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Profile of endobronchial mass lesions diagnosed by bronchoscopic biopsy: A series of 81 cases

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Abstract
Endobronchial mass lesions detected on bronchoscopy can be either benign or malignant. The present study was carried out to assess the profile of endobronchial mass lesions diagnosed by bronchoscopic biopsy. Patients with endobronchial mass lesions diagnosed by bronchoscopic biopsy between June 2014 to December 2015 were included in the study. Out of the 800 flexible bronchoscopies performed during the study period, endobronchial mass lesions were visualised in 81 cases (10.1%). Age ranged from 25 to 86 years with 50 males and 31 females. 67 (83%) lesions were malignant, 8 (10%) lesions were benign while reports of 6 (7%) lesions were inconclusive. Among the malignant lesions, squamous cell carcinoma (76.1%) was reported to be the most common histopathological type. Bronchoscopy with adequate sampling remains the most efficacious diagnostic modality for diagnosing endobronchial mass lesions.

Keywords: Bronchoscopy, endobronchial mass, bronchoscopic biopsy

1. Introduction
Flexible bronchoscopy plays a central role in the diagnosis of lung malignancy, especially in endobronchial tumours. It allows the sampling of cytological specimens as well as biopsies for histological diagnosis [1]. Prior to the introduction of the fiberoptic bronchoscope, the collection of cytologic specimens directly from the lesion was difficult in many cases. With the advent of the fiberoptic bronchoscope, a biopsy of the lesion by forceps or brushing under direct vision or by fluoroscopic control is possible in the majority of suspected bronchogenic carcinomas [2].

Pulmonologist come across significant number of intrabronchial mass lesions on bronchoscopy. Clinical and radiological features of these lesions may not discriminate between different aetiologies, and sampling is required to distinguish benign from malignant lesions [3]. In addition to visualization of the endobronchial tree, biopsy material obtained through the fiberoptic bronchoscope also provide valuable cytopathologic, bacteriologic and immunologic information. Some of the advantages over rigid bronchoscopy include increased visual range, minimal discomfort to the patient, biopsy of previously inaccessible tumors, and the detection of early lung cancer [4].

The present study was undertaken to assess the profile of endobronchial mass lesions diagnosed by bronchoscopic biopsy.

2. Materials and methods
The present study was a cross sectional study, conducted in the Department of Respiratory Medicine, Regional Institute of Medical Sciences (RIMS), Imphal, after getting the approval of the Institutional Ethics Committee. The study was carried out between June 2014 and December 2015. 81 consecutive patients who presented with radiological evidence of lung mass and endobronchial lesions were included in the study. Uncooperative patients, patients with recent myocardial infarction and blood dyscrasias were excluded from the study. All flexible bronchoscopies were carried out or supervised by the same bronchoscopist using the Olympus BF-1T150 fiberoptic bronchoscope. The patients were made to stay nil per orally for at least 6 hours before the procedure. Written informed consent was obtained from each patient. Topical anaesthesia was achieved with 10% lignocaine spray to the oropharynx and 2% lignocaine solution infused through the scope during the procedure. Once the endobronchial lesion was localised, biopsy was taken using the reusable round cup biopsy forceps FB-20C-1. Whenever possible, at least four biopsies were obtained from the centre of the most abnormal area and the specimens were immediately fixed in formalin and sent for histopathological examination. All patients received supplemental oxygen and were monitored throughout the procedure.

3. Results
During the study period, eight hundred bronchoscopies were performed, out of which 81 (10.1%) patients had visible endobronchial mass lesions.

Table 1: Gender wise distribution of the cases

Gender	No.	%
Male	50	62.5
Female	31	38.3

Table 1 shows the distribution of the cases according to gender. 50 (62.5%) were males and 31 (38.3%) females.

The age of the patients ranged from 25 to 86 years (mean age = 64.35 years). Majority of the patients were in the age group of 71 to 80 years (Figure1).

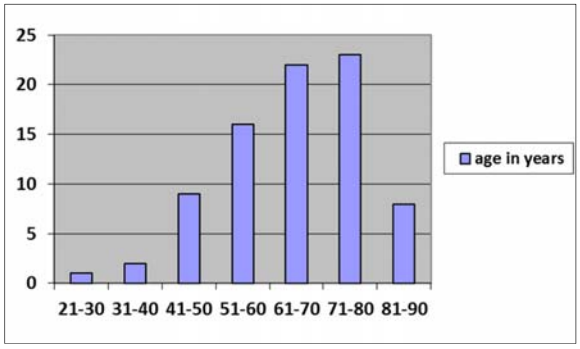

Fig 1: Age wise distribution of the cases

Out of the total 81 cases, 67 (83%) of them turned out to be malignant lesions. 10% of the lesions were benign. No conclusive diagnosis could be made in 6 cases (Figure 2) Squamous cell carcinoma was the most common histological type accounting for 76.1% of all the malignant lesions.

