

Clinical and radiological profile of patients with endobronchial lesions

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Abstract:

Background: Variety of benign and malignant lesions of respiratory system presents as endobronchial lesions. Present study was carried out to study the spectrum of endobronchial lesions and role of flexible bronchoscopy in their diagnosis.

Methodology: Retrospective study of case-records of patients with endobronchial lesions diagnosed by flexible bronchoscopy, bronchial washings and bronchial biopsy between January 2016 and October 2017.

Results: Out of the 131 flexible bronchoscopies done during the study period, endobronchial lesions were evident in 32 patients (age range 10-85 years; 22 males). Twelve (37.5%) lesions were malignant; six (18.75%) lesions were benign, while 14 (43.75%) lesions were inconclusive.

Conclusions: Though malignant lesions are common, benign lesions remain important causes of endobronchial lesions. Bronchoscopy with adequate sampling is an essential diagnostic modality for confirming the diagnosis of such lesions.

Keywords: Bronchoscopy; Computed tomography; Endobronchial lesions.

Introduction:

Fiberoptic bronchoscope is a very important tool in diagnosis of respiratory diseases [1,2]. The diagnostic yield of the procedure is usually high if the lesions are visible inside the bronchus. The patients with endobronchial pathologies may or may not be diagnosed by radiology. So, a retrospective study was conducted to assess the clinical and radiological presentations of such patients at our tertiary care hospital.

The study was conducted to assess clinical and radiological profile of patients with endobronchial lesions. We studied to find the indications for performing fiberoptic bronchoscopy in patients with endobronchial lesions and to observe the clinical presentations of patients with endobronchial lesions. Besides, we also assessed the radiological pictures in patients with endobronchial lesions.

Materials and Methods:

A hospital based retrospective study was conducted in the Department of Respiratory Medicine, GSL Medical College, Rajahmundry, India. After getting ethical clearance, case sheets of all patients who underwent fibre optic bronchoscopy from January 2016 to October 2017 were studied. Out of 131 bronchoscopies, only case sheets of patients whose bronchoscopy report revealed endobronchial lesions were taken for the study.

Results:

Age and sex Distribution: Of the 32 patients 22 (68.75%) were males and 10 (31.25%) were females. The age group among the patients studied varied from

10 to 85 with mean age of 48.43 with a standard deviation of 17.86 and most of them falling into the advanced age group of more than 50 years.

Symptomatology: Among the 32 patients included in the study, cough is the most common symptom occurring in 26 patients (81.25%), shortness of breath, sputum production, chest pain and fever were seen in decreasing frequency in that order in 18 (56.25%), 16 (50%), 15 (46.87%) respectively and hemoptysis occurred in 9 patients (28.12%).

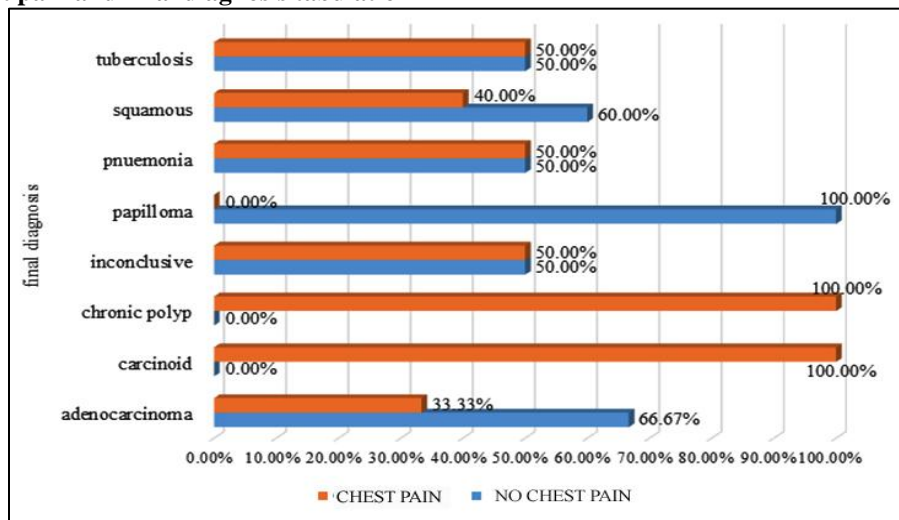
Table 1: Symptomatology:

