Original Research Article

A Study to Find the Diagnostic Yield of Fibreoptic Bronchoscopy in among the Suspected Lung Malignancy Individuals

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Abstract

Introduction: Fiberoptic bronchoscopy (FOB) stands as the primary approach for diagnosing and staging central lung cancer (LC), one of the leading causes of cancer deaths. A study was taken to find out the diagnostic accuracy of bronchial wash (BW), bronchial brush (BB) and endobronchial biopsy (EBB) in the suspected LC individuals.

Methods: It was a cross-sectional study conducted in the department of Respiratory Medicine, ASRAM Medical College, Eluru. Study was conducted from January 2017 to August 2018, approved by Institutional ethical committee. An informed written consent was taken from the participants. Individuals of both gender aged > 18 years with abnormal bronchoscopic and radiological evidence of lung were included. The blood parameters were analysed and processed for FOB if they are acceptable limits. BW, EBB and BB were collected and processed for the diagnosis of LC. Date was presented in mean and percentage.

Results: Total 44 (100%) members were included, male female ratio was 2.14. Cough (79%) was the leading symptom. FOB findings showed that majority (17; 38.66%) had endobronchial mass. The incidence of LC was 72.8% (32); in this adenocarcinoma was the leading (45.5%) followed by SCC, SCLC, 11.36% each, respectively. LC positivity was 100% with EBB, it was 21 (62.7%) with BB and 14 (44%) with BW.

Conclusion: FOB is an important modality to diagnose the etiological cause in patients with clinical suspicion of LC. This study confirms that the EBB gives better yield than BB and BW in visible endobronchial lesions in suspected cases of lung malignancy.

Keywords: Bronchoscopy, Lung, Cell, Carcinoma.

Introduction

Lung cancer (LC) holds the unfortunate distinction of being the primary cause of cancer-related fatalities in developed nations, and its prevalence is increasingly concerning in developing countries as well. [1] Lung neoplasms stand as the foremost contributors to both cancer occurrence and fatalities on a global scale; adenocarcinoma, squamous cell carcinoma (SCC), small cell carcinoma (SCLC), and large cell neuroendocrine carcinoma (LCNEC) represent prevalent types of LC. [2] By the year 2030, LC is anticipated to ascend to the sixth position among the leading causes of death, a change from its current ninth ranking. [3]

LC may present with notable symptoms such as intense shortness of breath, hemoptysis, stridor, one-sided wheezing, atelectasis, post-stenotic pneumonia, and severe respiratory failure. In certain instances, assisted mechanical ventilation may be necessary. Since the initial endeavors to screen LC in 2005, several studies have surfaced in Europe, on early detection through genetic methods. [4]. Fiberoptic bronchoscopy (FOB) stands as the primary approach for diagnosing and staging central LC. [3] It is also crucial for implementing therapeutic interventions aimed at restoring airway patency in individuals experiencing large airway obstruction and are unsuitable candidates for surgery. Presently, aside from adopting a healthy lifestyle, the establishment of national bronchology networks is imperative. These networks should ensure a uniform territorial distribution, enabling

access to specific diagnostic investigations for all symptomatic individuals and those at high risk of lung cancer. [5] A study was taken to find out the diagnostic accuracy of bronchial wash (BW), bronchial brush (BB) and endobronchial biopsy (EBB) in the suspected LC individuals.

Methods

It was a cross-sectional study conducted in the department of Respiratory Medicine, ASRAM Medical College, Eluru. Study was conducted from January 2017 to August 2018. Study protocol was approved by Institutional ethical committee. An informed written consent was taken from all the study participants. Individuals of both gender aged > 18 years with abnormal bronchoscopic and radiological evidence of lung were included. Those <18 years, non cooperative and confirmed pulmonary tuberculosis (PT) individuals were not considered in this research.

