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Relationship Between Chest X-Ray And Pathological Type Of Lung Cancer In Tertiary Centre.

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ABSTRACT

Lung cancer is the most common cancer representing approximately 12% of all new cancers. The present retrospective study was undertaken to study the clinical profile of primary bronchogenic carcinoma seen during last eight years in a teaching hospital. Consecutive 232 suspected lung cancer patients, who had initial chest x-ray lesions suspicious of malignancy (mass lesion, nodules, pleural effusion, evidence of bronchial obstruction such as collapse, unresolved consolidation etc.) were taken as study population. Flexible Fiberoptic Bronchoscopy (FOB) was used primarily to diagnose the central lung lesions, whereas CT-guided FNAC orbiopsy was performed mainly to diagnose the peripheral lesions. Radiographs were evaluated based on number, location, distribution and other characteristics of the lesions including the details of calcification, cavitation, satellite lesions and involvement of adjacent structures if any. We found that squamous cell carcinoma and small cell carcinoma commonly presented as central lesions, whereas adenocarcinoma manifested most frequently as peripheral lesions. Chest radiography can provide a clue about the pathological cell types of bronchogenic carcinoma especially in cases of hilar or parahilar lesions, collapse, non resolving consolidation and effusions.

Keywords: Chest X-Ray, lung, cancer, bronchogenic carcinoma.

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INTRODUCTION

Lung cancer is the most common cancer representing approximately 12% of all new cancers. The present retrospective study was undertaken to study the clinical profile of primary bronchogenic carcinoma seen during last eight years in a teaching hospital. Bronchogenic carcinoma is the most common malignancy of men in the world and the leading cause of death in males suffering from cancer in 35 different countries. It is the sixth leading malignancy in women worldwide. Although the cause of this malignancy is probably multifactorial. Tobacco smoking is the most vital contributing factor in the development of lung cancer, with approximately 80–90% of deaths directly caused by tobacco use (Cigarette Smoking). Risk of developing lung cancer related to indoor pollution, dusty workenvironment, and residential exposure to asbestos.

Patients may present with symptoms of airway obstruction caused by central tumors, symptoms related to direct tumor invasion of surrounding structures, or symptoms produced by distant metastases. The common histological cell types, which comprise over 95% of all primary lung cancers, are adenocarcinoma, squamous cell carcinoma, undifferentiated large cell carcinoma and small cell carcinoma. Average duration of illness was 4.5 months. Weight loss (77%) and fever (34%) were the commonest general symptoms. Other chest symptoms include cough (68%), dyspnoea (59%), chest pain (22%), hemoptysis (20%) and dysphagia (6%). Various imaging techniques such as plain chest roentgenography, computed tomography (CT) scan and magnetic resonance imaging provide crucial help in the diagnosis of lung cancer. An initial chest X-ray guide clinicians to do the required investigation for diagnosis of bronchogenic carcinoma. Chest radiography is an essential initial investigation for suspected cases of bronchogenic carcinoma and can be a predictor of malignancy. Radiologically, obstructive pneumonitis was the commonest presentation (59.5%) followed by mass lesion (31.8%) and rib destruction (5.1%). Left untreated, most patients die within one year of diagnosis with a median survival of less than six months.

Aim of the study

The aim of our study was to determine the significant differences in radiographic abnormalities in respect to the pathological cell types of lung cancer with correlation between chest radiographic presentation and the pathological cell type of lung cancer. Pathological cell types of lung cancer in tertiary care centre.

MATERIAL AND METHODS

Consecutive 232 suspected lung cancer patients, who had initial chest x-ray lesions suspicious of malignancy (mass lesion, nodules, pleural effusion, evidence of bronchial obstruction such as collapse, unresolved consolidation etc.) were taken as study population. Flexible Fiberoptic Bronchoscopy (FOB) was used primarily to diagnose the central lung lesions, whereas CT-guided FNAC or biopsy was performed mainly to diagnose the peripheral lesions. Radiographs were evaluated based on number, location, distribution and other characteristics of the lesions including the details of calcification, cavitation, satellite lesions and involvement of adjacent structures if any.

Inclusion criteria:

- Patients above 18 years of age and both sexes.
- Patients with initial chest X-ray lesions suspicious of malignancy (mass lesion, evidence of bronchial obstruction such as collapse, non-resolving consolidation, nodules, etc.).

