

Diagnosis of Pulmonary Tuberculosis; Conventional Versus Fluorescent Microscopy and Gene Xpert MTB/RIF

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Abstract:

Tuberculosis is an infectious disease with a high prevalence with about 9 million cases occurring annually. ZN microscopy is the most widely used technique to detect AFB, but it is less sensitive. However fluorescent microscopy is more helpful with simple diagnostic criteria. Gene Xpert® MTB/RIF assay is a rapid molecular assay that enables diagnosis of TB with simultaneous detection of rifampicin resistance. The diagnostic accuracy of fluorescent microscopy and Gene Xpert MTB/RIF for the diagnosis of TB were evaluated.

A total of 352 respiratory specimens were tested among which 160 samples were positive by culture. Out of culture positive samples, 158 samples (98.7%) were GeneXpert TB positive while 2 were negative. While only 49 were positive on ZN microscopy and 89 were positive on fluorescent microscopy. Out of the culture negative samples, 2 were positive with ZN microscopy, one was positive with fluorescent microscopy and 3 were positive on Gene Xpert. Sensitivity, specificity, PPV, NPV and diagnostic accuracy of ZN Smear microscopy was 39%, 99.5%, 96%, 63% and 14.5% respectively. Sensitivity, specificity, PPV, NPV and diagnostic accuracy of fluorescent smear microscopy was 55% and 99.5%, 98%, 72% and 79% respectively. Sensitivity, specificity, PPV, NPV and diagnostic accuracy of Gene XPERT was 98 % and 99%, 98%, 99% and 98% respectively.

In countries like Pakistan where the disease is endemic, fluorescent microscopy and Gene Xpert PCR can help in making a timely diagnosis.

Key words: Pulmonary Tuberculosis, Fluorescent microscopy, Gene Xpert, Auramine phenol stain