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EFFICACY OF BRONCHOSCOPY AND BAL AND ITS CORRELATION WITH BIOPSY IN CARCINOMA LUNG

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ABSTRACT

Back ground: Statistically lung cancer is considered to be the commonest cause of cancer related deaths worldwide. So an early detection of the cancer and its management hold the key to prevent mortality. Bronchoscopic findings of an endobronchial mass complemented with broncho alveolar lavage can give an early diagnosis.

Aim : The aim of the study was to compare the diagnostic efficacy of bronchoscopy with BAL in the diagnosis of lung cancer, taking biopsy as a"gold standard"test.

Materials and Methods: Prospective study of - 36cases
From January 2016 – june 2016
Age group between - 27 to 85 years
All the suspected cases underwent bronchoscopy and bronchoalveolar lavage with subsequent biopsy. Cytological and biopsy specimens were fixed in isopropyl alcohol and formalin respectively and stained with haematoxin and eosin stains.

KEYWORDS : Bronchoscopy, incidence, cytology

INTRODUCTION:

Lung cancer is currently the most frequently diagnosed and the common cause of cancer related mortality worldwide. The increasing incidence could be due to increase in smoking, change in life style, increased environmental pollution and also the availability of different modern diagnostic modalities to detect lung cancer.

The time a patient presents to the clinicians the condition has already advanced and hardly around 25-30% of these patients can be offered a curative treatment. [1-3]There has been a lot of interest in the methods to diagnose lung cancer at the earliest. Some of the diagnostic modalities include: radiology, bronchoscopy, bronchial biopsy, brushing and bronchial lavage cytology. Each of the above tests have their own advantages and disadvantages with varying sensitivity and specificity. Due to this reason combining the diagnostic techniques can give a better yield.[4-5]

The role of convential fibreoptic bronchoscopy in the diagnosis and management of lung cancer has been well established over the past. Bronchoscopy allows in visualizing early changes of lung cancer and also permits in sampling for histological staging. In case of patients with risk of hemorrhage a bronchial biopsy cannot be performed, there by an alternative method of diagnosis has to be looked for. A bronchial lavage or brush cytology is always a safer method and can complement a biopsy, but there is always a disagreement regarding the reliability of these techniques. [7,8]

MATERIALS AND METHODS:

A prospective study of 36 patients was done from January 2016 to June 2016 in the department of CTVS together with the department of pathology at Father Muller's Medical College& Hospital, Mangalore. Flexible endoscoscopy was done on patients who were suspicious to have a lung mass radiologicaly and who had signs and symptoms.

An olumpus fiber optic bronchoscope was used and a local anesthetic agent was used before the procedure. All the lobes were visualized and bronchial wash was taken from all the patients who underwent the procedure. While biopsy was taken from suspicious lesions in the bronchial tree.

The bronchial wash material was obtained from the bronchial tree by instilling 30 to 50 ml of isotonic saline and re-aspirating it. All the samples were preserved in 50% ethyl alcohol. The specimens were centrifuged for five minutes at a rate of 1500 revolutions per minute. Slides were prepared from cell concentrate and stained with H&E stain.

RESULTS:

Samples from 36 patients were evaluated with a male to female ratio of 3.5:1. The ageof presentation was 27 to 85 years.

In bronchoscopy – 24 patients were considered to be suspicious of malignancy which was seen as either as an endobronchial infiltration or as a mucosal infiltration. Out of these 24 suspicious cases, 22 of them were proved to be malignant on histopathology (true positives). Two of the 24 cases were negative for malignancy (false positive).

Cytological examination revealed 18 cases to have evidence of malignancy out of which 15 were proven to be malignant (true positive) and 3 cases to be negative for malignancy or to be a benign condition (false positive). Cytological typing of the tumor showed 9 cases to be squamous cell carcinoma, 3 cases as adenocarcinoma, and 6 cases to have atypical cells.

By combining both bronchoscopic findings and the BAL the efficacy in diagnosis a case of carcinoma lung was checked. Here if any of the two investigations were found to be positive then the combined result is also considered to be positive. By doing so 25 patients of the 36 were suspicious of malignancy by either of the two methods. In the 25 patients 23 were proven to be malignant (true positive). 2 of the 25 were negative for any malignancy (false positive).

In this study we could get a sensitivity of 88% and 65.22% in bronchoscopy and BAL respectively but a 95.3% sensitivity when combining these two. Also the specificity by combining the two was around 83.33%, when individually it was 81.82% for bronchoscopy and 76.92% for BAL. The combined results also gave a positive predictive value of 92% and a negative predictive value of 90.91%.

COMPARISON BETWEEN BRONCHOSCOPY , BRONCHIAL LAVAGE AND COMBINED RESULTS

	BRONCHOSCOPY	BRONCHIAL LAVAGE	COMBINED
SENSITIVITY	88.0%	65.22%	95.3%
SPECIFICITY	81.82%	76.92%	83.33%
POSITIVE PREDICTIVE VALUE	91.67%	83.33%	92.00%

NEGATIVE PREDICTIVE VALUE	75.00%	55.56%	90.91%

DISCUSSION:

In our study we had 36 patients who were in the age group of 27-85, with a male to female ration of 3.5:1 which was similar to study done by Barry M et al.[9] keeping biopsy HPE as gold standard we wanted to see how effectively we could diagnose a case of lung cancer by bronchoscopic findings and BAL cytology.

In bronchoscopy – 24 patients were considered to be suspicious of malignancy which was seen as either as an endobronchial infiltration or as a mucosal infiltration. Out of these 24 suspicious cases, 22 of them were proved to be malignant on histopathology (true positives) which was 91%. 2 of the 24 cases were negative for malignancy (false positive). In other studies 37 ie: 72.5% of 51 patients were only found to have a bronchoscopically visible lesion.[9] Similar true positivity of 79.7% was seen in a study done by Rabahi MF et al.[10] In our study using only bronchoscopic findings we had a sensitivity of 88%, specificity of 81.82%, PPV of 91.6%, NPV of 75%.

Cytological examination revealed 18 cases to have evidence of malignancy out of which 15 were proven to be malignant (true positive) and 3 cases to be negative for malignancy or to be a benign condition (false positive). In a study done by Pradeep Kumar L et al, out of 33 cases 23 patients were true positives giving a sensitivity of 68.6% similar to our study which was 65.2%.[11]Thuladar A et al also gave a sensitivity of 66.7%, which was in comparable with our study.[12] Cytological typing of the tumor showed 9 cases to be squamous cell carcinoma, 3 cases as adenocarcinoma, and 6 cases to have atypical cells. There for we got a specificity of 76.9%, PPV of 83.3% and NPV of 55.6% by using only BAL.

By combining both bronchoscopic findings and the BAL the efficacy in diagnosis a case of carcinoma lung was checked. Here if any of the two investigations were found to be positive then the combined result is also considered to be positive. By doing so we could get a sensitivity of 95.3%, specificity of 83.3%, and also a better positive predictive value of 92% and a negative predictive value of 90.91%.

CONCLUSION:

Thus we can say that combining 2 modalities of investigation like bronchoscopy and BAL we can diagnose a case of carcinoma lung much effectively than using individual modalities, there by increasing the sensitivity and specificity.

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