



ISSN (P): 2617-7226
ISSN (E): 2617-7234
www.patholjournal.com
2019; 2(2): 71-73
Received: 03-05-2019
Accepted: 07-06-2019

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A study on the utility of ultrasound guided fnac in lung lesions

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DOI: <https://doi.org/10.33545/pathol.2019.v2.i2b.80>

Abstract

Introduction: Primary confirmation of Lung lesions by Ultrasound guided FNAC. It is useful for to differentiate Infective, Benign and Malignant lesions of lung.

AIM: To study and confirm Cytological features of different types of lung lesions. 2. To assess the overall utility of FNAC in lung Pathology.

Methods: Present study done over a period of two years, from Feb 2017- Jan 2019. During the above period 57 cases are studied, in the Department of pathology, Govt Medical College, Kadapa, AP. The above cases were categorised based on cytological features obtained by FNAC. Materials required for FNAC – 10 ml sterile disposable syringe with 25-22G needles. Suitable fixative is Isopropyl Alcohol. Alcohol fixed slides taken up for H&E staining.

Results: Ultrasound guided FNAC of the Lung were performed on 57 cases. Out of 57 cases 48 (84.21%) cases were Primary neoplastic lesions, which are Squamous cell carcinoma, followed by large cell carcinoma 7 (12.28%) cases, Adeno carcinoma 2 (3.50%) cases.

Keywords: Aspiration cytology, Diagnosis of various types of lesions, Kadapa, FNAC

Introduction

Fine Needle Aspiration Cytology (FNAC) is a well-established method of diagnosing both neoplastic and inflammatory conditions of the lung, has resulted in a decrease in the need of other procedures that are more invasive. Transthoracic Fine Needle Aspiration Cytology is regarded as the most effective of the cytological methods for diagnosing lung cancer, in particular peripherally-located lesions including lung nodules of infective etiology. Trans-bronchial lung biopsy or brushings via Fibre Optic Bronchoscope and Per-cutaneous transthoracic aspiration under fluoroscopic guidance are the other alternatives^[1]. Primary confirmation of Lung lesions by Ultrasound guided FNAC. It is useful for to differentiate Infective, Benign and Malignant lesions of lung. Ultra sound guided FNAC is safe, effective, relatively pain less procedure with low complication rate.

Aim

To study and confirm cytological features of different types of lung lesions. To assess the overall utility of FNAC in lung pathology.

Materials and Methods

Present study done over a period of two years, i e Feb 2017- Jan 2019. During the above period 57 cases are studied, in the Department of pathology, Govt Medical College, Kadapa, AP. The above cases were categorised based on cytological features obtained by FNAC. Materials required for FNAC–10 ml sterile disposable syringe with 25-22G needles. Suitable fixative is Isopropyl Alcohol. Alcohol fixed slides taken up for H&E staining.

Results

Ultrasound guided FNAC of the Lung were performed on 57 cases. Out of 57 cases 48 (84.21%) cases were Primary neoplastic lesions, which are Squamous cell carcinoma, followed by large cell carcinoma 7 (12.28%) cases, Adeno carcinoma 2 (3.50%) cases. Maximum number of cases were seen in 41-50years age group. These lesions were predominantly seen in males, with Male to Female ratio is 18:1

Table 1: Age and Sex incidence of lung lesions

Type of lesions	41-50 yrs		51-60 yrs		>61 yrs		Total		Total Number (%)
	M	F	M	F	M	F	M	F	
Squamous cell carcinoma	38	-	9	-	-	1	47	1	48(84.21%)
Adeno carcinoma (Acinar)	-	-	1	-	-	1	1	1	2(3.50%)
Large cell Carcinoma	5	-	1	1	-	-	6	1	7 (12.28%)

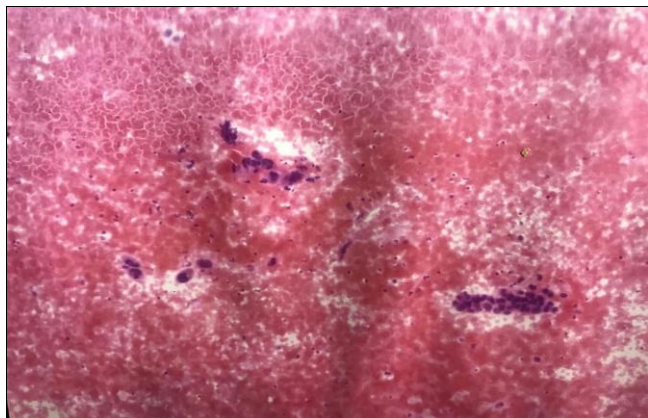


Fig 1: Low power view showing round to polygonal cells with hyper chromatic Pleomorphic nucleus arranged in small clumps- Squamous cell carcinoma of lung

