Original Article

Experience of CT-guided FNAC from Lung lesion: A Study of 330 Cases

Sarker MR[1], Hossain MS[2], Farooq S[3]

Abstract

CT-guided FNAC is an important method in which aspiration of materials done from deep structure of the body. Now a day, it is a useful tool for diagnosis of lung lesion. This study was done in the department of Pathology, Khwaja Yunus Ali Medical College & Hospital (KYAMCH), a rural tertiary hospital in Bangladesh. A total of 330 cases from January 2008 to December 2013 were evaluated in this study. Of these, 93 (28.20%) were adenocarcinoma, 66 (20%) were squamous cell carcinoma, 35(10.6%) were small cell carcinoma, 31 (9.4%) were non-small cell carcinoma, 03 (0.9%) were non-hodgkin lymphoma, 57 (17.3%) were inflammatory, 24 (7.3%) were tuberculosis and others were 21 (6.4%). The mean age±SD of patients was 58.92±12.92 years. Incidence of malignancy was quite similar in compare to previous study. So in case of any suspicious lesion or growth of lung, CT- guided FNAC should be done for diagnosis and also to exclude malignancy that will help to reduce patients' morbidity and mortality.

Key words: Computerized Tomography Scan Guided (CT-guided), Fine needle aspiration cytology (FNAC), Malignant cell, Lung lesion.

Introduction

The lung is the vital organ of the body and surgery is more difficult than others. There are many causes that show lung opacity. After cardiovascular disease, cancer is the (second) leading cause of death1. Cancers of the lung, female breast, prostate and colon/rectum constitute more than 50% of cancer diagnoses. CT-guided FNAC from lung lesion is done to identify the disease. Lung cancer is currently the most frequently diagnosed major cancer in the world and the most common cause of cancer mortality worldwide[1]. Different studies showed, it can diagnose malignancy in 93-96.6%[2,3,4]. CT guided FNAC can diagnose benign lesions in 88% cases[3]. It is also important for the diagnostic evaluation of other non-neoplastic conditions including tuberculosis that

present as lung mass[5,6,7]. Active management may require in few cases. After all, CT guided FNAC is a simple, reliable and coast effective method for diagnosis of lung lesions[2]. This study will reflect the impression of malignant and other diseases of lung in a cancer based rural tertiary hospital in Bangladesh.

Materials and method:

The study consists of CT-guided FNA materials from lung lesions of 330 patients of different age and sex. This was a retrospective and descriptive study conducted for a period of 2008 to December 2013 in the department of Pathology, Khwaja Yunus Ali Medical College Hospital (KYAMCH), Enayetpur, Sirajgonj. All the cases had nodular or mass lesion radiologically and

1. Dr. Md. Mahbur Rashid Sarker, Assistant Professor, Dept. of Pathology, KYAMCH, Enayetpur, Sirajgonj.

2. Dr. Md. Shahadat Hossain, Assistant Professor, Dept. of Pathology, KYAMCH, Enayetpur, Sirajgonj.

3. Dr. Md. Shamim Farooq, Associate Professor, Dept. of Pathology, Dhaka National Medical College, Dhaka.

Correspondence: Dr. Md. Mahbur Rashid Sarker, Assistant Professor, Dept. of Pathology, KYAMCH, Enayetpur, Sirajgonj. Email: mahburs@gmail.com

FNA done under CT-guidance. After collection, the container labelled with the date, patient's profile etc. A correctly completed request form must accompany each specimen. Then the specimens will be processed for microscopic examinations by papanicolaou (pap) staining. Patient's age, sex, organ and cytopathological findings etc. were taken as variables. The data were analysed using software statistical program for social sciences (SPSS).

Results

During these periods, three hundred and thirty (330) specimens were analysed. The results are shown in the following tables and figures. The mean age of patients was 58.92±12.92 years which are shown in table 1.

