

European Respiratory Society Annual Congress 2012

Abstract Number: 3910

Publication Number: P2698

Abstract Group: 10.2. Tuberculosis

Keyword 1: Tuberculosis - diagnosis **Keyword 2:** Bronchoscopy **Keyword 3:** MDR-TB

Title: Value of bronchoscopic specimens for the diagnosis of sputum smear negative tuberculosis in high burden multidrug resistant tuberculosis setting

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Body: Background Rapid diagnosis of pulmonary tuberculosis (PTB) allows timely treatment and infection control. This has a special relevance in subjects with potential multidrug resistant tuberculosis (MDR TB). Bronchoscopy is an alternative method of collecting sputum samples, with an additional benefit in sputum smear-negative (SSN) patients. Objectives To assess the diagnostic yield of PTB in SSN patients, using the examination of bronchoscopic specimens (BSS) such as - bronchoscopic aspiration (BA), bronchoalveolar lavage (BAL), bronchial washing (BW) and post-bronchoscopy sputum (PBS). Methods A retrospective study of patients, registered in national electronic TB database, with culture confirmed PTB between January 2008 and December 2011. Patients, who were SSN or non-productive of sputum (NPS) before bronchoscopy, were eligible. Results The inclusion criteria were met by 503 subjects. BA was performed in 369 cases, BW - 116 cases, BAL - 18 cases, PBS was available 37 in patients. Microbiological examination of BSS was the exclusive method for the microbiological confirmation of PTB in 344(68,4%) cases. The overall diagnostic rate of BSS for smear positive PTB was 21% (98/466). Higher rate for diagnosis of smear positive PTB were proven for bronchial washing (30,9%) and bronchial aspirate (17,2%) which were superior to PBS (8,5%; p=0,01 and p=0,005, respectively). The overall rate of MDR TB among smear positive cases was 27,6% (27/98). Conclusions Microbiological examinations of BSS give a higher rate of definitive diagnosis of PTB among SSN cases, with an earlier identification of contagious subjects with potential MDR TB.