

# Diagnostic utility of percutaneous lung FNAC in detection of lung cancer

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## Abstract

**Background:** Lung cancer is the most commonly diagnosed malignancy across the globe, especially in males. fine needle aspiration cytology (FNAC) and Biopsy are simple methods to diagnose lung cancer in a vast majority of patients, especially in peripherally situated lesions. **Aim and objective:** To study the diagnostic utility of percutaneous lung FNAC in detection of lung cancer **Methodology:** All primary lung were cancer patients. After collecting required history and clinical examination patient underwent special investigations. Percutaneous lung FNAC was done in 17 patients.

**Results and Discussion:** Percutaneous lung FNAC was positive in 91.66% of cases. It was similar to other studies. **Conclusion:** Percutaneous lung FNAC has higher diagnostic yield in lung cancer.

**Key Words:** FNAC, lung cancer.

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simple, relatively safe, rapid, reliable technique for the diagnosis of pulmonary mass lesions. Fine needle cytology is a well-established method of diagnosing neoplastic as well as inflammatory conditions of the lung. It has resulted in decrease need of other procedures that are generally more invasive for diagnosis.

## MATERIAL AND METHODS

This study was carried out in 58 indoor patients, who were having high index of clinical, radiological suspicion of carcinoma of lung during the period Janury 2000 to March 2002, at tertiary care hospital. Data collection was done with pretested questionnaire . it includes history of patient, sociodemographic data. Routine investigations were carried out in all patients. 22 patients, had palpable lymphnodes. Out of which 17 patients undergone FNAC procedure, In remaining 5 patients procedure could not be performed as the size of L.N. were too small to do the procedure.

### Fine needle aspiration cytology (FNAC).

**Localisation of lesion:** It was done by plain X-ray chest postero-anterior view and lateral view/Under ultra sonography. And by C.T.Scan in two cases.

## INTRODUCTION

Lung cancer is one of the most common cancers and one of the important causes of cancer related deaths all over the world. This high risk of mortality makes early diagnosis and treatment essential for survival.<sup>1,2</sup> FNAC not only distinguishes between benign and malignant lesions but also helps in tumor typing of lung cancer, so initiation of specific therapy like chemotherapy or surgery is possible without unnecessary delay. FNAC was first used by Martin and Ellis<sup>3</sup> as a diagnostic tool. Leyden in 1883 and Menbriel in 1986 introduced the technique as diagnostic lung puncture for detection of malignancy and infections<sup>4</sup> Fine-needle aspiration cytology (FNAC) is a

**Technique:** 0.6 mg. atropine was given half an hour before the procedure. Patient was positioned as per localisation of the lesion by X-ray and ultra sonography. 21-23 gauge needle was attached to a 20 cc syringe containing 5 ml of sterile 0.9% saline. The needle was advanced under ultra sonography guidance until firm resistance was experienced and needle is visualized on the USG screen. The tip of the needle was confirmed to be within the lesion on USG screen with the movement of needle. Suction was applied by pulling back on the plunger of the syringe. Simultaneously the needle was rotated and moved a short distance back and forth, there upon the plunger was released and the biopsy needle with syringe attached to it was removed from the chest. Slides were prepared from the aspirate material and fixed in 95% alcohol and sent to histopathological study. X-ray chest was done after few hours. Patients were monitored for haemoptysis, breathlessness and vital signs.

#### **Percutaneous lymphnode FNAC**

This was done by using 21-23 gauge needle. The needle was advanced into the lymph node until firm resistance was experienced, if the lesion is solid. Suction was applied by pulling back on the plunger of the syringe. Simultaneously the needle was rotated and moved a short distance back and forth, there upon the plunger was released and the needle with syringe attached to it was removed from the lymph node. Slides were prepared from the aspirate material and fixed in 95% alcohol and sent to pathology for histopathological study.

