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Title: A retrospective review of the Xpert® MTB/RIF assay performance in bronchoalveolar lavage samples in a London hospital

Dr. Muhammad Saleem 3538 Anwar drsaleemhaf@yahoo.com MD ¹, Dr. Clare 3539 Ross
Clare.Ross@imperial.nhs.uk MD ¹, Dr. Melissa 3540 Wickremasinghe
Melissa.Wickremasinghe@imperial.nhs.uk MD ¹, Dr. Graham 3541 Cooke Graham.Cooke@imperial.nhs.uk
MD ¹, Dr. Annette 3542 Jepson Annette.Jepson@imperial.nhs.uk MD ¹ and Dr. Onn Min 3544 Kon
Onn.Kon@imperial.ac.uk MD ¹. ¹ Respiratory Medicine, Imperial College Healthcare NHS Trust, London,
United Kingdom .

Body: BACKGROUND: The Gene Xpert® MTB/RIF test has been validated in sputum samples, facilitating rapid mycobacterium tuberculosis (MTB) diagnosis with improved sensitivity compared to smear status alone. Its utility in bronchoalveolar lavage (BAL) samples is unclear. AIMS AND OBJECTIVES: To examine the sensitivity of the Xpert® MTB/RIF test in BAL samples and evaluate its use as a rapid diagnostic test in non-productive patients undergoing bronchoscopy. METHODS: We conducted a retrospective analysis of all culture-proven MTB samples (n=43) acquired by BAL between 01.08.2009 and 31.07.2012. 28 of these samples were also sent for PCR testing. We assessed the proportion of MTB PCR positive samples and compared these results with smear status and time to culture positivity. RESULTS: 21/28 of the culture-proven cases sent for MTB PCR were PCR positive, giving a sensitivity (if culture is taken as the 'gold standard') of 75%. 14/28 and 17/43 samples were smear positive. Of the 14 smear negative culture positive samples sent for PCR, 50% were PCR positive. All smear positive cases were PCR positive. The PCR positive samples had a lower mean time to positivity: 12 days vs. 16.3 days for PCR negative samples (p=0.052). There were no cases of rifampicin resistance. Incidentally 4 additional PCR positive samples were identified which were culture negative, in patients with clinically likely TB. CONCLUSIONS: This data supports the use of the Xpert® MTB/RIF assay in the diagnosis of pulmonary MTB in BAL fluid, with a sensitivity of 75% (if not higher given the likely cases detected exclusively by PCR) when compared to MTB culture, adding additional value to simple smear.