humans can also act as intermediate hosts when accidentally ingesting the eggs of *T. solium* in contaminated water, vegetables, on hands *etc*. The released oncospheres penetrate the intestine, become cysticerci and cause NCC when they are located in the CNS (Figure 1). Therefore, taking this life cycle into account, I consider it essential to disabuse the authors who have provided some serious misinformation in their article:

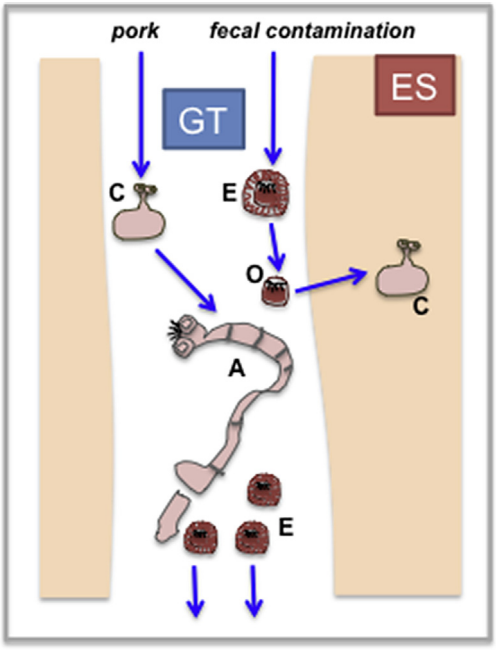


**Figure 1.** Life cycle of *T. solium* in humans.
GT, gastrointestinal tract; ES, extraintestinal sites; C, cysticercus; E, eggs; O, oncosphere; A, adult.

1. ‘Epidemiologic studies have demonstrated tight clustering household or household contact with NCC patients have three times higher risk to have positive serology for cysticercosis compared with controls’ (p. 100).

Contact with NCC patients does not pose any risk of acquiring parasitation by *T. solium* since the cysticercus is enclosed in the CNS without the possibility of transmission to other people, ruling out, of course, cannibalism. The risk appears when people are in contact with patients suffering from taeniasis (the parasitation by the intestinal adult stage), since these patients eliminate *T. solium* eggs, the origin of NCC.

2. ‘The eggs hatch and release the larvae (cysticerci) into the intermediate host. The larvae penetrate the intestinal wall and spread through the blood stream to different organs in the body such as brain, striated muscles, liver and other tissues’ (p. 102).

The eggs release the oncospheres that penetrate the intestinal wall and then become cysticerci.

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3. 'The cycle is complete when humans, the definitive host, ingest undercooked pork or untreated water containing the larvae. Once it gets into the human body, it attaches to the intestinal mucosa and grows to full length' (p. 102 and Abstract).

Taeniasis is acquired only by means of ingesting undercooked pork with cysticerci, which do not exist outside any intermediate host but only the eggs do. The ingestion of eggs leads to cysticercosis, not taeniasis.

4. 'The adult tapeworm releases cysticerci which can disseminate to different parts of the body' (p. 102).

The adult tapeworms release eggs not cysticerci. The eggs abandon the host with faeces. Although internal autoinfection has been suggested, it is not clear that it really happens.

## Conflict of interest statement

We declare that we have no conflict of interest statement.

## Reference

[1] Rizvi SAA, Saleh AM, Frimpong H, Al Mohiy HM, Ahmed J, Edwards RD, et al. Neurocysticercosis: a case report and brief review. *Asian Pac J Trop Med* 2016; **9**(1): 100-102.