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**A PILOT STUDY ON ECHINOCOCCOSIS CONTROL IN SAMARKAND REGION SUPPORTED BY THE KOICA, 2015-2018**

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**KOICA КЎМАГИДАГИ САМАРҚАНД ВИЛОЯТИДА ЭХИНОКОККОЗГА ҚАРШИ КУРАШ БЎЙИЧА ТАЖРИБА ТАДҚИҚОТИ, 2015-2018 ЙИЛЛАР**

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**ПИЛОТНОЕ ИССЛЕДОВАНИЕ ПО БОРЬБЕ С ЭХИНОКОККОЗОМ В САМАРКАНДСКОЙ ОБЛАСТИ ПРИ ПОДДЕРЖКЕ KOICA, 2015-2018 гг.**

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Echinococcosis is a zoonotic parasitic disease caused by *Echinococcus granulous*. It is transmitted through accidental ingestion of helminth eggs in the feces of infected dogs, or through contaminated food or water. Echinococcosis is an endemic disease in Central Asia including Uzbekistan where livestock farming is developed in. A pilot study on echinococcosis control in Samarkand Region was carried out as part of the 2nd phase Project for "Quality improvement of diagnosis in patients with infectious diseases in Uzbekistan (strengthening water- and food-borne diseases surveillance)" supported by the KOICA from 2015-2018. A Korean and Samarkand parasite control team worked together to achieve the goal of eliminating echinococcosis in a target area. Payarik District was selected as a pilot

area, since it was relatively highly endemic area in Samarkand Region (5.6/100,000 people reported in 2014 whereas 2.3/100,000 from the entire Samarkand Region). The followings showed activities done in Payarik District during the Project.

The echinococcosis control committee was formed at the beginning to include Samarkand Health Authority, Isaev Research Institute of Parasitology, 2nd Samarkand Hospital and Veterinary Research Institute. Baseline surveys through serological exam and abdominal sonography by radiologists from 2nd Hospital were performed once a year in Urtasaidov, Kumchuk and Chororoshly villages to find out liver echinococcosis cases in humans including asymptomatic cases. Serodiagnostic laboratories for cystic echinococcosis were established at the Isaev Institute of Parasitology and Samarkand 2nd Hospital. A new ELISA equipment was provided, and technical support was also provided by invitational training in Korea and local training in Samarkand. Infected people confirmed by sonography were referred to the 2nd Hospital, and referred to undergo operation to remove parasitic tumors if needed. Investigation on the prevalence of echinococcosis in sheep and cows were done at abattoirs by local Veterinary Institutes. Reservoir hosts (mostly domestic dogs) were investigated whether or not they were infected. Continuous education was done to the people through available resources including mass media (TV, radio and newspaper), poster and verbal teaching whenever possible. Improvement of surgical treatment was performed to support laparoscopic apparatus to the Samarkand 2nd Hospital. Technical supports were provided several times by invitational training in Korea and at Samarkand 2nd Hospital. Development of the printed manual and video were made in order to provide other Regions to assist for echinococcosis control in Uzbekistan.

As a result, in the first year, 2015, 15 positive cases among 4,385 were detected by abdominal sonography in Payarik District. After that, it decreased to 4 cases among 2,867 in 2016, and none among 3,471 in 2017. Serum samples were collected from residents of 3 villages in Payarik District to use for diagnose echinococcosis serologically. The cut-off value of absorbance was determined to be 0.19. The result showed some difficulty in interpretation, however, 39 out of 4,385 tested were found positive (0.88%) in 2015, 26 out of 2,256(1.15%) in 2016, and 15 out of 3,060(0.45%) in 2017. As a result of surveying 1,749 dogs raised at home while carrying out this project for 3 years, 8 positive dogs were confirmed in the first year of 2015, but the infection rate of dogs in 2016 and 2017 was reduced by administering praziquantel, every 3 months thereafter, and eventually remained at 0%. Therefore, it was speculated that the dog deworming project was successfully carried out. On the other hand, adult worms were found in the intestines of stray dogs and a hunted jackal, which is a wild animal. No echinococcosis infection was found in hunted a few foxes. Investigations of egg contamination in the villages' soil were conducted. Eggs were identified in 4 of 30 soil samples. Development of PCR-RFLP algorithm for practically useful genetic characterization of *E. granulosus*, and a study result was reported at a scientific journal using tumor samples extracted from humans. The study found that the G1 genotype is the most popular genotype, as in many other regions, however, it was newly revealed for the first time in the world that the G4 genotype exists in Samarkand. Since 2017 a total of 14 operations (liver 11, lung 2, kidney 1) were performed until around May 2019 using laparoscopy for echinococcosis patients who had visited Samarkand 2nd Hospital. It is expected to increase rapidly in the future not only for abdominal echinococcosis treatment but also surgeries for the treatment of other diseases. At the beginning of this pilot project in 2015, residents' knowledge about echinococcosis was relatively low, however, as a result of carrying out education including so-called Olympiad and publicity on echinococcosis for 3 years, the level of knowledge especially prevention methods gradually increased.

At the end of the project in 2018, it achieved remarkable results that no echinococcosis cases were found in the subjects examined by abdominal ultrasonography in a pilot area. The project was completed in 4 years, but if we continue to make this kind of various efforts, it can lead to the elimination of echinococcosis in Samarkand Region and whole Uzbekistan in the near future.