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THE QUALITY OF SPUTUM COLLECTED FOR ACID-FAST BACILLI (AFB) TEST FROM PATIENTS AT DR. GEORGE MUKHARI HOSPITAL, PRETORIA

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OBJECTIVE: In order to obtain optimal results using sputum smear microscopy for acid-fast bacilli (AFB) detection in the diagnosis of pulmonary tuberculosis (PTB), good quality sputum with an adequate volume of at least 5.0ml is required. An inadequate amount of sputum sample may result cases of active PTB being missed. This study was aimed at showing that a single sputum sample of at least 5.0ml would lower the chances of missing active PTB cases, and increase sputum smear positivity by microscopy thus enabling prompt treatment of PTB, and restricting its transmission.

METHODS: An analytical cross sectional study was carried out at Dr George Mukhari Hospital in Pretoria, South Africa. Two sputum samples, one of 5.0ml and the other with 2.0ml were collected from each adult patient suspected of having active PTB. Sputum collection was supervised and patients were given instructions on how to enhance sputum expectoration. Sputum samples were processed using the *N*-acetyl-L-cysteine (NaLc-NaOH) method and stained with Auramine O. Sputum analysis was done with the aid of fluorescence microscopy. Following microscopy, both the 2.0ml and 5.0ml specimens were sent for culture using the Middlebrook broth medium, and culture results were available after 6-8 weeks. Using the culture results as gold standard, the yield through microscopy of the 2.0ml specimen versus the 5.0ml specimen for each patient were compared and analysed.

RESULTS: A Total of 330 sputum samples were analysed of which 77 were found to be culture positive. A sensitivity of 76.6% and specificity of 99.6% was obtained for AFB test in the 5.0ml specimens; while in the 2.0ml samples the sensitivity was 75.3%, with a specificity of 99.2%. The difference in the smear positivity rate of 76.6% obtained using the 5.0ml sputum specimen compared to the 75.3% obtained using the 2.0ml specimen from patients suspected of having TB in this study was statistically insignificant – ascribable to the small sample size.

CONCLUSION: In this study, the volume of sputum collected did not determine a better AFB test yield in the diagnosis of pulmonary tuberculosis in patients suspected of having TB.

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