



DIAGNOSTIC EVALUATION OF SPUTUM AND FINE NEEDLE ASPIRATION CYTOLOGY IN RADIOLOGICALLY DIAGNOSED MASS LESIONS OF THE LUNG

Pathology

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ABSTRACT

Aim: To do sputum examination and fine needle aspiration cytology in patients diagnosed radiologically of having lung mass, the prevalence of various benign and malignant lesions and to find out the relative diagnostic value of FNAC and sputum cytology

Materials and methods: This study was taken up in the Department of Pathology, Assam Medical College and Hospital. A total of 50 cases of clinically suspected lung mass were picked up to study the different modes of presentations, the findings in sputum and CT guided FNAC after they were diagnosed radiologically as having lung mass.

Results: Out of the 43 diagnosed cases of malignancy, 33 cases were male (76.56%), 10 cases were female (23.2%). Out of the males, 60.60% cases were diagnosed as Squamous cell carcinoma, 27.27% cases as Adenocarcinoma.

Conclusions: Sensitivity of sputum is less but it is important for detecting central lesions of the lung. FNAC is better than sputum cytology in detecting mass lesions of the lung

KEYWORDS

Sputum Cytology, FNAC, Squamous cell carcinoma, Adenocarcinoma.

Introduction

Lung carcinoma is one of the leading cancers as well as leading causes of death in the world. It is the second most common cancer in both males and females in the world (American cancer society)1. Sputum cytology sensitivity ranges from 50-60% (peripheral lesions and metastasis), 70-85% for central lesions of the lung when 5-6 specimens can be examined 2. FNAC is highly sensitive in detecting lung cancers. 75% lung cancers are diagnosed on cytology alone 3.

Materials and methods

Clinically suspected 50 cases of lung mass were selected for the study. Parameters included in the study included size of the lung mass (diagnosed radiologically), position of the mass whether central or peripheral. All FNAC samples were taken with the help of CT guidance after proper localization of lesions by NECT and CECT. Early morning sputum samples were collected. The patients were instructed to collect only deep cough specimens using the diaphragm and not to collect the saliva. Routine staining by MGG, Haematoxylin and eosin, Papanicolaou stain and Ziehl Nelson stain was done using standard methods and as per guidelines.

Results

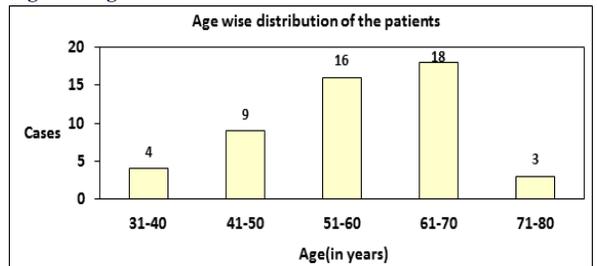
A total of 50 cases, clinicrodiologically diagnosed were included in the study. In our study we found that maximum number of cases were from 61-70 years of age group (n=18, 36%). Out of all the patients, 38 patients (76%) were male and 12 patients (24%) were females. Male: Female ratio being 3.16:1, showing a male preponderance.

80% cases (n=40) out of the total 50 cases were smokers. Out of the 43 diagnosed cases of malignancy, 33 cases were male (76.56%), 10 cases were female (23.2%). Out of the males, 60.60% cases (n=20) were diagnosed as Squamous cell carcinoma, 27.27% (n=9) cases as adenocarcinoma.

Among the female cases there were 4 cases of Adenocarcinoma (40%), 2 cases were Squamous cell carcinoma (20%), 2 cases of Small cell carcinoma (20%). CT guided FNAC showed a diagnostic efficacy of 94% (47 cases).

Sputum examination however gave positive results in 32% cases of lung mass cases mostly of which were centrally located (64.7%). The success rate of FNAC is much higher than that of sputum.

Figure 1: Age wise distribution of cases



Maximum number of cases (18 cases) were from the age group 61-70 years. Maximum no. of cases from this age group were diagnosed as Squamous cell carcinoma (50%). In the age group of 31-50 years, maximum number of cases belonged to Adenocarcinoma. Out the 50 cases, primary lung carcinoma was found in 41 patients (82%). Squamous cell carcinoma comprised 22 cases (44%), Adenocarcinoma 13 cases (26%), 4 cases (8%) of Small cell carcinoma, 2 cases of undifferentiated carcinoma (4%). Benign cases constituted 7 cases.