S.No	Symptom	Number	Percent
1	Cough	26	81.25
2	Breathlessness	18	56.25
3	Sputum	16	50
4	Chest pain	15	46.87
5	Fever	11	34.37
6	Haemoptysis	9	28.12

Table 1 Multiple symptoms simultaneously occurred in more than half of the patients.

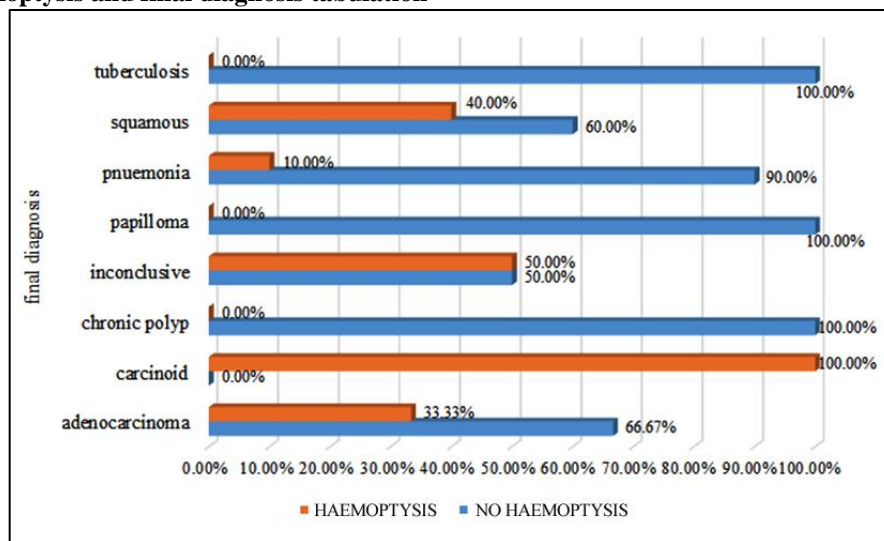
Chest pain and final diagnosis: With p value of 0.807, Chest pain is present in both malignant 5 cases (33.3%) and the benign lesions 7 cases (46.7%). Graph 1.

Graph 1: Chest pain and final diagnosis tabulation



Hemoptysis and final diagnosis: With a p value of 0.370, Hemoptysis is most common in the malignant lesions 5 cases (55.5%), than in the benign lesions (11.1%). Graph 2

Graph 2: Haemoptysis and final diagnosis tabulation



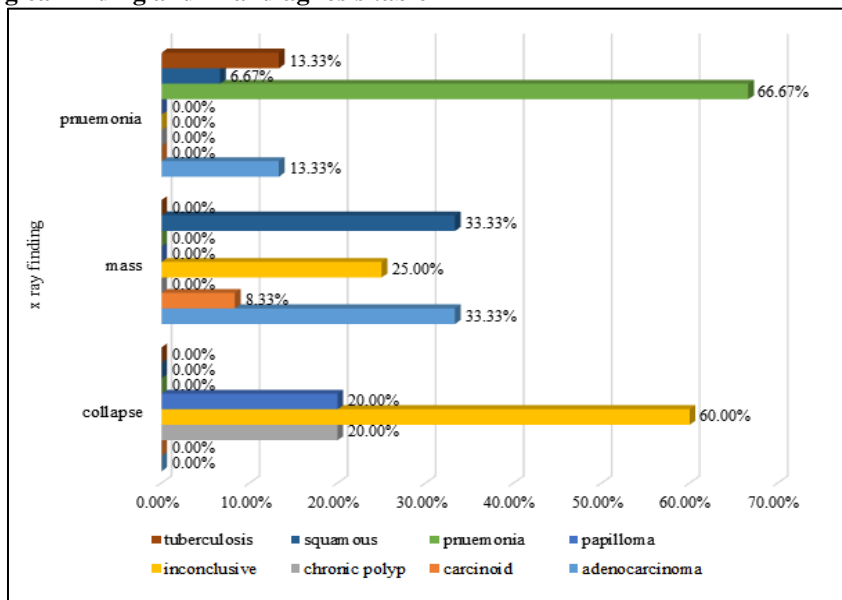
Radiological findings: Analysis of radiological findings among the 32 patients studied showed that pneumonia or unresolved pneumonia was the most common finding occurring in 15 (46.8%) patients followed by mass lesion in 12 (37.5%) patients, lobar collapse was seen in 5 (15.6%) patients. Table 2

