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Short communication

Toxoplasma gondii seroprevalence in goats, cats and humans in Russia

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ABSTRACT

Toxoplasmosis, a most common zoonosis, is caused by the protozoan parasite *Toxoplasma gondii*. However, there is little epidemiological information on *T. gondii* infections in humans and livestock animals in Russia. Therefore, in this study, the seroprevalence of *T. gondii* in goats in Russia was investigated. A total of 216 goats from 32 farms were investigated and 95 of them were seropositive for *T. gondii*. The difference in seroprevalence between the examined regions was not statistically significant. We next collected serum samples from 99 cats and 181 humans in Kazan city, the state capital of the Republic of Tatarstan, Russia, and examined their *T. gondii* seroprevalences. Thirty-nine of the 99 cat samples and 56 of the 181 human samples showed seropositivity. Logistical regression analysis revealed that the cat breeding history of the human subjects, but not their sex or age is a significant risk factor for *T. gondii* seropositivity. These findings suggest that the natural environment in Russia may be widely polluted with *T. gondii* oocysts shed by cats, and ingestion of these oocysts provides a major route for human infection with this parasite.

Toxoplasma gondii is a zoonotic protozoan parasite that causes widespread infections in humans and other animals, including meat production animals. Although most infections in humans are asymptomatic, the parasite can cause severe complications in immunocompromised individuals and abortion when a mother is infected for the first time during pregnancy. Human toxoplasmosis is transmitted mainly through ingesting the tissue cysts present in *T. gondii* contaminated raw or undercooked meat, or through oral contact with the sporulated oocysts of this parasite when present in the feces of infected cats. It was reported that 30 to 63% of human infections are attributable to the consumption of undercooked meat in Europe [1]. An epidemiological study among > 4000 Japanese pregnant women identified a history of raw meat intake as a risk factor related to

toxoplasmosis development, but cat ownership was not a significant factor [2]. In contrast, a nationwide representative cross-sectional survey in Germany showed that cat ownership was a risk factor for *T. gondii* seropositivity [3]. The relative importance of oocysts from cat feces or tissue cysts in meat products as sources of human *T. gondii* infections in each area is considered to be affected by the eating habits and cat rearing style of people in different countries. However, there is little information on the status of *T. gondii* infections among cats, domestic animals for meat production, and humans in Russia. In this study, we surveyed the seroprevalence of *T. gondii* in goats, cats and humans in Russia. All sampling and analysis procedures using human and all other animal derived samples were approved by the Ethical Committee of the Kazan State Medical Academy, Kazan, Russia (Permit

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