

Taenia spp. infections in humans and animals in Slovakia

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Taenia saginata and *Taenia solium*, also referred to as the beef and pork tapeworm, respectively, are food-borne parasites of global importance. In 2014, FAO/ WHO ranked *T. solium* as the food-borne parasite of the greatest global concern with substantial impact on human health and economy. *T. saginata* was considered less important, but still ranked among the list of "Top Twenty". Moreover, they pose major complications for trade and cause a considerable financial burden due to carcass condemnation, freezing and devaluation. The life cycle of both parasites depends on the link between humans and pigs or cattle, and while *T. solium* is highly endemic in poor communities of Asia, Africa and Latin America, *T. saginata* is distributed worldwide. Taking into account growing global trade with pork and beef, there is a possibility of the spread of the infection into localities considered parasite-free or with very low incidence of the disease. Little is known about the occurrence and genetic characteristics of *Taenia saginata* and *T. solium* in Slovakia, therefore the study aimed to review the epidemiology of human and animal taenioses in Slovakia and to identify two isolates of *Taenia* spp. obtained from human patients in 2017 and 2018.

According to EPIS (Epidemiological Information System of the Slovak Republic) in last 18 years the incidence of human taeniosis has ranged between 0.00–0.15 per 100,000 inhabitants per year. Since 2001, only a few cases of *Taenia* spp. infection have been reported every year with the decreasing tendency. While the incidence between 2000 and 2010 varied between 0.08 and 0.15, it has decreased to 0.00–0.06 since 2010, with an exception in 2013 when six cases were reported (incidence of 0.12/100,000 inhabitants).

The number of diagnosed human cases in the laboratories with the tributary area of Bratislava region since 2006 was 10, ranging from none to 2 cases per year. All cases were diagnosed by coprological examination and diagnosis of *Taenia* spp. has been given. In two cases, diagnosed in 2017 and 2018, feces containing eggs were analysed by PCR. A fragment of mitochondrial NAD1 gene was amplified and sequenced. Comparison with GenBank entries by BLAST (Basic Local Alignment Search Tool) confirmed that etiological agent of infection was *Taenia saginata* (GenBank accession numbers: MH744554; MH 675892).

The occurrence of cysticercosis in cattle and pigs is reported to the State Veterinary and Food Administration of The Slovak Republic. Since 2013, the number of positive cattle ranges between 0 and 3 of 34,636–38,311 examined animals. The number of positive pigs varies from

1 of 628,006 in 2013 to 64 of 529,871 animals in 2015. However, there is no possibility to verify the real positivity and we suppose that in some cases cysts of different origin or abscesses were reported. Therefore, the real number of positive animals would be lower.

The results suggest that human and animal taeniosis is still actual issue of parasitology in Slovakia and there is a need of further studies to clarify the epidemiological situation in the country.

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