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Title: Evaluation of real time polymerase chain reaction, adenosine deaminase and interferon gamma in tubercular pleural effusions

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Body: Introduction: Pleural effusions are a common manifestation of tuberculosis. Real Time Polymerase Chain Reaction (RT-PCR), Adenosine Deaminase (ADA) and Interferon gamma release assay (INF) provide faster results than Ziehl Neelsen (ZN) staining and Culture on LJ medium. RT-PCR is superior to conventional PCR in sensitivity, specificity with lower contamination and reduction in time to result. Aims and Objectives: To evaluate the sensitivity of RT-PCR, ADA and INF in cases of pleural effusions due to tuberculosis. Methods: RT-PCR was performed in 168 patients of tubercular pleural effusions. All patients had positive Mantoux test with high protein and lymphocyte predominance in effusion. RT-PCR was performed by detecting amplification reaction for the insert element IS6110 of the Mycobacterium tuberculosis complex (Biotub-QT, Biotools Labs, Spain) using a real-time centrifugal amplifcation system (Rotor-Gene 3000, Corbett Research, Australia). ADA was estimated by enzymatic method (BQ Kits, San Diego, USA) and INF was measured using Quantiferon TB Gold kit from Cellestis Ltd, USA on Automated ELISA Reader (TECAN, Minilyzer) Results: RT-PCR was positive in 154 of the 168 cases of tubercular pleural effusions (Sensitivity 91.67%). ADA showed high positivity in 162 of 168 cases (sensitivity 96.42%). INF showed sensitivity of 69.64% (positive in 117 of 168 cases). The sensitivity of ZN staining in tubercular pleural effusion was 13.10%, Culture for AFB by LJ medium was 31.55% and BACTEC was 57.14%. Conclusion: Real time PCR provides rapid diagnosis of tubercular pleural effusions. The diagnostic efficiency could be increased by combining RT-PCR with ADA.