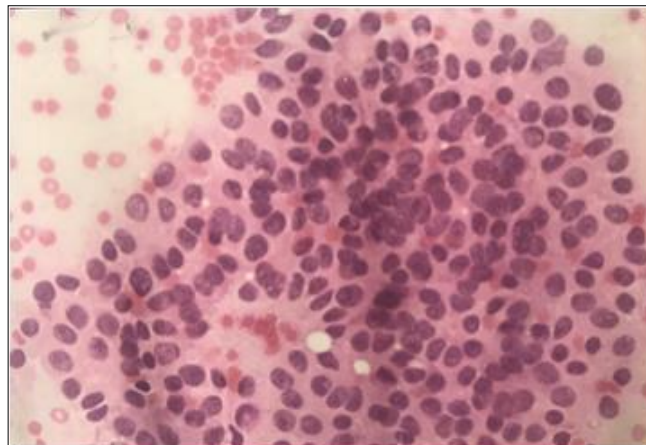


Fig 4: High power view of Acinar Adeno carcinoma of lung showing cells which are round to oval cells with hyperchromatic, Pleomorphic nucleus arranged in acinar pattern

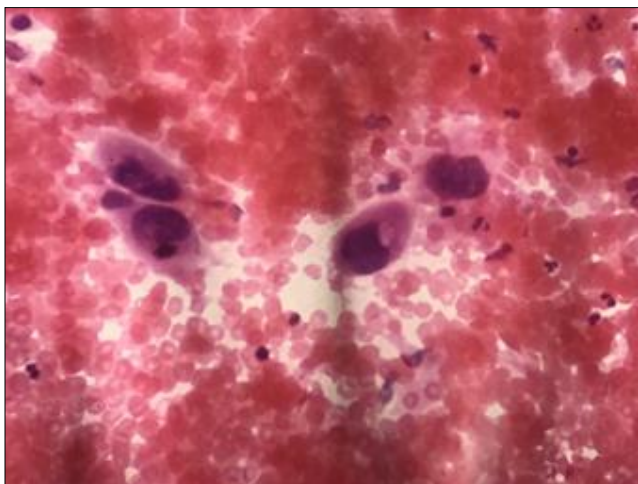


Fig 2: High power view showing dispersed individual Keratinizing malignant cells showing squamous differentiation- Squamous cell carcinoma of Lung

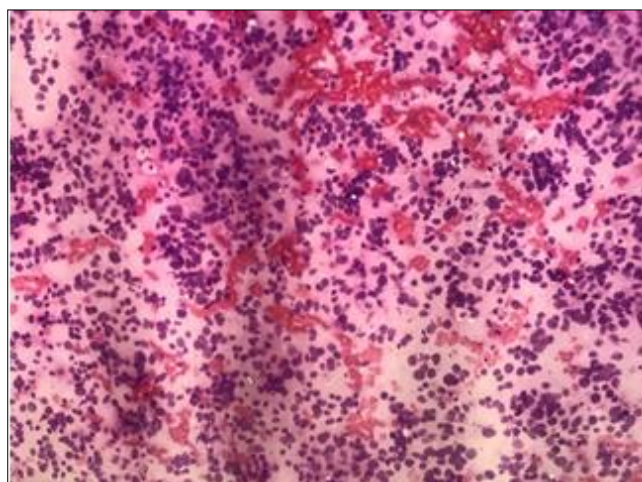


Fig 5: Smear showing dispersed large, highly, Pleomorphic cells with high N: C ratio wit out Squamous or glandular differentiation – Large cell carcinoma of lung

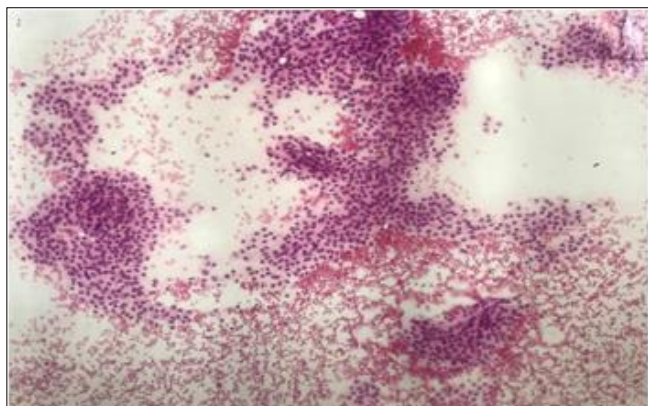


Fig 3: Highly cellular smear showing round to oval cells with hyper chromatic Pleomorphic nucleus arranged in acinar pattern- Adenocarcinoma of Lung

