Evaluation of GeneXpert MTB for detection of Mycobacterium tuberculosis in Fayoum Governorate

Abstract:

Background: Despite being one of the most ancient diseases, tuberculosis (TB) is still a major health problem globally. It is one of the most important causes of death worldwide. GeneXpert MTB/RIF assay is a fast nucleic acid amplification test used for detection of TB as well as identification of rifampicin resistance.

Design: This was a cross-sectional study.

Setting: The study was conducted at Fayoum Chest Hospital, Egypt, between December 2017 and December 2018.

Objectives: To evaluate GeneXpert MTB/RIF in detection of Mycobacterium tuberculosis in Fayoum Chest Hospital.

Patients and methods: One hundred participants were enrolled in this study with clinical or radiological susceptibility of pulmonary or extrapulmonary TB. All patients underwent the following: full history taking, clinical examination, plain chest radiography, examination of specimen by Ziehl–Neelsen stain, cultivation on Lowenstein–Jensen media, and processed in GeneXpert MTB/RIF.

Results: GeneXpert assay is a good, fast, noninvasive, and accurate diagnostic tool for detection of M. tuberculosis, showing sensitivity of 100.0%, specificity of 85.0%, positive predictive value of 96.4%, negative predictive value of 100%, and accuracy of 97%. On the contrary, Ziehl–Neelsen had sensitivity of 83.75%, specificity of 100%, positive predictive value of 100%, and negative predictive value of 60.61%.

Conclusion: GeneXpert is a fast, accurate, and promising technique with good sensitivity and specificity, but it cannot be used alone as a diagnostic tool for TB.

Keywords: extrapulmonary tuberculosis, fayoum governorate, GeneXpert MTB/RIF, pulmonary tuberculosis