

Evaluation Of Lung Masses Through Various Procedures In A Tertiary Care Centre

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Abstract:-

BACKGROUND- Lung mass is defines as lung opacification>3cm on chest imaging..The most common cause of lung mass is Adenocarcinoma.It may be located endobroncially,parenchymal out of which most are peripheral.Based on the feasibility,location of the lung masses they are evaluated with various techniques like bronchoscopy,CT or USG guided biopsy.

AIM- To evaluate the lung masses through various procedures and also to identify the most common cause and yield of various procedures.

MATERIALS AND METHODS-60 patients identified with lung masses through CT or Chest xray were selected.These patients underwent bronchoscopy ,CT and usg guided biopsies and various samples like lavage, biopsy ,cytology were done.

RESULTS:- Out of 60 patients 70 %are males and 30%are females and mean age 54yrs.out of 60 lung masses 25 are endobronchial and 35 has parenchymal lesions.Bronchoscopy is the highest yield techniqueand biopsy has the highest yield around 94.7%.Adenocarcinoma is the most common subtype around 52%.

CONCLUSION:-The most common cause of lung mass is Adenocarcinoma and chronic smoking elderly males are more prone.Biopsy has the highest yield.So feasible and highest yielded procedure like lung biopsy has to be done for early evaluation of cause of lung mass.

Keywords-lung mass,bronchoscopy,biopsy,malignancy

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I. INTRODUCTION

Lung masses are defined as pulmonary opacifications measures more than 3cm.There are various causes for lung masses,the most common is Adenocarcinoma. It is more common and one of the leading cause of death in elderly males who are chronic smokers.Lung masses may be locatedendobronchial,parenchymal out of which more are peripherally located.Lung mass may be primary or secondary and most common site of metastasis by lymphatic or venous spread. Lung carcinoma mostly have liver and arenalmetastasis.They are evaluated using various procedures based on location and feasibility of the lesion.Endobronchial lesions are evaluated through bronchoscopic guided biopsy,cytology of brushings.Ultrasound and CT guided biopsy are done for parenchymal lesions by considering factors of location of the lesion,feasibility,complications.ultrasound guided biopsy is done for peripheral parenchymal lesions and has less complications.CT guided biopsy is done for deep seated lesions ,but associated with more complications like pneumothorax,vascularinjury.As the most common cause is malignancy,and survival rates are <10% so early evaluation has to be done to start the treatment early and for better prognosis.lung mass may also be associated with pleural effusion ,in such cases peural fluid cytology can be sent for malignant cells;but it has less sensitivity.lung mass may also be associated with lymphadenopathy.,in such cases lymph node biopsy may also be considered.lung cancers are two types small cell carcinoma and non-small cell carcinoma .Non small cell carcinoma is further classified into adenocarcinoma,squamouscell,large cell carinomas,sarcomatoid.small

cell has worst prognosis. Newer techniques like endobronchial ultrasound and navigational bronchoscopy have been introduced for better yield but they are available in few centres. For pleural based nodules thoracoscopy guided biopsy is done. PET CT scan can also be used in certain cases.

II. MATERIALS AND METHODS

- This prospective interventional study was carried out on patients of department of Pulmonary medicine at MIMS (Maharajah's institute of medical sciences) college and hospital, Nellimarala, Vizianagaram, Andhra Pradesh from July 2022 to August 2023. A total of 60 adult subjects (both males and females) of age ≥ 40 yrs were taken for this study.
- **Study design:** A prospective interventional study.
- **Study location:** This was a tertiary care teaching hospital-based study done in department of Pulmonary medicine at MIMS (Maharajah's institute of medical sciences) college and hospital, Nellimarala, Vizianagaram, Andhra Pradesh.
- **Study duration:** July 2022 to August 2023
- **Study population:** All the eligible patients with lung opacification > 3 cm on chest x-ray or HRCT chest
- **Sample Size :** 60 patients.

INCLUSION CRITERIA

- Age > 40 yrs
- Both male and female smokers
- Patient with lung opacification > 3 cm identified through chest imaging
- Those who are willing to give consent

EXCLUSION CRITERIA

- Age < 40 yrs
- Haemodynamically unstable
- Non smokers
- Patients suffering from bleeding diathesis
- Mediastinal masses due to unavailability of EBUS and navigational bronchoscopy.
- Not willing to give consent for invasive procedures
- Patients with chronic renal failure
- Patients already known case of malignancy, or already on chemotherapy
- Patients with extremes of age and not willing for further evaluation and treatment.

MATERIALS:

- 1) Routine blood investigations like complete blood picture, bleeding time, clotting time, renal and liver function tests.
- 2) Peripheral blood smear.
- 3) ECG
- 4) Chest x-ray, CECT chest i.e., Contrast Enhanced Computed Tomography (if required).
- 5) Ultrasound chest
- 6) Pleural fluid cytology

METHODOLOGY

Patients who met the selection criteria and based on feasibility and location of the lesion; USG, CT guided biopsy; bronchoscopy guided biopsy and lavage, washings, brushings sent for histopathological and cytological examination. Pleural based nodules thoracoscopy and pleural fluid cytology is done.

