223. Xpert Mycobacterium tuberculosis/Rifampicin Assay for Diagnosis of Tuberculous Meningitis in Maharaj Nakorn Chiang Mai Hospital
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Session: 50. Diagnostics: Mycobacteriology
Thursday, October 27, 2016: 12:30 PM

Background. Early diagnosis and treatment of tuberculous meningitis (TBM) are crucial steps to reduce morbidity and mortality. Recommendation of using Xpert Mycobacterium tuberculosis/rifampicin (MTB/RIF) assay to diagnose pulmonary TB, pediatric TB, extrapulmonary TB, and rifampicin resistance was made by the World Health Organization. However, the data of accuracy in diagnosis of TBM is still lacking. This study aimed to find out the diagnostic performance of Xpert MTB/RIF assay for the diagnosis of TBM.

Methods. A prospective cohort study was conducted at Maharaj Nakorn Chiang Mai Hospital, Thailand. Patients who were ≥15 years old and had subacute lymphocytic meningitis were included.

Results. Fifty patients were included for analysis. Using the Mycobacteria Growth Indicator Tube (MGIT) TB culture as a reference gold standard, Xpert MTB/RIF assay the sensitivity and specificity were 80% (95% confidence interval [CI], 44.39%–97.48%) and 97.5% (95% CI, 86.84%–99.94%), significantly higher sensitivity (P < 0.001) than conventional staining. There was a good concordance between Xpert MTB/RIF assay and MGIT TB culture with 94% agreement (p < 0.001) and kappa of 0.805 (95% CI, 0.593–1.000). Sensitivity and specificity of the TBM score (≥6) compared with the cerebrospinal fluid (CSF) TB culture were 100% and 24.4%, respectively. Twelve TBM patients received treatment, but only 10 patients had CSF culture positive for TB, and the agreement between the Xpert MTB/RIF assay versus TBM treatment was 94% (p < 0.001), and the kappa score was 0.82 (95% CI, 0.626–1.000). Using a TBM score at cut-point of 6, and then the Xpert MTB/RIF assay as the sequential testing, there was an improvement in specificity from 97.5% to 98.13%. No statistical difference of diagnostic performance was found between human immunodeficiency virus (HIV) and non-HIV infected groups. No discordance of rifampin resistance between centrifuged CSF Xpert MTB/RIF assay and conventional drug-susceptibility testing.

Conclusion. Centrifuged CSF Xpert MTB/RIF assay was a rapid test to detect Mycobacterium tuberculosis complex from CSF specimens with high sensitivity and specificity. The TBM scoring system had a very high sensitivity and negative predictive value but low specificity. This could be used as a screening test for TBM patients before using a more specific diagnosis test. This sequential testing may be useful as a diagnostic algorithm for rapid diagnosis of TBM.

Disclosures. All authors: No reported disclosures.