Figure 2: Distribution of Disease Profile of Lung Mass as found by FNAC

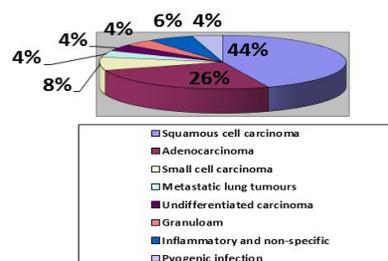
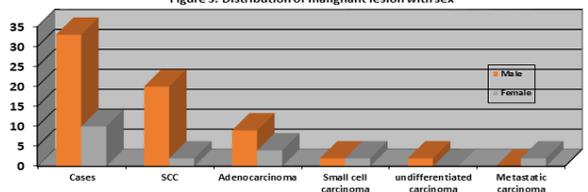


Figure 3: Distribution of malignant lesion with sex



Discussion and review

Chest X-Ray, CT and ultrasound have been widely used in the diagnosis of lung lesions in the recent years ,but there is no radiological features that can reliably differentiate between a benign from a malignant lesion. In recent years the improving sensitivity and positive predictive value of cytodiagnosis has led to the acceptance of FNAC or sputum cytology as an aid to the diagnosis of lung lesions and avoid unnecessary expensive and invasive procedures.

Maximum number of cases were from 61-70 years age group. Similar distribution of age was found by Takashi Hirose et al 20004.

There were 80% smokers and 20% non-smokers with highest duration of smoking being 41-50 yrs. in 2 patients. Smoking has direct relation to carcinoma of lung. Studies done by Ozlu et al,2005 found 90% of smokers to be suffering from lung carcinoma5.

Of all the patients with primary lung cancers only 17% were non-smokers which corresponded with the findings of Gupta et al 6 who reported 80% of men and 33% of women as having lung cancers as smokers.

Majority (50%) patients had symptoms of less than 2 months. In our study, 60% were having lesion size between 3-5 cm and 2% (1 case) of size 9cm.

Complications like Pneumothorax (6%), hemoptysis (4%), pulmonary hemorrhage (2%) occurred due to CT guided FNAC that resolved without any intervention. It corresponded with other studies of Pilloti et al (8.4%, 4.6%)7, Dash BK et al 2001(7.1%)8.

86% of mass lesions were diagnosed as malignant and 14% as non-malignant. Squamous cell carcinoma comprised 44 % cases and Adenocarcinoma 25% cases that closely corresponded to R.Prasad et al(2004)(Squamous cell carcinoma-46.5%,adeno-18.05%)9 ,R K Sharma(Squamous cell carcinoma (41%) followed by Adenocarcinoma (23%))10.

People with mean age of 58 years presented with carcinoma lung. Lung carcinoma has remained predominantly a disease of males with various studies showing similar results.

SCC comprised 60% of carcinomas in Men, 20% of women whereas adenocarcinoma predominantly occurred in women (40%) than in men (27.27%).

The present study showed an excellent diagnostic accuracy of CT guided FNAC of 94% like that of Charig MJ et al(2000)11, Dash BK et al(2001)8 etc.

Sputum cytology gave definitive diagnosis in 16 cases(32%) with 64.7% cases being centrally located and 15% peripheral lesions which were similar to findings of M.Patriaca et al(Sensitivity-71% central, 49% peripheral)12,Oswald et al(1971) reported 48% diagnostic yield 13, Wagne et al (1989) reported accuracy of sputum cytology to be 35% 14.The diagnostic success rate of FNAC was higher than sputum cytology.

The specificity of Sputum cytology was 100%,so was the positive predictive value which was similar to that of M.Patriaca et al(99%). The sensitivity was only 34%12.

Conclusion and summary

The study comprised 44% cases of Squamous cell carcinoma, 26% of Adenocarcinoma, 8% of Small cell carcinoma, 4% Undifferentiated. Sputum examination and FNAC is an important diagnostic tool for further evaluation of radiologically diagnosed mass lesion. The diagnostic yield of sputum cytology for central lesions was 64.7% as compared to 15% for peripheral lesions. Although the false negative rate of sputum cytology is high (31 cases in our study) but is useful in detecting centrally located lesions specially the malignant ones. FNAC could diagnose 94% cases.

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