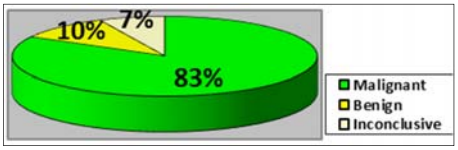

Fig 2: Distribution of endobronchial lesions diagnosed by bronchoscopic biopsy

Figure 3 shows the different types of malignant lesions diagnosed by bronchoscopic biopsy. Out of 67 confirmed malignancies, squamous cell carcinoma was found to be the most common histological variant accounting for 76.1% (n=51). Small cell carcinoma were found in 8 (11.9%) cases, adenocarcinoma in 7 (10.4%) cases and adenosquamous in 1 (1.9%) case.

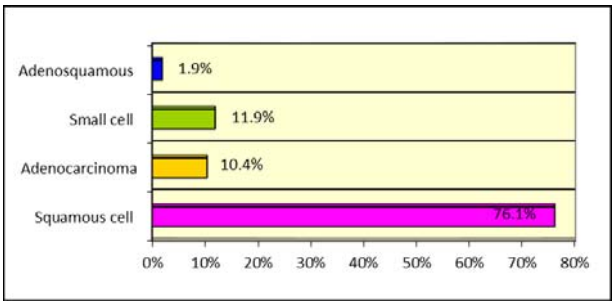

Fig 3: Distribution if types of malignant lesions diagnosed by bronchoscopic biopsy (n=67)

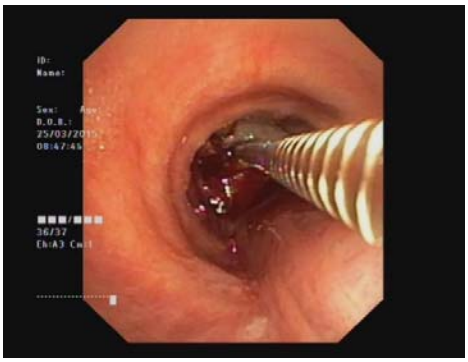

Fig 3.1 (a)

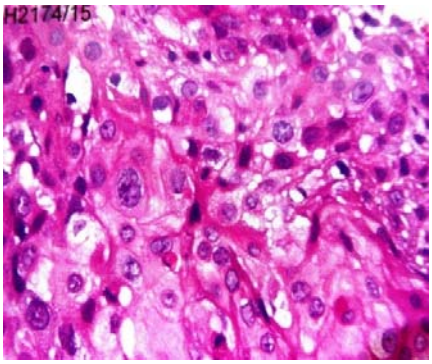

Fig 3.1 (b)

Fig 3.1: (a) Biopsy being taken from an endobronchial mass in the right main bronchus (b) HPE showing features of squamous cell carcinoma

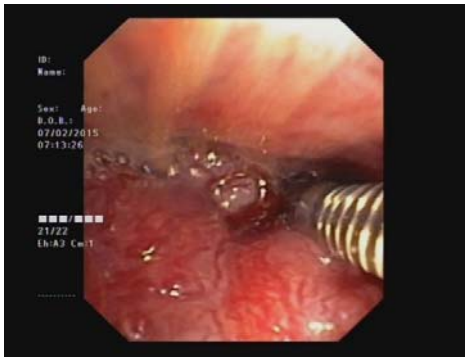

Fig 3.2(a)

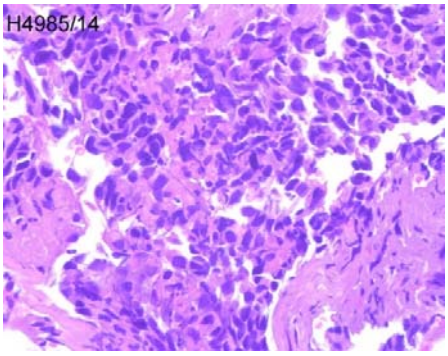

Fig 3.2(b)

Fig 3.2: (a) Biopsy from an endobronchial mass obstructing the left main bronchus. (b) HPE: Adenocarcinoma

Fig 3.3 (a)

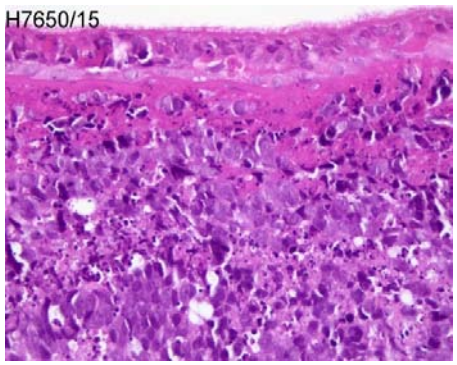

Fig 3.3 (b)

Fig 3.3: (a) Endobronchial mass in the right lower lobe (b): HPE: Small cell carcinoma

Majority (87.5%; n= 7) of the benign lesions turned out to be tuberculosis. 1 (12.5%) case was due to Aspergillus (Figure 4)

