Follow-up of patients with primary pulmonary tuberculosis by detecting 85B mRNA expression levels of Mycobacterium tuberculosis as a marker of cure

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Background: The antigen 85 complex is secreted in large quantities from growing mycobacteria and the presence of bacterial mRNA is also an indicator of cell viability. Quantitative detection of 85B mRNA expression levels can be used in the follow-up of anti-tuberculosis treatment outcomes regarding the detection of viable mycobacteria cells. Therefore, we aimed to evaluate the levels of 85B mRNA of Mycobacterium tuberculosis strains as a marker of cure in patients with pulmonary tuberculosis.

Materials/methods: Thirty patients with primary tuberculosis were included in this study. Sputum specimens of patients were collected at 0th, 15th and 30th days and were cultured using LJ and BACTEC MGIT 960 systems. 85B mRNA-based RT-qPCR method was studied in LightCycler 480 system using specific primers and probes. The obtained Ct values were analyzed according to the deltaCt method.

Results: The mean age and standard deviation of the patients (16 males and 14 females) were 38.63 ± 16.33 years. While 23 of the study strains were susceptible, remaining 7 strains were resistant to at least one of the primary anti-tuberculosis antibiotics. Initial tuberculosis treatment was started prophylactically and sputum specimens were collected at 0th, 15th and 30th days. Thereafter, sputum specimens were studied for the detection of 85B mRNA by RT-qPCR method. Only in one susceptible strain out of 23 susceptible strain, 85B mRNA was detected at 30th day. However, the different amounts of relative gene expression levels for 85B mRNA to 16SrRNA were observed for all resistant M. tuberculosis strains at 30th day. A statistically significant difference was observed for the expression levels of 85B mRNA between resistant and susceptible strains at 30th day (Figure 1, p < 0.05).

Conclusions: In conclusion, the relative gene expression levels for 85B mRNA could be used in the treatment follow-up of primary tuberculosis cases. There is a need for practical and fast new biomarkers to monitor anti-tuberculosis treatment outcomes. 85B mRNA seems to be a good diagnostic marker for monitoring anti-tuberculosis treatment outcomes.