Table 2: Radiological findings:

S.No	Radiological findings	Total	Percentage
1	Pnuemonia/ Unresolved pnuemonia	15	46.8
2	Mass	12	37.5
3	Collapse	5	15.6

Radiological and final diagnosis: 15 cases were diagnosed as pneumonia on radiological basis, and bronchoscopy in those cases revealed – adenocarcinoma in 2, tuberculosis in 2, squamous in 1 and pneumonia in 10 cases. 12 cases were diagnosed as mass lesions on radiological basis and bronchoscopy in those cases revealed – adenocarcinoma in 4, carcinoid in 1, squamous in 4, inconclusive in 3 cases. 5 cases were diagnosed as lobar collapse on radiological basis and bronchoscopy revealed chronic inflammatory polyp in 1, squamous cell papilloma in 1 and inconclusive in 3 cases. Graph 3

Graph 3: Radiological finding and final diagnosis table



Bronchoscopy findings: Bronchoscopic examination showed endobronchial growth was the most common finding in 13 patients (40%) Fig. 1, followed by inflammatory changes of the endobronchial lumen occurred in 11 patients (35%), and structural

changes such as fibrosis; atrophic mucosa, bronchostenosis and distorted anatomy were seen in 8 patients (25%).

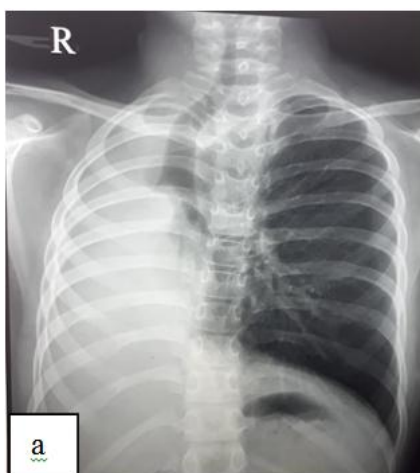


Fig. 1a: Chest X-ray PA view showing collapse of right lung

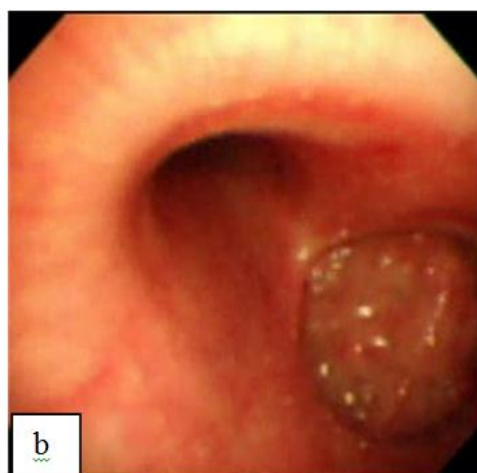


Fig. 1b: Bronchoscopy revealed mass in right main bronchus

Procedure and results: Forceps biopsy and bronchial washings were the procedures done. Almost all procedures were diagnostic. Bronchial washings were done in 30 patients with a positive yield in 6 (20%) of them. Of the 17 patients in whom endobronchial biopsy was done, 15 (88.23%) turned out to have positive yield. Bronchial brushings showed positive yield in 2 out of 7 cases. Table 3