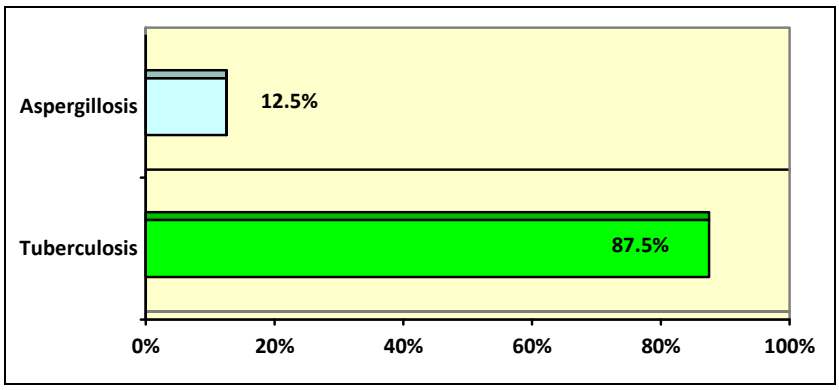

Fig 4: Distribution of types of malignant lesions diagnosed by bronchoscopic biopsy (n=8)

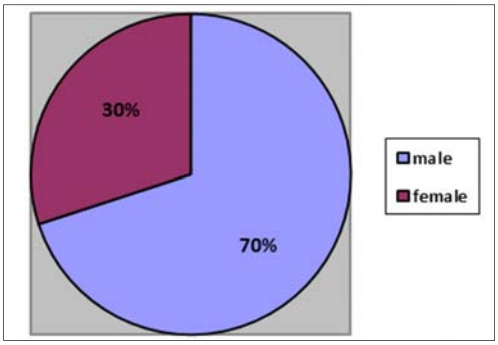

Fig 5: Distribution of malignant lesions according to gender

Table 2 shows the distribution of malignant lesions according to gender. Malignant lesions were found more common among males (70%; n=40) when compared to females (30%; n=17).
There were 6 (7%) cases where a definite diagnosis was not made. These inconclusive results were due inadequate or sub optimal biopsy sample, presence of necrotic material, nonspecific findings or normal bronchial mucosa on histopathology. Of the 81 cases with endobronchial lesions, diagnosis was made in 75 of them. This gives a diagnostic yield of 92.5%.

4. Discussion

Flexible bronchoscopy 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. 83 % of the cases in our study were confirmed carcinomas on histopathology but 10% of the cases were benign lesions. Malignant lesions were more common among males when compared to females.
Squamous cell carcinoma was found to be the most common type of lung cancer in the present study. This results are contrary to the findings of the more recently published studies which suggest that adenocarcinoma is the most prevalent lung cancer in India [5, 6]. The reason for this could be due to the central location of these tumors which are easier to assess by bronchoscopy when compared to adenocarcinomas which have a predominantly peripheral location which makes them nonvisible endoscopically. However similar findings of squamous cell carcinoma as the predominant type were reported in certain studies [3, 7, 8].

Some of the endobronchial mass lesions were caused by benign conditions (10%). These findings emphasizes 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. Definite diagnosis could not be made in 6 patients. 4 of these patients were lost to follow up, the other 2 did not give consent for a repeat biopsy.

The diagnostic yield of bronchoscopic biopsy was found to be 92.5 % which is similar to the findings of Gupta S *et al* [3] where the diagnostic yield was 92%. This is also in accordance with the guidelines laid down by the American Thoracic Society / European Respiratory Society (ATS/ERS) according to which diagnostic yield of bronchoscopy should be more than 90% [9]. The diagnostic yield was reported to be much lower (76.92%) in the study done by Fuladi *et al* [10], who recommends adopting all the diagnostic procedures including brushing and washing, in addition to biopsy, in order to increase the diagnostic yield. Similar results were obtained by Dobler *et al* [1] who concluded that addition of bronchial brushing and washing significantly increased the diagnostic yield when compared to biopsy alone. Likewise, certain studies also found that bronchial wash conferred an additional yield [11, 12]. However, certain other studies did not find any improvement in the diagnostic yield with addition of brushing and washing [13, 14]. So, they recommended omission of washing in cases of bronchoscopically visible lesions and found cytological methods unlikely to produce any additional benefit in terms of diagnosis.

Although computed tomography and virtual bronchoscopy are non-invasive modalities to diagnose intrabronchial lesions with good correlation between the CT and bronchoscopic findings, bronchoscopy is needed to obtain samples for tissue diagnosis. Also, CT scan can at times fail to detect endobronchial tumours [15] which later during bronchoscopy may be detected.

5. Conclusion

Despite the advent of bronchoscopy decades ago, it is not widely used in the diagnosis and evaluation of various pulmonary pathologies in Manipur, North East India, until recently. Although endobronchial lesions are mostly malignant, benign conditions can also mimic such lesions. Bronchoscopic biopsy is an essential tool for diagnosing visible endobronchial lesions with a high diagnostic yield.

6. References

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