Original Article

Pulmonology

Diagnostic yield of Fine Needle Aspiration Cytology and Biopsy (FNAC/FNAB) in Thoracic Mass Lesions

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ABSTRACT

Objective: To describe the diagnostic yield of USG and CT guided fine needle aspiration cytology/biopsy (FNAC/FNAB) in the bronchogenic carcinoma presenting as localized thoracic mass lesions.

Study Design: Descriptive study

Place and Duration of Study: This descriptive study was carried out in the Pulmonology Department, Nishtar Hospital, Multan from March 2011 to Oct 2011.

Materials and Methods: A total of 60 patients were included in the study. All the patients were subjected to bronchoscopy first and then FNAC/B.

Results: Out of 60 patients, 40 (66.66%) were males and remaining 20 (33.33%) were females. As regards age of the patients, Most of the (36%) were in the age group 41-50 years. Of the total 6o patients 28(47%) were smoker. Majority of the patients (72%) belong to urban areas. Chest radiograph showed right lung involvement in 36 (60%) cases. USG guidance was sought in 15(25%) cases where as CT guidance was taken in 45(75%)cases

(FNAC) was also done in all cases with radiological /USG /CT guidance in all cases. Out of 60 cases, 37 (61.6%) were suffering from primary malignancy of lung (Table-4). Out of 37 cases of malignancy the squamous cell carcinoma was confirmed in 18 (48.6%) cases.

Conclusions: It is concluded from the study that percutaeous aspiration biopsy/cytology of the lung has a definite diagnostic role in lung lesions particularly those situated peripherally. FNAC/FNAB is especially more useful in those lesions not visible through bronchoscopy. FNAC is safe procedure especially when guided by computed tomography(CT) or USG.

Key Words: Localized thoracic lesions ,malignancy, USG, CT ,FNAC/B.

INTRODUCTION

Thoracic malignancies including bronchogenic carcinoma is increasing alarmingly, inspite of all our efforts to stop smoking.[1] and strict laws to control atmospheric pollution[1,2] About half of the lung tumours appear radiologically as localized mass lesions[1].these may be solitary or multiple, other conditions mimicking as mass lesions radiologically include rounded consolidations ,vascular lesisons and loculated pleural effusions. These type of solid looking mass lesions , sometimes, may present as a diagnostic dilemma specially when located peripherally in the lungs especially in this part of the world where more sophisticated and modern techniques of diagnosis eg , trans bronchial needle aspiration (TBNA), Endobronchial USG (EBUS) or Electromagnetic navigation Bronchoscopy etc are either not available or too expensive for our patients. The non-availability of diagnostic paraphernalia has made it all the more imperative to search for easy and affordable but effective diagnostic ways and means in our settings. A study has shown that more than half of the bronchogenic carcinomas present as localized lung lesions[4]. Radiology is the most common imaging modality for the evaluation of the thoracic lesions, whether these be in lungs, mediastinum, pleural space or the chest bony cage. when a mass is identified in thorax, malignancy is the commonest provisional diagnosis, However other benign lesions like tuberculomas, fungal lesions or cysts may be common differentials and appear almost identical to malignant lesions on radiograph. Obtaining a definitive diagnosis via a FNA or true cut biopsy can help to determine the prognosis as well as to establish a treatment plan. Many lesions can be sampled via USG, especially mediastinal or lung masses along the periphery of the lung or adjacent to the chest wall.[5-11] However , deeper pulmonary and mediastinal masses cannot be visualized by USG due to the intervening air in the lungs. In these cases, CT can be used for guiding an FNA or biopsy needle to get a tissue diagnosis. The use of FNAC/FNAB for the diagnosis of localized thoracic masses is an effort to search easy and less expansive means for the diagnosis. The present study was done to find out the diagnostic yield of Percutaneous USG or CT guided fine needle cytology and biopsy (FNC/FNAB) in our settings.

MATERIALS AND METHODS

This descriptive cross sectional study was carried out in the Department of pulmonology, Nishtar Hospital, Multan from _March 2011 to OCT 2011. A total of 60 patients with clinical signs and symptoms of

malignancy with radiological evidence of a mass lesion were included, the lesions looking clearly as consolidation on radiograph were excluded. Non probability consecutive sampling was done. Informed consent was taken. Bronchoscopy was done prior to FNAC . FNAC was performed after localizing the site with PA and lateral chest radiograph. ultrasound and CT guidance was also sought where necessary. FNAC was performed with the help of spinal needle G 22-25 under local anaesthesia in the USG room or in CT scan department as per our selection, in case of a clearly accessible lesion CT or USG guided true cut biopsy was performed with the help of a true cut biopsy needle, whereas in case of more deeper and vessel surrounded lesions FNA was preferred to avoid any damage to the lungs or the surrounding blood vessel. In this way was taken in 45(75%)cases and USG guidance in15(25%) Slides were made as per recommendations of pathology department in case of FNA and biopsy material was sent in 5% formalin for histopathology. Process was repeated for one more time (no of passes at least 02) slides were fixed with alcohol and sent to pathology department for cytology. Descriptive statistics were applied, SPSS10 was used to calculate frequencies and percentages .