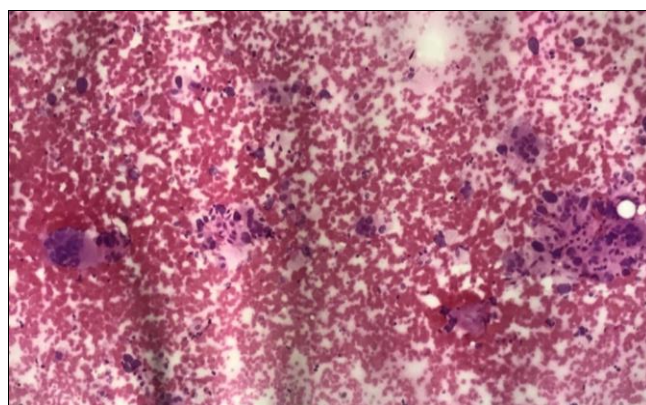


Fig 6: Hemorrhagic smear showing large malignant cells and multinucleated tumor giant cells- Large cell carcinoma of lung

Discussion

This study of Ultrasound Guided Percutaneous Transthoracic Fine Needle Aspiration Cytology has demonstrated that the technique is useful in diagnosing a variety of intrathoracic lesions, including malignant and non-malignant diseases [2].

In this study Male: Female ratio was 18:1. When compared to other studies the incidence among male is high [1, 3]. A final result of FNAC depends on factors like good sampling, location, the nature of the lesion, and amount of aspirated material. Inconclusive FNAC for lung lesions is possible due to inadequate sampling, few cells, and abundant necrosis or hemorrhages [4].

Histological typing can be done as epithelial and non-epithelial malignant lesions. Most thoracic malignancies are epithelial in origin and sometimes FNAC should be initial procedure of choice for evaluation of intra-thoracic lesions. Mesenchyme tumours and lymphomas which has high intercellular adherence requires biopsy of the lesion [4].

Positive result by FNAC is valued; however a negative result does not exclude the presence of disease. Cases with negative result for malignancy will be followed till the lesion is resolved or evaluated with other invasive procedures. It is of note only positive findings provide valuable information and might prevent the need for more invasive diagnostic procedure [4].

Out of 57 cases 48 (84.21%) cases were Primary neoplastic lesions, which are Squamous cell carcinoma, followed by large cell carcinoma 7 (12.28%) cases, Adeno carcinoma 2 (3.50%) cases. Maximum number of cases were seen in 41-50years age group.

A study done by Srivatsav *et al.* [5]. Reported that of the 26 patients, 22 (68.7%) were diagnosed by FNAC as having malignancy and 4 (12.5%) were non-malignant lesions. Squamous cell carcinoma 11(50%) is most commonly seen malignancy and TB granuloma 3(13.5%) is in benign Senthil Velmurugan V *et al.* [6]. study poorly differentiated carcinoma accounted for 31.2% cases, squamous cell carcinoma 25% cases and adenocarcinoma 16.3% of the cases. In the series of 116 cases studied by Khouri *et al.*, [7] 10.3% cases were diagnosed as lymphomas. Yu C *et al.* [8] found that correct histologic diagnosis with ultrasound-guided aspiration biopsy (UGAB) alone is higher in lung cancer (67%) and metastatic cancer (78%).

Presence of pathologist during the procedure, is an added advantage for both in terms of sharing case history, imaging findings and differential diagnoses (both radiological and pathological), clinical experience and knowledge. Above all it fulfills a sense of team work [9].

With less severe types of and less severe number of complications, USG guided FNAC being an OPD based minimally invasive diagnostic procedure, should be a first investigation of choice for tissue diagnosis in deep seated thoracic and abdominal lesions [10]. USG guided FNAC due to its high sensitivity and specificity, because of high diagnostic yield and low complications rate has proved to be more useful and sensitive than needle core biopsy in the radiologically detectable and approachable abdominal and thoracic lesions [11, 12].

Conclusions

Ultrasound guided FNAC of the Lung were performed on 57 cases. Out of 57 cases 48 (84.21%) cases were Primary

neoplastic lesions, which are Squamous cell carcinoma, followed by large cell carcinoma 7 (12.28%) cases, Adeno carcinoma 2 (3.50%) cases. Ultra sound guided FNAC is safe, effective, relatively pain less procedure with low complication rate.

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