Public Health Concerns of Taenidae and Their Metacestodes

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Editorial

Tapeworms of the family Taeniidae are transmitted from the definitive hosts such as carnivores to the intermediate hosts including herbivores or omnivores and human beings via oral-fecal cycle [1,2]. This family includes two major genera namely Taenia and Echinococcus. The Taenia species include T. saginata, T. solium, T. asiatica, T. hydatigena, T. ovis, T. multiceps, T. serialis, T. pisiformis, T. taeniaeformis, and T. crassiceps [2,3]. In many endemic areas the diseases caused by the genus Taenia in humans are often categorised as neglected tropical diseases [3]. In general, the larval stages or metacestodes belonging to these tapeworms infect the human intestine can finally produce the cysts in areas with high blood use, distribution, and reproduction in any medium, provided the original author and source are credited.

T. crassiceps is intestinal tapeworm of carnivores forming the cyst-like larvae or metacestodes (cysticerci) in the body cavities and subcutaneous tissues of rodents as the intermediate hosts [3,17]. The muscles and subcutis of the immunosuppressed humans and the eye and cerebellum in immunocompetent ones are involved by the cestode larvae as tumor-like masses [17]. Four Echinococcus species are known to infect the human hosts during their larval stage including E. granulosus, E. multilocularis, E. oligarthus, and E. vogeli that the latter two species are associated with neotropical echinococcosis [18].

Hydatid disease or cystic echinococcosis is caused by the larval stage of E. granulosus associated with the existence of the cysts in visceral organs especially the liver and the lungs [2,19]. This cestode with its metacestode is recognized as the most important helminthic zoonoses and is of great public health and economic importance especially in tropical and developing countries [19,20]. Considering to its importance, treatment modalities for patients with the disease include chemotherapy via albendazole and mebendazole or praziquantel, puncture aspiration injection reaspiration (PAIR) and surgery [20,21]. Alveolar echinococcosis, a parasitic disease with public health importance, is caused by the cestode E. multilocularis transmitted between intermediate hosts such as rodents and definitive host including wild carnivores especially foxes. In humans, the metacestodes proliferate and form tumor-like masses causing organ dysfunction [22,23]. The disease if remains untreated, can lead to the death of the patient due to unlimited proliferation and metastasis of the lesions [23]. Polycystic echinococcosis caused by the metacestodes of E. vogeli and E. oligarthus is regarded as an emerging parasitic zoonotic disease with public health concern in the humid tropical rainforests [24]. The intermediate hosts for E. oligarthus include wild rodents with the development of cysts in the muscles, subcutaneous tissues or lungs, liver and spleen. In human cases, they have been found in the heart muscle, behind the eyes and the liver [18].

Diagnostic methods mostly include serologic tests such as ELISA, imaging and scanning techniques like magnetic resonance imaging (MRI), computed tomography (CT) and ultrasound [21]. Given high public health significance of these tapeworms, it needs to control. An effective preventive program and also early diagnosis should be designed and implemented and an appropriate treatment is necessary. Development of an effective, safe and cheap vaccine against the parasites can be helpful [5,21]. On the other hand, close proximity of the final hosts such as dogs to humans in these cases may be a main factor in the occurrence of human cases of the disease [23,25]. Therefore, dogs should be considered as the main source of infection and the major risk factor. The big problem for control of these diseases is reducing the risk factors including access of the stray dogs and other wild carnivores to the infected carcass wastes, consumption of raw meat and unwashed vegetables, poor sanitation, use of human feces as fertilizer, and inadequate meat inspection [2,5]. Regular deworming of carnivorous pets and repeated treatment of dogs (the major final host.
in most cases) with anti-parasitic agents, public awareness of different ways of parasite transmission, accuracy in carcass inspection, health education for dog owners, proper condemnation of the infected carcass to reduce the stray dog population, all can be useful in reducing the prevalence and incidence of these zoonotic parasitic diseases [2,4,5,25].

References