

Research Article

Usefulness of bronchoscopic aspirate in sputum negative acid fast bacilli cases in the diagnosis of tuberculosis- A study of 30 cases.

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Abstract: The confirming diagnosis for tuberculosis as recommended by World Health Organization is by detecting the Acid Fast Bacilli bacteriologically in the respiratory specimens. In certain cases, where there is a strong clinical and radiological suspicion for tuberculosis and with repeated sputum samples showing negativity for AFB, bronchoscopic study with bronchial washings for the detection of AFB increases the yield of true positive cases. The main is to ascertain the usefulness of bronchial wash AFB smears in sputum smear AFB negative cases with a strong clinical suspicion of tuberculosis. In this study, we selected 30 patients with a clinical suspicion of tuberculosis and 3 consecutive morning sputum samples was collected from each patient and stained with Zeihl Neelson stain for AFB detection. They were further subjected for bronchoscopic study with bronchial washing and AFB smears from such samples was analyzed. In results out of the total 30 cases, all the sputum samples were smear AFB negative. The bronchial washing AFB from the same set of cases showed positivity in 37% of cases. In conclusion thus, bronchoscopic examination with bronchial wash specimen is an essential requirement for respiratory work-up for early diagnosis of tuberculosis.

Keywords: Sputum, bronchial wash, AFB, tuberculosis

INTRODUCTION:

Tuberculosis is one of the most important health problems worldwide [1]. Many diagnostic methods have been developed ever since the discovery of Mycobacterium tuberculosis (MTB) by Robert Koch in March 24, 1882. Despite all that, the “gold standard” for the diagnosis of tuberculosis (TB) is still a bacteriologic confirmation by culture method and acid-fast Bacilli (AFB) smear microscopy [2] of sputum sample. To increase the diagnostic sensitivity for identification of M. tuberculosis, for sputum samples, international guidelines recommend obtaining at least two specimens from patients with suspected tuberculosis [3].

In suspected patients of Tuberculosis who do not produce sputum or who have a negative AFB smear from spontaneous sputum, gastric lavage specimens (particularly in children), induced sputum (IS) specimens or bronchial lavage (BL) specimens obtained using fiberoptic bronchoscopy may provide confirmation of the diagnosis [1]. Fiberoptic bronchoscopy offers a mean of investigation whereby bronchial secretion and washing can be collected from the most likely abnormal site under direct vision [4].

Early diagnosis of pulmonary tuberculosis prevents progression of disease, morbidity, spread of disease and permanent damage by fibrosis. Culture of sputum for acid fast bacilli (AFB) takes long time and a reliable serological test is not yet available. In such a situation, bronchoscopy has been tried for rapid diagnosis of tuberculosis in smear negative cases. Fibreoptic bronchoscopy with bronchial washing analysis for AFB including culture for Mycobacterium tuberculosis has a significant role to establish the diagnosis when extensive search for AFB in expectorated sputum has repeatedly failed, when sputum expectoration is absent or sputum induction has failed [5].

In our study, we aimed to prospectively assess the amplifying diagnostic yield of acid fast bacilli (AFB) smear of a bronchial wash sample over the yield of sputum sample smear in such patients.

MATERIAL AND METHODS:

In our present study, we selected a total of 30 cases. In all these cases, early morning sputum sample was collected for 3 consecutive days and observed for

acid fast bacilli (AFB). All these cases were found to be negative for AFB in all the sputum samples. Further, these cases underwent bronchoscopic study with bronchial wash and aspirate for detection of AFB.

RESULTS:

In the selected 30 cases, all the sputum samples were negative for AFB. The protocol for sputum collection is early morning sputum samples for 3 consecutive days. All the samples were stained with Zeihl Neelsen (ZN) stain for AFB detection.

All these sputum AFB negative cases (30) underwent bronchoscopic wash and aspirate. The

sample was processed the same day. Smears were made and stained with Hematoxylin and Eosin stain, Rapid pap stain, Leishman stain and Zeihl Neelsen stain.

All the ZN stained smears of bronchoscopic wash and aspirate were reviewed by two pathologists. On an average, 100 Oil immersion fields were observed for AFB. Acid Fast bacilli are rod shaped beaded bacilli, pink in colour, lying singly or in clusters.

Out of the 30 cases (bronchial wash samples), 11 cases showed positivity for acid fast bacilli. All these 30 cases are sputum AFB negative.

