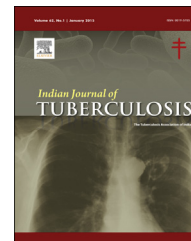


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Original Article

Role of bronchoscopy in evaluation of cases with sputum smear negative pulmonary tuberculosis, interstitial lung disease and lung malignancy: A retrospective study of 712 cases

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ABSTRACT

Background: The introduction of flexible bronchoscope has revolutionized the field of pulmonary medicine and is a standard instrument used for diagnostic purpose. A retrospective analysis of the clinico-radiological profile, indication, biopsy procedure and complications, for patients undergoing bronchoscopy at one of the respiratory unit at a tertiary care center in India.

Methods: Retrospective analysis of 712 bronchoscopies was done in regard to demographic profile, clinical and radiological presentation and diagnostic indication. The results were analyzed on basis of bronchoscopy inspection and histopathological specimen obtained from transbronchial (TBLB), endobronchial biopsy (EBLB) and cytology specimen by transbronchial needle aspiration (TBNA). Furthermore, diagnostic yield of each biopsy procedure and their combination was evaluated.

Results: Of 712 patients undergoing bronchoscopy, the pathological diagnosis was achieved in 384 (53.93%). Of 384 diagnosed cases, the clinic-radio-pathological diagnosis of pulmonary tuberculosis in 88 (22.19%), interstitial lung disease (ILDs) in 226 (58.85%), and lung cancer in 70 (18.22%) cases. Of 116 sputum smear negative tuberculosis patients, 88 (75.86%) were diagnosed to be pulmonary tuberculosis; the contribution of BAL being 71.59%. Of 226 ILDs, sarcoidosis was most common 148/226 (65.48%). Among 70 lung cancer diagnosed cases, squamous cell carcinoma was most common (54.28%).

Conclusion: The results from current study reemphasizes on the diagnostic utility as well as safety of the bronchoscopy procedure.

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1. Introduction

Bronchoscopy is the diagnostic inspection of the tracheo-bronchial tree. Gustav Killian performed the first bronchoscopy in 1897. In 1966, first flexible bronchoscope was introduced by Shigeto Ikeda.^{1,2} Since then, the flexible bronchoscope has revolutionized the field of bronchoscopy and became the standardized instrument for diagnosis by the pulmonologists. It is an important advancement in the field of respiratory medicine, particularly for the investigation of haemoptysis or radiological appearances, such as atelectasis or non-resolving opacities. It is an alternative method to aid in diagnosis of infection where non-invasive methods fail to cite the underlying etiology; especially in cases of pulmonary tuberculosis.³ Furthermore, fibreoptic bronchoscopy has become an important instrument for the pathological diagnosis of interstitial lung disease particularly sarcoidosis, and hypersensitivity pneumonitis.⁴ Bronchoscopy is an important tool in the diagnostic pathway and staging in patients of lung cancer.⁵

Thus, a retrospective study for analysis of data, with reference to clinico-radiological profile, indications, procedure performed and complications for diagnosis in patients undergoing bronchoscopy at one of the respiratory unit at Vallabhbai Patel Chest Institute, Delhi, India was done.

2. Materials and methods

712 bronchoscopies performed at one of the respiratory units at Vallabhbai Patel Chest Institute, Delhi, during 1999–2013 were retrospectively analyzed. The patients who were unable to complete the procedure and unavailability of case records were excluded from the analysis.

2.1. Methods

The instruments used were fibreoptic bronchoscopes; Olympus and Fujinon. The following accessories were used during the bronchoscopy, 1) forceps for endobronchial biopsy (EBLB) and transbronchial lung biopsy (TBLB) 2) transbronchial needle for aspiration (TBNA). After complete visualization of tracheobronchial tree, bronchoalveolar lavage and bronchial aspirate were obtained wherever indicated.

The patients work up for bronchoscopy included a prior detailed clinical history and evaluation. All patients underwent a battery of investigations which included complete haemogram, random blood sugar, kidney and liver function tests and coagulation profile. The sputum investigations for AFB, pyogenic, fungus and cytology were obtained. Also, the records of other serological investigations were reviewed. The radiological evaluation included a chest x-ray and computed tomography of chest.

The patients and the family members were explained the procedure in advance and a written informed consent were taken from the patient. Patients were kept on overnight fasting and a prior skin sensitivity test for lignocaine was performed on volar aspect of forearm.

The patients were nebulized with lignocaine/lignocaine spray 10 min before the bronchoscopy and absence of gag reflex was confirmed. Cardiac monitoring and pulse oximetry was done throughout the procedure. The transtracheal injection of 4% lignocaine was used for giving topical anaesthesia and 2% lignocaine solution was given during the bronchoscopy whenever required. The bronchoscope was introduced either transnasally or orally. Firstly, supraglottic airways were inspected for any abnormalities followed by vocal cord examination for defective movement or growth. The scope was then gently advanced carefully observing for any abnormalities of mucosa, growth, bleeding spots, luminal distortion and movement during respiration. Firstly the normal side of the lung was inspected, followed by the diseased side and the aspirate/biopsy were taken whenever indicated.

The steps for performing lung biopsies (TBLB, EBLB and TBNA) and bronchoscopic aspirate/lavage were followed as described in the literature.^{6–8} In cases with significant bleed following the biopsy procedure, wedging of the bronchoscope and instillation of the cold saline was done till bleeding ceases and thorough inspection of the bronchial tree was done before withdrawing the bronchoscope. The procedure was well tolerated by almost all the patients and they were explained about the possible episode of fever, hemoptysis or chest pain after the bronchoscopy. The patients were allowed to have oral feeding once the gag reflex reappears and were kept under observation for few hours and if there were no complications; discharged same day.

2.2. Statistical analysis

The data analysis was performed using SPSS statistical package version 14.0 for windows (SPSS, Chicago, IL, USA) for the purpose of percentage calculation.

3. Results

3.1. Patient demographics

A total of 712 patients underwent bronchoscopy, including 400 males and rest 312 females. The age ranged from 14 to 80 years, mean being 44.5 ± 13.6 years.

3.2. Clinical data

The decision to proceed to bronchoscopy was made on the basis of the clinical history along with physical examination and radiological interpretation.

3.3. Symptoms

The predominant symptom was cough (84.26%), followed by dyspnea (68.25%), hemoptysis (16.29%) and chest pain (8.12%). The patients also suffered from fever (8.97%), weight loss (6.51%) and hoarseness of voice (2.23%).

3.4. Radiological profile

The most common radiological presentation was of interstitial/diffuse shadows (33.00%), followed by lymphadenopathy

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