## **RESULTS**

**Table 1:** Distribution of patients according to duration of illness

Duration in months	No. of patients	Percentage
< 1 month	32	55.17%
1 - 2 months	8	13.79%
2 - 3 months	12	20.68%
3 - 4 months	6	10.34%
4 - 5 months	--	--
5 - 6 months	--	--
7 months	--	--

**Table 2:** Results of lymph node biopsy and lymph node FNAC

Sr no	Name of diagnostic procedure	No. of patients undergone procedure	Total No. of Positive cases	Percentage
1	FNAC (mass lesion)	36	33	91.66 %
2	Lymph node biopsy	5	2	40.00 %
3	L. N. FNAC	17	13	76.47 %

Incidence of lung carcinoma was found to be most common in the 6th decade. Male incidence was more than female 2.86:1. Male urban to rural ratio was 1:2.8 while

female urban to rural ratio was 1:6.5. Pleural effusion (46.55%), liver involvement (17.24%), vocal cord palsy (8.62%), Phrenic nerve involvement (3.44%) and CNS involvement (3.44%) were common metastatic manifestations. Most of the patients (55.17%) had duration of disease less than 1 month, and 31.02% cases had more than 2 months duration. Out of 58 cases, General practitioner referred 26 patients between 1-4 months of duration after the onset of symptoms. Amongst them 13 (22.41%) patients had received anti tuberculous treatment and were treated empirically as pulmonary tuberculosis. Average time of reaching the diagnosis after the onset of symptoms was 2-3 months. It was observed that 22 patients, had palpable lymphnodes. Out of which 17 patients undergone FNAC procedure and positive results for malignant cells were seen in 13 patients (positivity 76.47%). In remaining 5 patients procedure could not be performed as the size of L.N. were too small to do the procedure, so L.N. Biopsy were done in 5 patients which showed positivity in only two cases (40%). Percutaneous lung FNAC was positive in 91.66% of cases. L.N.FNAC was significant and showed 76.47% positive result. While biopsy showed 40.00% positivity. Haemoptysis, pneumothorax, hydropneumothorax and pneumothorax were common complications. All the complications were mild and the patients settled with conservative management. One case required intercostal tube drainage for large hydropneumothorax, developed after pleural biopsy.

## **DISCUSSION**

In all the cases included in the present study, the duration of disease was estimated by the time interval between onset of first symptoms and admission to the hospital. Maximum No. of cases (55.17%) had less than one month of their symptoms. General practitioner referred 18 cases between 2-4 months for further investigations. Thirty two patients were diagnosed in less than one month at the specialist level. Amongst 58 patients, 50 (86.20%) were diagnosed within 2-3 months of their symptoms and 54 (93.10%) were diagnosed within 6 months of their symptoms. Remaining 4 patients took more than 6 months for their diagnosis. Amongst the 58 patients, 13 patients were receiving antitubercular chemotherapy on the basis of radiological lesion for a variable periods of 1-6 months. Average time in reaching a diagnosis in Buchsery et al (1975)<sup>18</sup> was 1-5 month and in Oschner et al (1956)<sup>79</sup> it was 12-30 month. Percutaneous lung FNAC showed a diagnostic yield of 91.66% out of the total number of patients in whom the procedure was carried out.

**Table 3:** Diagnostic yield in various studies of FNAC lungs are

Author	Yield
1. I. Rubin (1977) <sup>(47)</sup>	90%
2. Murey and Nade <sup>(73)</sup>	83-85%
3. Schenk D.A. et al (1991) <sup>(108)</sup>	69%
4. Peter F. Fedullo (1991) <sup>(93)</sup>	90%
5. J.C.Suri et al (1991) <sup>(56)</sup>	93.2%
6. P. N. Chhajed et al (1999) <sup>(83)</sup>	52.9%
7. B.K.Das (2001) <sup>(19)</sup>	95.2%
8. Present study	91.66%

The yield of FNAC increases when prior localization of the lesion is accurate by USG, by CT scan or MRI and if the biopsy done under biplanar fluoroscope.

## CONCLUSION

Percutaneous lung FNAC was positive in 91.66% of cases. Percutaneous lung FNAC has higher diagnostic yield in lung cancer.

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