After recruiting the participant in the study, detailed clinical history was collected. All the findings were recorded in the study proforma. The study was clearly explained in the local language. The participants were allowed to ask doubts. After clarifying all the doubts beyond the knowledge attempted for blood sample collection and parameters were analysed as per the protocol. The blood parameters are in acceptable limits, then processed further. Then FOB was carried as per Chandra et al. report. [6] BW and EBB was collected and processed as per the guidelines. Simultaneously BB was also processed for the diagnosis of LC as per the Davidson KR et al. [7]

Statistical Analysis: The data were analysed using SPSS version 21. It was presented in mean and percentage. Chisqaure test was used for statistical analysis and P <0.05 were considered to be statistically significant.

Results

Total 44 (100%) members were included, 68.2% (30) were male members and the male female ratio was 2.14. Cough (79%) was the leading symptom followed by sputum production (68%). FOB findings showed that majority (17; 38.66%) had endobronchial mass followed by irregular mucosa with endoluminal narrowing (13; 29.54%) and ulcerative mucosa (7; 15.9%). Among the study members, the incidence of LC was 72.8% (32); in this adenocarcinoma was the leading (45.5%; 20) followed by SCC, SCLC, 11.36% (5) each, respectively. There was 2.27% (1) each incidence of papilloma, and lymphoma, respectively. Specimen wise, all (32; 100%) were LC positive with EBB whereas it was 21 (62.7%) with BB and 14 (44%) with BW.

Discussion

FOB stands as the primary tool in the diagnostic assessment of individuals with LC, serving a crucial role in diagnosis, staging, and treatment. Known for its relative ease of performance, the procedure is both safe and well-tolerated by patients. The flexibility of the device permits the examination of most fourth-order bronchi and frequently extends to the sixth bronchi. With a complication index of 0.12% and a mortality rate of 0.04%, FOB is deemed a secure procedure. [3, 8] For respiratory physicians, FOB is proved to be an essential tool in the diagnosis of smear negative PT. [9]

In this research, majority (68%) were in 41-60 years group and the mean age was 53.3 years. A research reported by Vipul Kumar et al. FOB was used to detect LC; out of the 45 study members, the mean was s 54.71 years. [10] Old age was reported to be one of the risk factors for LC. [11] The incidence of LC was more among the men. Similar view was also reported with a high LC incidence among the men. [12] In the last twenty years, there has been a significant shift in the gender distribution of diagnoses for this ailment, marked by a decline in incidence among men and a persistent rise among women in various regions across the globe. [13]

In this study, cough (79%) was the leading symptom followed by sputum production (68%). As per the available literature, Cough was reported to be the leading clinical presentation among the LC individuals and it was followed by sputum production and or haemoptysis. [14, 15]

Among the study members, the incidence of LC was 72.8% (32); in this adenocarcinoma was the leading (45.5%; 20) followed by SCC, SCLC, 11.36% (5) each, respectively. There was 2.27% (1) each incidence of papilloma, and lymphoma, respectively. In a study conducted by Agrawal et al., [16] individuals were examined to assess the effectiveness of bronchoalveolar lavage, BB cytology and BB for diagnosing LC. The prevalent FOB finding was identified as endobronchial growth, accounting for 70%. In a separate investigation by Roth et al. [17] involving 107 patients, the primary bronchoscopic observation was characterized by exophytic growth, constituting 71.96% of cases. Evapiya et al. [18] investigated the correlation between bronchial brushing cytology and BB for the diagnosis of LC in 53 patients; the predominant histopathological diagnosis was SCC at 64.2%, with adenocarcinoma following at 18.8%. Specimen wise, in this research LC positivity was 100% (32) with EBB whereas it was 21 (62.7%) with BB and 14 (44%) with BW. A meta-analysis incorporating 35 prospective studies and encompassing 4507 patients revealed that, the diagnostic yield was 47% for BW, 61% for BB and 74% for EBB.

FOB is an important modality to diagnose the etiological cause in patients with clinical suspicion of LC. This study confirms that the EBB gives better yield than BB and BW in visible endobronchial lesions in suspected cases of lung malignancy.

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