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CYTOPATHOLOGICAL SPECTRUM OF LUNG MASSES: A RETROSPECTIVE STUDY

Pathology

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ABSTRACT

Background: Image guided FNAC is a well-established method in the cytopathological diagnosis of lung lesion. **Aim:** Aim of our study is to evaluate the cytopathological spectrum of disease in lung through USG /CT guided FNAC. **Material And Method:** 40 cases were evaluated retrospectively for a period of 4 months in SPMC, Bikaner from June 2021 to September 2021.Air dried smears were stained with May-Grunwald-Giemsa (MGG) whereas alcohol fixed smear stained with modified Papanicolaou (PAP) stain for cytopathological evaluation of the lesions. By cytological study we widely divided cases into Positive, Negative and suspicious groups. We further divided positive cases into metastatic, small cell carcinoma, non-small cell carcinoma and others category. All the relevant details, clinical history and investigations of the patients were taken. **Result:** Out of 40 cases, 80% were male. Male to female ratio was 4:1. Mean age was 57.55 years. 60% patients had history of smoking. 90% were diagnosed as malignant lesion, 5% were diagnosed as suspicious of malignancy and 5% have benign. Non-small cell carcinoma (72.2%) was the predominant malignant tumor followed by small cell carcinoma (22.2%) while 2 cases (5.5%) were diagnosed as metastatic cancer. **Conclusion:** Image guided FNAC can diagnose lung lesion fairly accurately leading to less morbidity and mortality and treatment can be started early.

KEYWORDS

USG Guided, CT guided, Fine needle aspiration cytology, Lung mass

INTRODUCTION

Image guided FNAC is a well-established method in the cytological diagnosis of lung masses. FNAC distinguishes between benign and malignant lesion & also helps in typing of cancer so specific therapy such as chemotherapy or surgery can be started without delay. Both, CT- and US-guided procedures have a high sensitivity, specificity and positive predictive value for diagnosing malignancy. The diagnostic accuracy of CT guided FNAC is reported to be more than 80% in benign disease and more than 90% in malignant disease[1]. Ultrasound guided Fine Needle Aspiration Cytology of small and large peripheral pulmonary lesions using fine needle is the choice for establishing the diagnosis which is simple and safe and provides documentation of the needle in the mass lesion.[2] FNAC is an accurate and safe method for the evaluation of lung nodules and it enables sub classification of lung carcinomas in the vast majority of cases. The main primary types are small-cell lung carcinoma (SCLC) and non-small-cell lung carcinoma (NSCLC). It is also useful for the diagnosis of tuberculous pulmonary nodules.[1]This study was done to determine the effectiveness of image guided FNAC for diagnosis of lung lesions and its usefulness in classification of lung tumors.

AIMS & OBJECTIVES

1.To determine the cytopathological spectrum of lung lesions
2.To further classify malignant lung tumors

MATERIALS AND METHODS

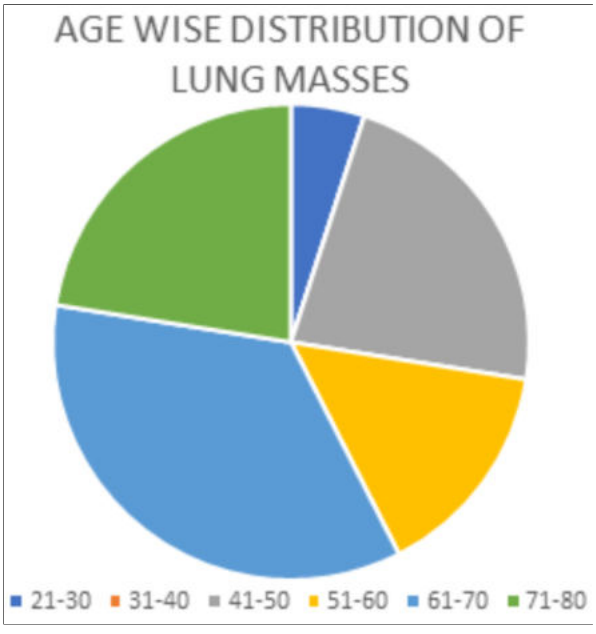
The study was carried out in Department of Pathology, Sardar Patel Medical College, Bikaner from June 2021 to September 2021.This was a retrospective study of 4 months in which patients with lung masses were included in our study. Image guided FNAC was performed by pathologist in co-ordination with radiologist. Risk and benefit were explained and informed consent was taken from each patient or his/her relatives.

