GeneXpert: A new tool for the rapid detection of rifampicin resistance in mycobacterium tuberculosis

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Abstract

Objective: To evaluate the diagnostic accuracy of GeneXpert assay for the detection of rifampicin resistance in mycobacterium tuberculosis using conventional drug susceptibility testing as gold standard.

Methods: This cross-sectional study was conducted at Jinnah Hospital, Lahore, / Allama Iqbal Medical College, Lahore, Pakistan, from January 2012 to December 2014, and comprised clinically and radiologically diagnosed tuberculosis
suspected cases. Pulmonary and extra-pulmonary specimens were collected from strong tuberculosis suspects. All specimenswere processed for Ziehl Neelsen staining, Lowenstein-Jensen culture and GeneXpert assay. Allmycobacterium tuberculosis positive cases on Lowenstein-Jensen culturewere further processed for drug susceptibility testing.

Results: Of the 2,200 cases, 840(49.46%) were positive for mycobacterium tuberculosis on GeneXpert assay. Of them, 134(15.6%) cases showed rifampicin resistance on GeneXpert assay. The sensitivity, specificity, positive predictive value and negative predictive value of GeneXpert assay for rifampicin resistance were 127(98.3%), 704(99.1%), 127(94.7%) and 704(99.4%), respectively, by comparing the results with drug susceptibility testing.

Conclusion: GeneXpert assay was an extremely helpful diagnostic tool for the detection of rifampicin resistance in tuberculosis suspects with fairly high sensitivity and specificity along with short turnout time.

Keywords: GeneXpert MTB/RIF assay, Mycobacterium tuberculosis, Rifampicin resistance, Drug susceptibility testing.