

Detection of hydatid and leishmaniasis infections by molecular method in sputum samples of patients with pulmonary tuberculosis in Ardabil province during 2016 to 2019

Abstract

Background: Tuberculosis or TB is a very serious health problem in developing countries. Pollution in Iran is high in most provinces due to weather and working conditions and in Ardabil province we see new cases of the disease every year. Co-infection with tuberculosis and parasitic diseases has been shown in both laboratory and epidemiological studies in humans. Studies have shown that treatment is slower and more difficult in patients with tuberculosis who have a concurrent parasitic infection. Due to the lack of a similar study in the province, this study aimed to investigate the parasitic infections of hydatid and leishmaniasis in the sputum sample of patients with pulmonary tuberculosis in Ardabil province by molecular method.

Aim: The aim of this study was to determine parasitic infections of hydatid and leishmaniasis by molecular method in sputum samples of patients with pulmonary tuberculosis in Ardabil province during 2016-19.

Materials and Methods: This study is a cross-sectional and descriptive study and collects information and data by available method from patients' health records and examines positive and negative sputum samples in the central tuberculosis laboratory and from a checklist designed by the researcher; After DNA extraction, the samples were examined for the presence of Mycobacterium using specific srRNA 16 primers and tuberculosis complex with IS6110 primers and polymerase chain replication technique. Echinococcus granulosus (hydatid) with the mitochondrial gene cox1 was identified in patient samples. Genomic DNA isolated from promastigotes was used as a template to amplify the ITS gene by PCR. Also, kDNA was amplified using suitable primers using Kinetoplastid DNA PCR to detect Leishmania; and then the results were analyzed by software.

Results: In the present study, a total of 178 people were included in the study. Of these, 89 were in the tuberculosis group and 89 were in the non-tuberculosis group (control group). Of the subjects, 300 samples were examined; of which 150 samples were positive for tuberculosis and 150 samples were negative for smear. Hydatid involvement was found in three cases of tuberculosis group and was not observed in any of the controls. Leishmania involvement was found in two cases of tuberculosis and was observed in one of the controls. In this study, concurrence of all three diseases of tuberculosis, hydatid disease and leishmaniasis was not observed in any of the patients.

Conclusion: According to the analysis of the results of the present study, there was an association between tuberculosis and parasitic diseases of hydatid disease and leishmaniasis, which can be due to a decrease in the immune system response of a person with tuberculosis and make a person susceptible to parasitic diseases and opportunistic. Due to the inability to show the cause-and-effect relationship in cross-sectional studies, the issue of whether

parasitic infections have turned latent TB disease into active TB or TB disease itself has made the patient susceptible to parasitic infections needs further investigation.

Key words: pulmonary tuberculosis, parasitic infection