RESULTS

A total of 60 patients were included no of males was 45 (66.66%) and remaining 15 (33.33%) were female. As regards age of the patients, Most of the (36%) were in the age group 41-50 years. 28 patients (47%) were smoker. Majority of the patients (72%) belong to urban areas.

Clinical data of symptoms and signs are shown in table-I and 2.

Chest radiograph showed right lung involvement in 36(60%) cases (Table-3)

Out of 37 cases that were diagnosed as primary malignancy of lung on FNAC, the squamous cell carcinoma was confirmed in 18 (48.6%) cases (Table-5).

The incidence of complications was very low which is shown in table-6.

Table No.1: Presenting symptoms

Symptoms	Male	Female	Total	%age
Cough	27	11	40	67%
Chest pain	23	12	35	58%
Haemoptysis\	25	07	32	53%.0
Weight loss	18	03	21	35%.0
Sputum production	15	08	23	38%.0
General aches	05	08	13	21%
Breathlessness	07	05	12	20%
Anorexia	07	08	15	25%

Table No.2: Clinical data of patient's signs

Signs	Male	Female	Total	%age
Anaemia	11	13	24	40.0
Clubbing	11	04	15	25.0
Lymph node	05	02	07	11.0
Pleural effusion	02	01	03	05.0
Superior vena caval struction	06	01	07	11.0
Bone pain	05	02	07	11.0

Table No.3: Radiological presentation

Type of lesion	Right lung		Left lung	
	Cases	%age	Cases	%age
Solitary mass	21	35.0	12	20
Collapse 0f lobe	05	08.0	05	8.0
Round consolidation	03	05.0	03	06.0
Mediastinal widening	04	07.0	03	05.0
Pleural effusion	03	05.0	01	1.5

Table No.4: Diagnostic yield of FNAC/FNAB

Diagnosis made	No. of cases	%age
Primary malignancy of lung	37	61.0
Hodgkin's lymphoma	03	5.0
Non-Hodgkin's lymphoma	02	3.0
Tuberculosis	07	10.0
Chronic empyema	02	3.3
Chronic non-specific inflammation	04	6.7
Diagnosis not clear	07	11.0

Table No.5: Tissue diagnosis of FNAC/B in 37 cases of primary lung malignancy

Tissue typing	Male	Female	Total	%age
Squamous cell carcinoma	17	01	18	48.6
Adenocarcinoma	06	06	12	32.4
Small cell carcinoma	04	-	04	11
Large cells	02	0	02	5.4
Atypical cells	01	0	01	2.6

Table No.6: Complication of FNAC

Complications	No. of cases	Percentage
Chest pain	12	22.0
Pneumothorax	03	06.0
Haemoptysis	02	02.0

DISCUSSION

Mainly peripherally located mass lesions were included to find out the diagnostic yield of per cutaneous FNAC/B. Overall diagnostic yield of FNAC/FNAB was 88.33% in 60 cases. The malignant lesions were

diagnosed in 40 (70%) cases and non-malignant in 20 (16%) cases. Out of 42 cases of malignancy 37 were primary malignancy of lungs. Westcott found the diagnostic yield of FNAC for localized lung lesion as 90.5%[10] whereas Lalli found a yield of this procedure to be 80%[12]. Klin performed needle aspiration cytology/biopsy on 25 cases of lung lesion and diagnosed 12 (48%) cases of malignancy which consisted of 7 (58.3%) cases of squamous cell carcinoma. The diagnostic yield was 91.6% of FNAC/FNAB[13].

In the present study, the benign lesions were diagnosed in 9 (16%) cases. These were tuberculosis 4 (8%) cases, chronic pyogenic abscess 2 (4%) and chronic non-specific inflammation in 2 (4%) cases.

As regards the complications of FNAC and the true cut biopsy, these were very few and were not of much concern, none of the patients needed chest intubation out of 03cases of Pneumothorax other complications like chest pain and haemoptysis were also mild in nature as also narrated b Gupta S and colleagues[19]

Cohen found 75% cases of bronchogenic carcinoma in 6th and 7th decade[15]. The present study shows that right lung was more involved (55%) as compared to left lung (45%) and upper zone was more commonly involved as compared to lower zones. These results are similar to many studies .[14,15,16,17.18]. The ratio of complications was also low in our study common complication was pain at the site of needling which was mild and responded to mild analgesia. only 03 patients in the study developed Pneumothorax which was less than 30%, non of the patients needed chest intubation similar percentage of complications was described by Iqbal ZH and colleagues and gupta and colleagues in their studies.[10,18] in our study bronchoscopy was able to pick up only 18% of lesions this is because mainly peripherally located lesions on radiographs were included to find out the diagnostic yield of FNAC/B. It is obvious from this discussion that our study is in accordance with other national and international studies[11-21]in terms of clinical aspects, diagnostic yield, tissue typing and safety.

CONCLUSION

It is concluded from the study that Percutaneous aspiration biopsy/cytology of the lung has a definite diagnostic accuracy in lung lesions particularly those situated peripherally. FNAC/FNAB is especially more useful in or setting it is also relatively free of complications.

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