Routine investigations (CBC, BT, CT, PT and aPTT) were done before the procedure. Skin was cleaned by betadine and 22G spinal needle was introduced through percutaneous transthoracic approach. The exact position of lesion was established by CT scan/USG with site, angle, depth and route of needle introduction was determined. After the needle placement, CT scan/USG was done to ascertain that the tip of the needle was within the mass. Air dried smears were stained with May-Grunwald-Giemsa (MGG) whereas alcohol fixed smear stained with modified Papanicolaou (PAP) stain for cytopathological evaluation of the lesions. Smears with inadequate material were excluded from the study.

By cytological study we widely divided cases into Positive, Negative, suspicious and unsatisfactory groups. We further divided positive cases into metastatic, small cell carcinoma, Non-small cell carcinoma and others category.

RESULTS

A total of 40 patients were included in this study. Out of which, 32 (80%) were male and rest were female (20%). Male to female ratio was 4:1. Age of the patients ranged from 29 years to 79 years old. Mean age at diagnosis was 57.5 years. The most common age group was 61-70 years (35%) while the next most common age group was 71-80(22.5%).



History of smoking was present in 24 cases(60%).Most common presenting symptom was cough(60%) followed by shortness of breath(50%) and weight loss (30%).

On cytological study, 36 cases were of malignant lesions(90%) while 2 cases each were diagnosed as suspicious of malignancy(5%) and benign lesions(5%). Among the benign lesions, both cases were of granulomatous disease.

Table 1 Cytopathological Spectrum Of Lung Masses And Correlation With Smoking (n=40)

S. No	Diagnosis	Number of cases	Percentage (%)	History of smoking
1	Non-small cell carcinoma	26	65	16

	Squamous cell carcinoma	15	37.5	12
	Adenocarcinoma	10	25	3
	Undifferentiated carcinoma	1	2.5	1
2	Small cell carcinoma	8	20	6
3	Metastatic	2	5	0
4	Suspicious of Malignancy	2	5	1
5	Benign lesion	2	5	1
	Total	40	100	24

Among the malignant lesions, Non-small cell carcinoma (65%) was the commonest followed by small cell carcinoma (20%), metastatic cancer (5%). Among the non-small cell carcinoma, Squamous cell carcinoma (57.6%) was the commonest followed by Adenocarcinoma (38.4%) and undifferentiated carcinoma (4%).

History of smoking was seen in 60% cases. Out of the total 15 cases of Squamous cell carcinoma,12 cases (80%) cases had history of smoking while 6 cases(75%) out of the 8 cases of Small cell carcinoma.

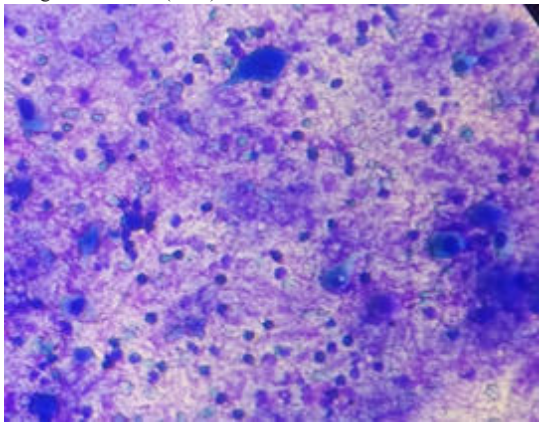


Fig.1. Squamous Cell Carcinoma (40X)