Exclusion criteria

- Sputum that was Acid fast bacilli (AFB) positive.
- Diagnosed or suspected pneumonia.
- Respiratory failure.
- Without written consent.

Table 1: Histopathological Type of bronchogenic carcinoma

| Type | No. of Patients (n=232) | Percentage |
|-------------------------|-------------------------|------------|
| Squamous cell carcinoma | 64.9 | 28.00% |
| Small cell carcinoma | 39.4 | 17.00% |
| Adenocarcinoma | 81.2 | 35.00% |
| Large cell carcinoma | 04.6 | 2.00% |
| Poorly differentiated | 20.8 | 9.00% |
| Others | 20.8 | 9.00% |

Table 2: Correlation of Histopathological type with radiological presentation

| Radiological presentation | Squamous cell Carcinoma (n=64.9) | Small cell carcinoma (n=39.4) | Adenocarcinoma (n=81.2) | Large cell carcinoma (n=4.6) | Poorly differentiated (n=20.8) | Others (n=20.8) | Total (n=232) |
|---------------------------|----------------------------------|-------------------------------|-------------------------|------------------------------|--------------------------------|-----------------|---------------|
| Mass | 7(10.7%) | 30(76.4%) | 46 (57.1%) | 4.6 (100%) | 11.5 (55.5%) | 7.6 (33.3%) | 106 (46%) |
| Collapse-consolidation | 35 (53.5%) | 2 (5.8%) | 0 | 0 | 0 | 0 | 37 (16%) |
| Pleural effusion | 0 | 2.3 (5.8%) | 27.7 (34.2%) | 0 | 0 | 9.2 (44.4%) | 39.4 (17%) |
| Combined | 23.1 (35.7%) | 4.6 (11.7%) | 7 (8.5%) | 0 | 9.2(44.4%) | 5.0 (22.2%) | 48.8 (21%) |

Table 3: Correlation of Histopathological type with Site of lung cancer

| Site of Primary lung cancer | Squamous cell Carcinoma (n=64.9) | Small cell carcinoma (n=39.4) | Adenocarcinoma (n=81.2) | Large cell carcinoma (n=4.6) | Poorly differentiated (n=20.8) | Others (n=20.8) | Total (n=232) |
|-----------------------------|----------------------------------|-------------------------------|-------------------------|------------------------------|--------------------------------|-----------------|---------------|
| Right lung | 41.6 (64.2%) | 18.5 (47.05%) | 51 (62.8%) | 2.3 (50%) | 13.8(66.6%) | 11.5 (55.5%) | 139.2 (60%) |
| Left lung | 24.5(37.7%) | 16.2 (41.1%) | 30.1(37.1%) | 2.3(50%) | 6.9 (33.3%) | 9.2 (44.4%) | 88.2 (38%) |
| Bilateral | 0 | 4.6(11.7%) | 0 | | 0 | 0 | 4.6 (2%) |

DISCUSSIONS

In our study, Adenocarcinoma was the most predominant type followed by squamous cell type (Table 1). Squamous cell carcinoma and small cell carcinoma presents as central lesion whereas adenocarcinoma present as peripheral lesion. The common radiographic manifestations were mass, collapse-consolidations, pleural effusion and combined. Squamous cell carcinoma most commonly presented as collapse-consolidations (53.5%) whereas the presentation of adenocarcinoma was mostly mass (57.1%) followed by pleural effusion (34.2%).

Common radiographic presentation of squamous cell carcinoma was collapse followed by unresolved consolidation and masses, whereas adenocarcinoma mostly present as a mass followed by pleural effusion (Table 2).

The most common radiological presentation was mass lesion (46%) followed by pleural effusion (17%) and collapse (16%) which are in accordance with study conducted by Behra et al. (2004). Most of the lesions are found on right side (60%) which is similar to Khan et al. (2004), observed 63% in the right lung [1-12].

CONCLUSION

We found that squamous cell carcinoma and small cell carcinoma commonly presented as central lesions, whereas adenocarcinoma manifested most frequently as peripheral lesions. Chest radiography can provide a clue about the pathological cell types of bronchogenic carcinoma especially in cases of hilar or parahilar lesions, collapse, non resolving consolidation and effusions.

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