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## The relationship of parasitic diseases with cancer among children.

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One third of the world population is estimated to be infected with intestinal parasites. The most affected people are children and the poor people living in tropics and subtropics. Poly-parasitism (the concurrent infection with multiple intestinal parasite species) is found to be the norm among the same population although accurate estimate of its magnitude is unknown or involved mechanism is unknown. It was found that poly-parasitism might have a greater impact on morbidity (rate of disease) than single species infection which might also increase susceptibility to other infections. Thus, the studying and the analysis of archival documentation Department State sanitary – Epidemiological Supervision of Kyrgyz Republic (DSSES), Center of the State sanitary – Epidemiologic Supervision (CSSES) and Republican Clinical Infectious Hospital (RCIH) since 2005, shows on growth intestinal mix-invasion of the population in the Bishkek city (Table 1 and Fig.1). Especially, high contamination is marked at children of school age. So, in 2008 from 329 surveyed at 2 persons are revealed intestinal mix-invasion - 0,60%, in a combination of parasites (lamblia + ascaris, lamblia + oxyuris). In 2009 from 207 infected, the mix-invasion are revealed at 6 patients - 2,89%, in a combination (lamblia + ascaris, lamblia + oxyuris, ascaris + lamblia + oxyuris). In 2010 12 schoolboys with mix-invasion, from 220 infected - (5,45%) are revealed.

Several environmental factors (chemical, physical and biological) can cause the initiation, promotion and progression of cancer. Regarding the biological factors, several studies have found that infections cause by some bacteria, virus, protozoan and helminthes are related to carcinogenesis. In this work, we reviewed the available information regarding how parasitic infections may modulate the cancer progression.

**Introduction:** Humans simultaneously infected by different parasites are quite natural and frequent. Around 14,000 pathogens have been described in humans and approximately 30% of infections may be mixed infections or co-infections, although this can rise up to 80% in some human populations.

In addition, infectious diseases participate in modulating carcinogenesis. It has been largely known that viral infections are associated with several types of cancer (i.e. papilloma virus and cervical cancers) as well as bacterial infections (helicobacter pylori and gastric cancer).

To survive for long periods in a disadvantageous and aggressive environment, helminthes secrete several soluble factors that interact with host cells. It is therefore possible that some of these molecules might modify host-cell homeostasis and increase the risk of malignant transformation. A lot research works are found about evidence that serine proteases do not only have important functions in the regulation of endogenous physiological processes of parasitic helminthes, but are also actively involved in host-parasite interactions. Schistosoma haematobium infection is associated with cancer of urinary bladder Clonorchis sinensis and Opisthorchis viverrini food-borne liver flukes are associated with cholangiocarcinoma of the liver.

**Conclusions:** In this review, we have gathered information that polyparasitism is very common in developing countries and polyparasitism may lead to carcinogenesis. Hence, there is an urgent need to implement an innovative and integrated control program to reduce the prevalence and intensity of these infections significantly and to save these children from the negative impact of co-infective diseases. The studying and the analysis of archival documentation DSSES, CSSES and RCIH since 2005, shows on growth intestinal mix-invasion of the population in the Bishkek city.

1. Especially, high contamination is marked at children of school age. So, in 2008 from 329 surveyed at 2 persons are revealed intestinal mix-invasion - 0,60%, in a combination of parasites (lamblia + ascaris, lamblia + oxyuris). In 2009 from 207 infected, the mix-invasion are revealed at 6 patients - 2,89%, in a combination (lamblia + ascaris, lamblia + oxyuris, ascaris + lamblia + oxyuris). In 2010 12 schoolboys with mix-invasion, from 220 infected - (5,45%) are revealed.

2. The invasiveness is marked not only in the areas far away from a civilization, but also in the Bishkek city. If before, the mix-invasion were revealed in the new buildings, where municipal accomplishments leave much to be desired, recently there are data about distribution of intestinal mix-invasion in the central areas of the capital.

3. It would be desirable to notice, that revealing of mixed invasion at the population was not a main objective of workers DSES and CSSES. These data are casually found out and if we lay down for ourselves the aim of revealing intestinal mixed invasion, unfortunately, the invasiveness percent will be much more above.

Based on the findings, there is a great need for a proper health education regarding good personal hygiene practices and community mobilization to enhance prevention and instill better knowledge on polyparasitic infection transmission and prevention in these communities.

### **Biography**

Mambet kyzy Gulina is the senior teacher and research worker in Medical Biology Department of KSMA. She was born in Naryn region, Kyrgyzstan on 20 June 1975. Gulina graduated from Naryn school in June 1992, and from Ishenaly Arabaev University of Bishkek with a teacher skills in Biology in July 1996. She remained at the University as a manager and teacher in Biology and Chemistry faculty. In June 2002, Mambet kyzy Gulina was invited by German anatomist and professor Gunter von Hagens, as research assistant to his "Morphological Center of Biological corrosion" laboratory in Bishkek. In May, 2003 Mambet kyzy Gulina worked as assistant in "Institute for Plastination" in Heidelberg, Germany. From September 2008 - current, she is working as visiting lecturer in General Medicine & Dental Faculty of Tentishev Satkynbay Asian Medical Institute. From 2010 – current, Mambet kyzy Gulina is visiting coordinator and translator in National Center of Testing. In July 2016 she participated in "Research methodology and ethics in health sciences" seminar, in Koç University, School of Medicine Harvard University, Medical School, National Institutes of Health Istanbul, Turkey. In August 2018, she attended seminar of German professor in "Advancing university education in biomedical engineering and health management in Kyrgyzstan", Co-funded by the Erasmus+ Programme of the European Union. From 2010 to current, she is the senior teacher and research worker under the supervision of MD, professor, Kuttubaev Omurbek Tashibekovich, who is head of Medical Biology, Genetics and Parasitology Department of KSMA. Her research is concerned to Molecular Parasitology, which studies about cancer induced by metabolites of helminthes among children.

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