Table 1. Age distribution of the patients (n=330)

Age in years	Number of cases	Percentage	Mean age (M ±SD)
<20 yrs	2	0.6	
20 -29 yrs	6	1.8	
30 -39 yrs	10	3.0	58.92±12.92
40 -49 yrs	46	13.9	
50 -59 yrs	77	23.3	
>60 yrs	189	57.3	
Total	330	100.0	

Among the 330 cases, male cases were 280 (84.8%) and female cases were 50 (15.2%) with M: F of 5.6:1; which have shown in figure 1.
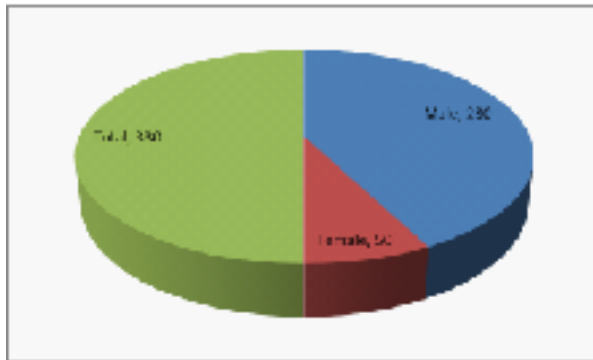

Figure 1: Sex distribution.

The significant diagnostic findings were showed that, 93 (28.20%) were adenocarcinoma, 66 (20%) were squamous cell carcinoma, 35 (10.6%) were small cell carcinoma, 31 (9.4%) were non-small cell carcinoma, 03 (0.9%) were non-hodgkin lymphoma, 57 (17.3%) were

inflammatory, 24 (7.3%) were tuberculosis and others (including inadequate samples) were 21 (6.4%). These were shown in Table 2.

Table 2: Diagnostic findings of FNAC of lung lesions (n=330)

Diagnosis	Sex		Site		Total
	Male	Female	Right	Left	
Squamous cell carcinoma	62	4	37	29	66 (20.0%)
Adenocarcinoma	74	19	52	41	93 (28.2%)
Small cell carcinoma	34	1	20	15	35 (10.6%)
Non -small cell carcinoma	23	8	14	17	31 (9.4%)
Tuberculosis	19	5	13	11	24 (7.3%)
Inflammation	48	9	34	23	57 (17.3%)
NHL	3	0	1	2	3 (0.9%)
Others	17	4	11	10	21 (6.4%)
Total	280	50	182	148	330 (100%)

On the other hand, among the total 330 cases, 228 (69.1%) cases were malignant. Of them, the most common malignancy was adenocarcinoma (40.8%) followed by squamous cell carcinoma (28.9%) and small cell carcinoma (15.4%). These were shown in figure 2.
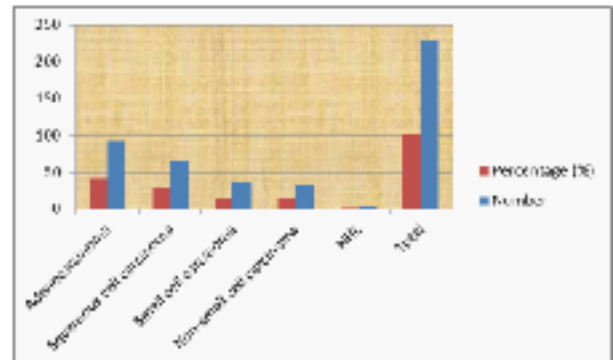

Figure 2: Different malignant lesions of lung.

Discussion

This CT-guided FNAC from Lung lesions study showed that malignant lesion is more common in aspirated specimens. One of the previous studies of Mousumi Ahmed et al showed that out of total 82 cases samples, 45 (59.21%) cases were malignant and 31(40.79%) cases were benign. Among the malignant cases, the commonest malignancy was adenocarcinoma (40%) followed by squamous cell carcinoma (37.78%) and small cell carcinoma (15.56%)[8]. Our present study showed a slight higher incidence of general malignancy (69.1%) with quite similar findings of sub classification

