Original Research Article

Different radiological presentations in patients with lung cancer

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Abstract

Background: Lung cancer is the most common cause of cancer related death worldwide. Early diagnosis is critical for initiation of specific therapy. **Aim and Objective:** To study different radiological presentation in patients of lung cancer. **Material and Methods:** This prospective observational study was carried out at a tertiary care centre between December 2010 to august 2012. Total 60 patients presenting with clinical and radiological features suggestive of lung malignancy were studied. Chest X ray and CT scan of thorax with screening for adrenal gland was done in all patients. Ultrasound of abdomen was done in all patients to screen for metastasis. CT scan of brain was done in patients as per indication. **Results:** Most common presentation on chest x ray was mass (61.66%) followed by pleural effusion (18.33%). 4 patient had both mass and effusion on chest x ray. 10 patients with non resolving pneumonia finally diagnosed to have lung malignancy. Peripheral tumours were more common compared to central. Squamous cell carcinoma and adenocarcinoma (44% each) were more common in central tumours while adenocarcinoma (51.42 %) was more common in peripheral tumours. Right side and upper lobe were more common site of involvement. **Conclusion:** Lung cancer is suspected on the basis of radiological presentation as clinical symptoms are non specific. However lung cancer is usually in its advanced stage at its presentation. Hence effective screening tool is needed to diagnose lung cancer at a early stage.
Key Words: Lung cancer, radiological presentation, CT scan, metastasis.

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INTRODUCTION

Lung cancer is the most common cause of cancer related death worldwide. Lung cancer is usually at the advanced stage at first diagnosis. Lung cancer can grow for long time before any sign or symptoms appear. In India, lung malignancy accounted 6.9% of all new cancer cases and 9.3 % of all cancer related deaths in both males and females, it is the commonest cancer and cause of cancer related mortality in men, with the highest reported incidences from Mizoram in both males and females[2] In the four cities of Maharashtra (Mumbai, Pune, Nagpur and Aurangabad) the absolute numbers of newly diagnosed lung cancer patient is expected to increase from 3170 to 4788 (more than 50% increase)[3]. At a national level this would translate into 235,104 new patients. With 90% of these presenting in an advanced and inoperable stage, it would be challenging to diagnose this patients as early as possible. In this extremely challenging scenario we need to utilize all available modalities and advantages of technology that has the potential for early and accurate diagnosis so as to improve outcome in such patients. Lung masses have traditionally been evaluated through the use of planar chest X-rays, CT and MRI scanning. These tests can provide information regarding the size and location of the lung mass and only suggest the abnormality is benign or malignant with no absolute confirmation. Unfortunately, the overall 5- year survival rate in patients with the different types of lung cancer is less than 10%. However, that five-year survival rate can increase to 35-40% when lung cancer is

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diagnosed early enough to offer surgery before it has metastasized. This study was undertaken to study different radiological presentations of lung cancer.

MATERIALS AND METHOD

The study was conducted at a tertiary care centre between December 2010 and August 2012. All patients diagnosed with primary lung cancer were included in study. Written informed consent was taken from all patients prior to study. All demographic information, history, examination and laboratory details were noted for all patients. Routine blood investigations were done in all patients. Chest x ray, CT Thorax with upper abdominal cuts and USG abdomen were done in all patients. CT brain was done in selected patients as per indication.

RESULTS

Table 1: X-ray presentation of lung cancer

X-ray presentation	No. of patients	Percentage
Mass	37	61.66%
Consolidation	06	10%
Pleural effusion.	11	18.33%
SPN	02	03.33%
Mass + effusion	04	06.66%
Total	**60**	**100%**

Table 2: CT locations of the lung lesions

CT location	Total
Upper lobe	23
Middle lobe	18
Lower lobe	16
Total	**57**

3 Patients presented with isolated pleural effusion. Right side was involved in 35 out of 60 cases. 3 Patients had bilateral disease on presentation.

Table 3: Pattern of distribution of lung cancer

Location	No.	%
Central tumours.	25	41.66%
Peripheral tumours.	35	58.33%

Table 4: Histological subtypes of Central Vs Peripheral tumors

Location	Histological subtypes (%)					Total
	Sq. cell	Adenoca	Small cell	Large cell	Undifferentiated	
Central	11(44%)	11(44%)	2 (8%)	0	1 (4%)	25
Peripheral	8 (22.85%)	18 (51.42%)	3 (8.57%)	1 (2.85 %)	5 (14.28%)	35

DISCUSSION

In our study most common presentation on chest x ray was mass (61.66%) followed by pleural effusion (18.33%). Consolidation was a presenting feature in 6 patients (10%). 4 patients (6.66%) had both mass and effusion on chest x ray and 2 patients presented with SPN (3.33%). These results were similar to a study by Dey *et al* (2012) where most common radiological presentation was mass (77.3%) followed by effusion (27.8%) and collapse(18.6%).[4] Study by Sharma CP, Behera D. Aggarwal AN, Jindal SK (2002) describes mass as common radiological finding followed by pleural effusion.[5] Study by Jindal and Behera (1990) also showed similar results.[6]. In a current study we found that upper lobe was involved most commonly followed by middle and lower lobe. Right side was involved in 35 out of 60 cases (58.33%). 3 patients had bilateral disease on presentation. This result was similar to study by Sharma *et al*. in which upper lobe was involved most commonly followed by middle lobe and lower lobe.[5] Recent study from Uttarakhand also showed upper lobe involvement as most common presentation. Right side involvement was slight more common than left.[7] In this study peripheral tumours were present in 58.33% patients while central tumours were found in 41.66% patients. This result is similar to studies conducted by Rawat *et al*.[7] and Sharma *et al*.[5] Study by Vigg *et al*.[8] also showed that peripheral tumours were more common than central tumours. (60.2% Vs.39.8%). Out of 25 cases recorded for central tumours 44% of central tumours were squamous cell carcinoma, 44% were adenocarcinoma, 8% small cell carcinomas, 4% undifferentiated non small cell carcinoma. Out of 35 cases of peripherally located tumours 51.42% were adenocarcinomas, 22.85% squamous cell carcinomas and 8.57% each small cell and large cell tumours. Undifferentiated non small cell carcinoma was found in 14.28% of peripheral tumours. In a study by Sharma *et al*.[5] presentation as a central mass (72.2% cases) was more common among squamous cell carcinoma than as a peripheral lesion (27.8%). Small cell

cancer also presented more commonly as a central lesion (83.6%) than as a peripheral lesion (16.4%). Thus this study shows that squamous cell carcinoma commonly presents as central tumours whereas adenocarcinoma as peripheral tumours.

CONCLUSION

Mass lesion is the most common radiological presentation of lung cancer followed by pleural effusion. Right lung and upper lobe are more commonly involved. Squamous cell carcinoma presents more commonly as central tumour while adenocarcinoma as peripheral tumour. However lung cancer is usually in its advanced stage at its presentation. Hence effective screening tool is needed to diagnose lung cancer at a early stage.

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