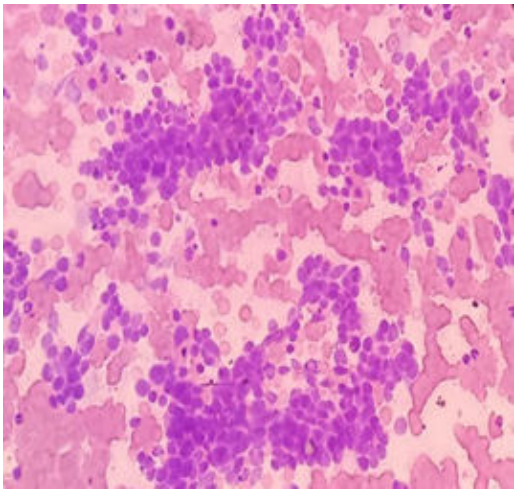


Fig.2. Metastatic Round Cell Tumor

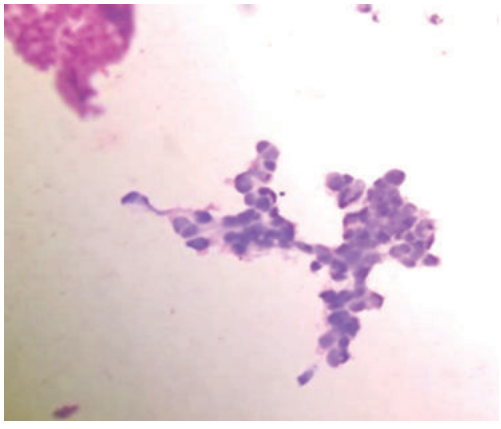


Fig.3. Small cell carcinoma lung(40X)

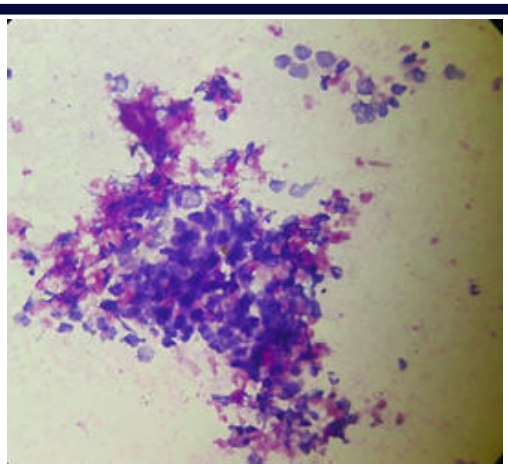


Fig.4. Undifferentiated carcinoma(40X)

DISCUSSION

Image guided FNAC is a well-established method in the cytopathological diagnosis of lung lesions. It is a safe and accurate method for the diagnosis of malignant and benign lung lesions. Total 40 patients were included in our study over a period of 4 months. Conclusive cytodiagnosis was made in all 40 cases. All the cases were adults. Mean age of diagnosis was 57.55 years which is similar to studies conducted by Ahmed et al and Singh et al.[3,4] This is indicative of lung masses especially malignant tumors in old age. There was male preponderance (80%) with male female ratio being 4:1 which is in accordance with the study conducted by Bandyopadhyay et al[5]. The reason of male preponderance can be attributed to smoking habits and more occupational hazards among males.

Out of the total 40 cases, 90% were malignant tumors, 5% were suspicious of malignancy while 5 % were benign lesions. In a study conducted by Mondal et al, 91.93% cases were malignant while 8.07% cases were benign.[6] High incidence of malignancy can be attributed to successful treatment of benign conditions by antibiotics.

Among the malignant tumors, most common was Squamous cell carcinoma(42%) followed by Adenocarcinoma (28%), Small cell carcinoma(22%), Metastatic cancer(5.5%) and undifferentiated carcinoma(2.5%).Similar results of squamous cell carcinoma more common than Adenocarcinoma were found in a study conducted by Shah et al[7].

CONCLUSION

Image guided FNAC can diagnose lung lesion fairly accurately leading to less morbidity and mortality and treatment can be started early.It is a safe and cheap method for early diagnosis of lung cancer. History of smoking must be thoroughly investigated for possibility of lung cancer.

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