

Abstract

The aim of this study was to isolate the bacteria that causing pulmonary tuberculosis in Al-Muthanna province and using real time PCR based assay to detection multidrug-resistant tuberculosis from culture samples. Age, gender and location were also included in this study. The study was conducted at the Consultant Clinic for Thoracic and Respiratory Diseases in Al-Muthanna Governorate for the period from 2016/10/9 to 2017/9/8. The study included 450 patients suspected of having pulmonary tuberculosis. Sputum samples were examined directly by acid fast bacillus and confirmation using GeneXpert with the culture on Lewinsein-Jensen agar medium and the drug susceptibility testing of grown colonies as well as application of real time polymerase chain reaction test. The positive results of the current study showed the 30 patients with pulmonary tuberculosis infection, positive samples results to tests (direct examination, culture, molecular diagnosis of GeneXpert and Real time Polymerase chain reaction respectively) were (26, 30, 28 and 30), which included 26(87%) new cases of tuberculosis, 1(3.3%) failure of tuberculosis treatment case, 1 (3.3%) of under treatment condition and 2 cases (6.6%) with tuberculosis relapse. The female infections were 16(53%) compared with males 14(47%) especially in rural area 22(73%) that recorded significant value ($P < 0.05$) compared with in urban areas 8(27%) and it was noted that the age group (21-30) was the most affected by 8(26.6%). The positive results of the real time Polymerase chain reaction showed that amplification of genes (*rpoB*, *katG*, *inhA1* and *inhA2*) that were responsible for resistance to rifampicin and isoniazid. The test showed positive results for resistance genes (6(20%), 3(10%), 2(6.6%), 3(10%) Respectively) as well as note that the values of Ct for this test ranged from (12-38.25), and the melting points of the genes were between (85-88.5C^o). Real time Polymerase chain reaction results identified three amplification genes of multidrug resistant (rifampicin and isoniazide) resistance genes, whereas there was one multidrug resistant of molecular diagnostic results with the GeneXpert test for rifampicin. When comparing the results of the Real time polymerase chain reaction and GeneXpert tests at the level of the genetic with amplification rifampicin, the real time Polymerase chain reaction test showed four resistance genes for the *rpoB* gene for both new cases and relapse tuberculosis as well as one *rpoB* gene for under treatment patient. Both molecular tests have agreed to identify one *rpoB* gene in the case of failure tuberculosis treatment. The real time Polymerase chain reaction test may give accurate results by identifying of resistance genes rather than *rpoB* gene alone, as well tracking genes when treatment is followed.