of lung carcinomas. In cytological diagnosis of lung lesions, different studies showed that prevalence of malignancy ranges from 61% to 70% and benign lesions ranges from 29.3% to 39%, excluding the inadequate samples[9,10,11]. The prevalence malignancy of our study was almost similar with these studies. Another study of Tan KB et al showed that higher prevalence were adenocarcinoma (49.4%) followed by squamous cell carcinoma (16%) and small cell carcinoma (9.4%). Our study showed adenocarcinoma (40.8%) and small cell carcinoma (15.4%) which was quite similar to this study but slight higher prevalence in case of squamous cell carcinoma (28%). Tuberculosis is another important finding other than malignancy. In western populations, tuberculosis cases constituted 0.2-1.5% of all FNAC cases of lung masses[9]. In Singapore, tuberculosis cases found 5.3% by lung FNAC[11]. But in studies of India showed, the TB cases range from 2.1% to 20%[5,6]. In our study, TB cases were found 7.3% of all lung mass FNAC. So tuberculosis cases (other than malignancy) were important findings in lung masses specially in South Asia.
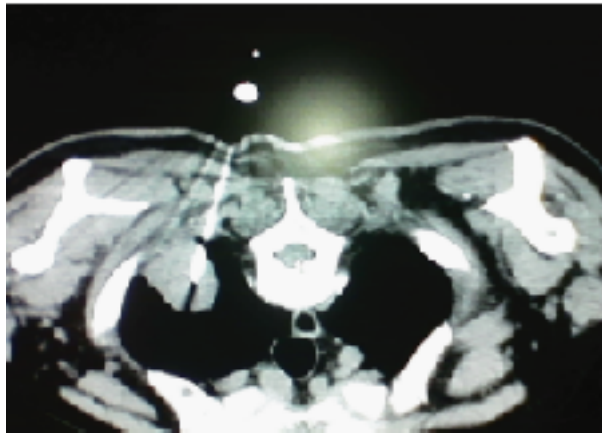

Figure 3: CT-guided FNAC from lung lesion.

Conclusion

This study reflects that CT-guided FNAC is a comparatively safe method for evaluation of both benign and malignant diseases of lung. So any abnormal growth or lesion in the lung should be sent for FNAC for early diagnosis. This will be helpful for patients for early management and it may also help the clinicians in future for further study in Bangladesh.

References

1. Robins & Cotran Pathologic Basis of Disease. Editor Kumar, Abbas, Fausto. 8th edition, 2010, Publisher Elsevier India Ltd.

2. DeMay RM. The art and science of Cytopathology. ASCP Press, 1995; 948-50.

3. Khouri NF, Stitik FP, Erozan YS, Gupta PK, Kim WS, Scott WW et al. Transthoracic needle aspiration biopsy of benign and malignant lung lesions. Am J Roentgenol 1985; 144: 281-288.

4. Stanley JH, Fish GD, Andriole JG, Gobien RP, Betsill WL, Laden SA et al. Lung lesions: Cytopathological diagnosis by fine needle biopsy. Radiology 1987; 162: 389-91.

5. Rajwanshi A, Jayaram N, Behra D, Gupta SK, Malik SK. Fine needle aspiration cytology of intrathoracic lesions. Indian J. Pathol. Microbiol 1989; 32: 306-09.

6. Das DK, Pant CS, Pant JN, Sodhani P. Transthoracic (percutaneous) fine needle aspiration cytology diagnosis of pulmonary tuberculosis. Tuber Lung Dis 1995; 76: 84-89.

7. Gomez L, Rami-Porta R, Domingo A, Rodriguez-Carballeria, Heredia JL. An unusual pulmonary mass. Postgrad Med J; 73: 323-24.

8. Mousumi Ahmed, M Jalal Uddin, MS Farooq. CT-guided FNAC of lung masses and cytological sub classification of bronchogenic carcinoma: A prospective study of 82 cases. J Med Coll Women Hosp 2010; 8(2): 75-80.

9. Goulimos AD, Giannopoulos DH, Pangi GM, Fletoridis NK, Deligeorgi-Politi HA, Vlahos LJ. Computer tomography-guided fine aspiration of peripheral lung opacities and initial diagnostic procedure. Acta cytol 2000; 44:344-48.

10. Basnet SB, Thapa GB, Shahi R, Shrestha M, Panth R. Computed tomography guided percutaneous transthoracic fine needle aspiration cytology in chest masses. J Nepal Med Assoc 2008; 47 (171): 123-27.

11. Tan KB, Tamboo TP, Wang SC, Nilsson B, Rajwanshi A, Salto-Tellez M, et al. Audit of transthoracic fine needle aspiration of lung: Cytological subclassification of bronchogenic carcinomas and diagnosis of tuberculosis. Singapore Med J 2002; 43(11): 570-75.