Table 3: Procedure and Results:

Procedure	Positive/Total	Percent
Bronchial washings	6/30	20
Biopsy	15/17	88.23
Brushings	2/ 7	28
Malignancy ¹⁰	12/32	37.5

Histopathology and cytology: Among the 32 patients, who undergone bronchoscopy, most common cell type is adenocarcinoma occurring in about 6 (18.75 %) of patients. Squamous cell carcinoma occurring in 5

(15.6%) of patients and nonspecific inflammation in 2 (6.2%), carcinoid in 1 patient (3.1%), Tuberculous caseating granulomatous lesion in 1 patient [2], chronic

inflammatory polyp in 1 patient, squamous cell papilloma in 1 patient. Table 4

Table 4: Histopathology and cytology:

S.No	Cell type	Number	Percent
	Malignant lesions	12	
1	Squamous cell carcinoma	5	15.6
2	Adenocarcinoma	6	18.75
3	Carcinoid	1	3.1
	Benign lesions	20	
4	Tuberculosis	2	6.2
5	Chronic inflammatory polyp	1	3.1
6	Squamous cell papilloma	1	3.1
7	Nonspecific inflammation	2	6.2
8	Inconclusive	14	43.75

Discussion:

Flexible bronchoscopy (FOB) is an indispensable diagnostic tool to aid in the diagnosis of various lung lesions. While most endobronchial mass lesions are malignant, some benign lesions can also present as endobronchial mass. 37.5% of the cases in our study were confirmed carcinomas on histopathology. Adenocarcinoma was found to be the most common type of lung cancer in the present study. These results are similar to the findings of the more recently published studies which suggest that adenocarcinoma is the most prevalent lung cancer in India [3,4]. Some of the endobronchial mass lesions were caused by benign conditions (18.75%). These findings emphasize the fact that all endobronchial lesions are not malignant. Out of these benign lesions, tuberculosis was found to be the most common. This reflects the endemic nature of the disease in the region.

Mak et al., have done a retrospective study to evaluate the diagnostic yield of lung cancer by FOB [5]. In the group with endoscopically visible tumors, biopsy gave a positive result in 76%, washings in 49.6%, brushing in 52%. Lam et al., reported the diagnostic yield of BAL, brushings and biopsy of 76, 74 & 82% in endobronchial lesions [6]. The diagnostic yield of bronchoscopic biopsy was found to be 56.25 % which is similar to the findings of Fuladi et al., who recommended adopting all the diagnostic procedures including brushing and washing, in addition to biopsy [7], in order to increase the diagnostic yield. Similar results were obtained by Dobler et al., who concluded that addition of bronchial brushing and washing significantly increased the diagnostic yield when compared to biopsy alone [1].

Benign lesions can mimic malignant lesions on visual impression, and thus, adequate sampling is a must. However, good histopathology and microbiology laboratories should support bronchoscopy for obtaining high yield. Computed tomography or virtual bronchoscopy can also diagnose endobronchial lesions

with good morphological correlation between CT and bronchoscopic findings. These modalities are non-invasive but do not permit obtaining samples for diagnostic testing and cannot distinguish benign lesions from malignant lesions. Also, CT scan can at times fail to detect endobronchial tumors which later during bronchoscopy may be detected [8-10].

Conclusions:

FOB was extremely useful in the diagnosis of endobronchial lesions, with an overall positive diagnosis following FOB in more than half of the patients (56.25%), biopsy being the most yielding procedure with an overall yield of 88.23%. Among endobronchially visible lesions, most common lesions were malignant 37.5%, in which adenocarcinoma is the most common cell type 18.75%.

Conflicts of Interest: None declared

Acknowledgements: Nil

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