Figure 1:-chestxray PA view showing left middle and lower zone mass

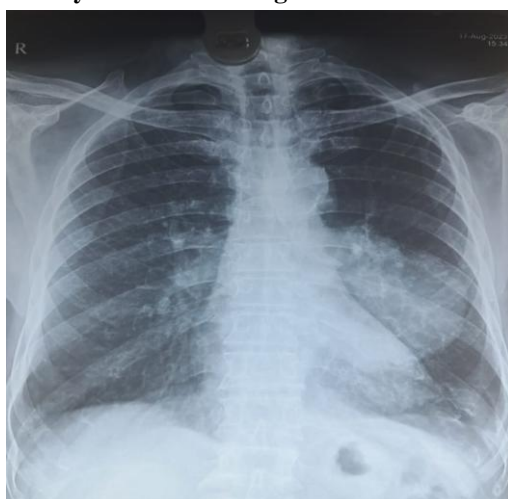


Figure2:- HRCT CHEST in same patient Showing left lower lobe mass



Figure 3:-USG CHEST showing mass



III. RESULTS

In study sample out of 60 patients,42 (70%) were male and 18(30%) were female.Mean age is 54yrs.Most of the lesions are parenchymal (35) while significant proportion were peripheral ,25 were endobronchial.Adenocarcinoma constituted aroundpatients and the most common type in our centre,next common is squamous cell carcinoma around patients

Table 1: BRONCHOSCOPY YIELD IN ENDOBRONCHIAL TUMOURS

PROCEDURE	NO.OF PATIENTS	POSITIVE	YIELD
LAVAGE CYTOLOGY	53	31	58.49%
BRUSHINGS	25	15	60%
BIOPSY	11	7	63.63%

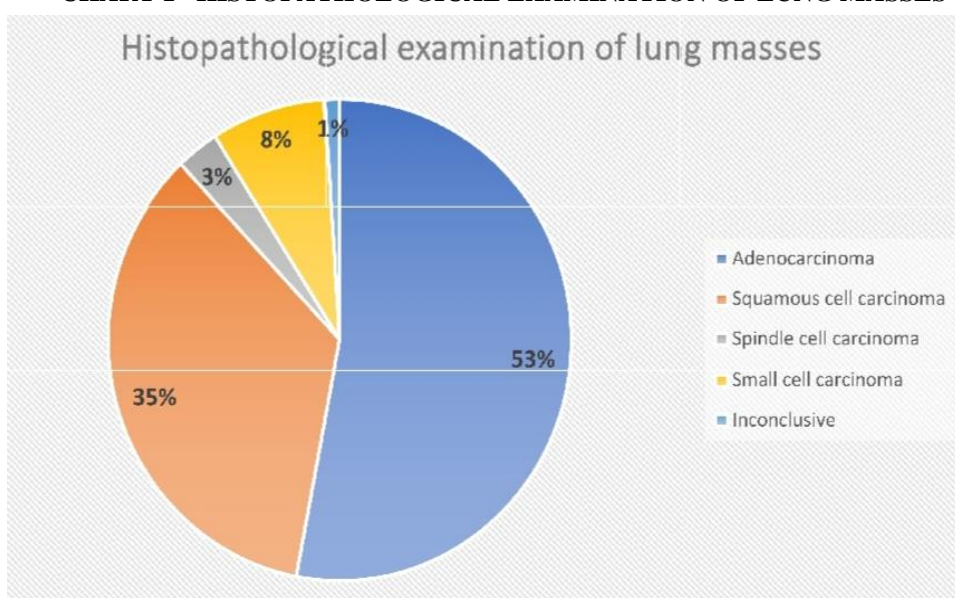
Table 2 :YIELD IN PARENCHYMAL TUMOURS

DIAGNOSTIC PROCEDURE	NO .OF PATIENTS	POSITIVE CYTOLOGY	YIELD
BRONCHOSCOPY	28	9	32.14%
CT/USG GUIDED BIOPSY	35	32	94.28%

Table 3: YIELD OF PROCEDURES IN CASES OF PLEURAL EFFUSION

DIAGNOSTIC PROCEDURE	NO.OF PATIENTS	POSITIVE CYTOLOGY/HISTOPATH	YIELD
PLEURAL FLUID ASPIRATION	15	7	46.66%
PLEURAL BIOPSY	15	11	73.33%

CHART 1 –HISTOPATHOLOGICAL EXAMINATION OF LUNG MASSES



IV. DISCUSSION

Lung masses are often malignant in nature. In our study 70% were males and 30% females. mean age 54yrs, while Vishak Acharya et al revealed in their study that mean age around 57.7 yrs. Bronchoscopy guided biopsy has been identified as the most useful and relatively safe technique to diagnose endobronchial lung masses. But there is diverse adversity on diagnostic yield of various samples like lavage, brush cytology, biopsies. Adenocarcinoma is identified as the most common subtype (52%), next common is squamous cell carcinoma (35%) patients, small cell carcinoma (8%), spindle cell carcinoma (3%) is a rare neoplasm identified in patients. Biopsy has more yield in evaluating lung masses 94.7%; while Vishak Acharya et al revealed in their study that biopsy has highest yield around 80% and squamous cell carcinoma was the most common type. Sushantmuley et al revealed in their study that bronchoscopy is the most useful technique with highest yield.

V. CONCLUSION

In elderly male, chronic smokers the most common cause of lung opacification >3cm is malignancy, and the most common being adenocarcinoma. Biopsy has more diagnostic yield in evaluation of lung masses around 94.7%. So the suitable, feasible, and a high yield biopsy should be chosen for early evaluation of lung masses.

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