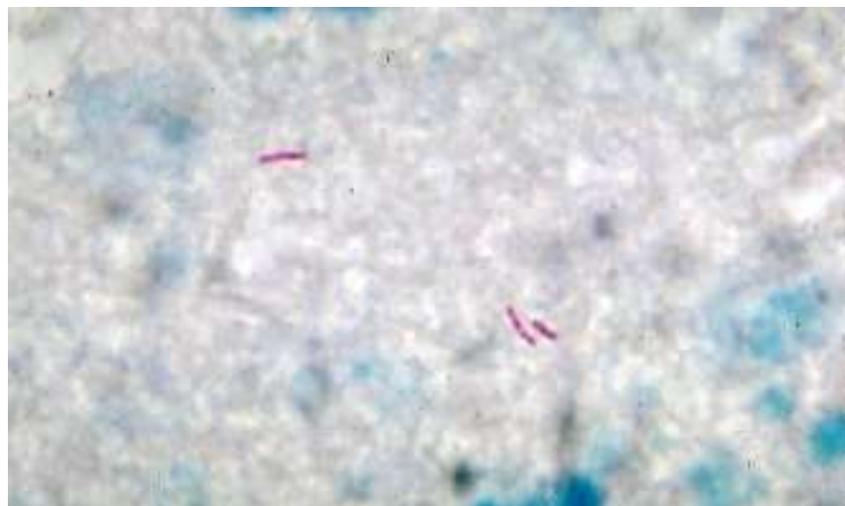
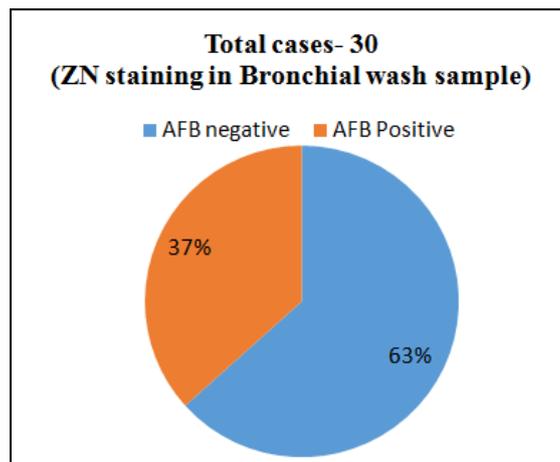


Fig 1: Ziehl Neelsen stain: OIF (Oil immersion field) showing beaded pink rod shaped bacilli in a necrotic background (Bronchial wash smear).

DISCUSSION:

In our present study, bronchial wash and aspirate smears for AFB increased the detection of AFB positive cases by 37% when compared to sputum AFB smears.

In suspected cases of pulmonary tuberculosis, detection of AFB in sputum/ bronchial wash sample helps in making a prompt and early diagnosis and for sooner treatment protocols. Although culture of the specimen for detection of M. Tuberculosis is diagnostic, demonstration of the organism by the same takes about 2-6 weeks. When sputum sample is not available,

bronchoscopic specimens can be obtained for diagnostic purpose.

Bronchoscopic study with bronchial wash cytology will be helpful in many cases where there is a diagnostic dilemma and in cases of tuberculosis with relapse. It is also helpful in identifying the multi drug resistant cases (MDR) of tuberculosis.

In our present study, it was seen that 11 out of the 30 cases showed bronchial wash positivity for AFB in comparison with the sputum AFB which was negative in all the 30 cases, the positivity increasing by 37% by bronchial wash. Yoo H *et al.*; [3] obtained a positive yield of 26% with the first bronchial washing. In a study by Bachh AA *et al.*; [5] bronchial washing smear for AFB and histopathological evidence of caseating granuloma made immediate diagnosis possible in 48.33% (29/60) of patients. Panda BN *et al.*; [6] showed that bronchoscopy provided diagnostic yield in 46% cases.

The diagnostic yield of bronchial washing samples is better than that of sputum samples, but they are complementary and should be included in the work-up in function of the epidemiological context, patient presentation and resources available [7].

Conclusion:

The study of bronchoscopy as well as the clinical correlation plays a very important role in arriving at a definitive diagnosis as well in early diagnosis of the multi drug resistant cases. So, in addition to conventional sputum AFB, it is better to advice for bronchoscopy study to have a clear picture of the disease and to increase the yield of true positive cases.

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