

Pulmonary Tuberculosis - A Mimicker of Lung Malignancy

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Abstract: *In India, where tuberculosis is spreading in an uncontrolled way, it is not uncommon to find a lung cancer patient being treated for tuberculosis initially. The diagnosis of lung cancer can be delayed in patients with high suspicion for clinical tuberculosis or a history of infection with pulmonary tuberculosis. Several factors are responsible for this situation including lack of awareness, inadequate infrastructure and socio - economic factors. This delayed diagnosis of malignancy may lead to increased morbidity and mortality, due to more advanced stage of the disease. So the early diagnosis of malignancy is important, and radiological imaging can play a very crucial role in that. And thus help in the early management of the patient.*

Keywords: Tuberculosis, Malignancy, Lung, Xray, CT Scan

1. Introduction

Lung cancer is one of the most common malignancies in the world, with an incidence of 1.8 million and 1.6 million deaths, annually. The 5 - year survival rate is poor and mortality is increased at later stages of diagnosis. [1] If diagnosed early lung cancer is highly responsive to treatment; therefore, it is important to have a high index of suspicion for malignancy when evaluating suspicious radiographic lesions in high - risk patients with non - specific symptoms. Pulmonary tuberculosis is a diagnostic chameleon for lung malignancy so, sometimes it is difficult for clinicians to rule out malignancy in a patient with a history of tuberculosis infection or a contact history. [2] In India, where tuberculosis is spreading in an uncontrolled way, it is not uncommon to find a lung cancer patient being treated for tuberculosis initially. Symptoms such as fever, cough, expectoration, hemoptysis, weight loss and anorexia are common to both tuberculosis and lung cancer. So it is utmost important to identify the risk factors of malignancy such as age of the patient, history of smoking, mediastinal symptoms such as hoarseness of voice, Superior Vena Cava (SVC) obstruction, and dysphagia. [3]

2. Discussion

2.1 Clinical Features of Pulmonary Tuberculosis & Lung Malignancy

Pulmonary tuberculosis and lung cancer have common symptoms like cough, expectoration, fever, hemoptysis, weight loss, and breathlessness. However, careful history and examination can help clinician to suspect lung cancer.

History of tobacco smoking is generally present in cases of lung cancer while it may be present or absent in tuberculosis.

Fever in tuberculosis is low grade with evening rise, whereas in lung cancer, it is non - specific.

Sudden weight loss indicates malignancy rather than pulmonary tuberculosis in which weight loss is gradual.

Commonest symptom of lung cancer at presentation are change in character of chronic cough (a cough that does not go away), hemoptysis, dyspnea, hoarseness of voice, chest pain (aggravated by deep breathing), unexplained weight loss and loss of appetite, non - resolving pneumonia and superior vena cava syndrome (localized edema of face and upper extremities, facial plethora, distended neck and chest veins).

These symptoms common with centrally - placed neoplasms like squamous cell variety, whereas peripheral neoplasm, commonly adenocarcinoma may cause no respiratory symptom at the time of diagnosis, which may follow a chest radiograph taken for some other reason or as a part of non - specific symptoms.

Sometimes, hoarseness of voice is the only complaint, and it is due to vocal cord paralysis due to involvement of left recurrent laryngeal nerve. When these patients are asked to cough, they produce relative ineffectual expiratory noise so called "bovine cough, " lacking an explosive quality of normal cough. Clubbing of fingers and toes is frequently seen. Lymphatic spread is common and scalene and supraclavicular lymph glands are usually the first to be involved.

Approximately 1/3rd patients with lung cancer present with symptoms due to metastatic spread, like skeletal metastasis, which are commonly seen in small cell and large cell types. These may present with bone pain or even pathological fractures.

Cerebral metastasis may present with progressive neurological symptoms. These symptoms can be present in case of tuberculosis also if there is involvement of spine (Pott 's disease)

2.2 Radiological features of Pulmonary Tuberculosis and Lung Malignancy

Due to high TB prevalence and radiological similarities, a large number of lung cancer patients initially get wrongly treated for tuberculosis based on radiological picture, mainly chest radiograph alone.

2.2.1 Chest radiograph

Tuberculosis manifests as 5 main entities:

Parenchymal disease, lymphadenopathy, miliary disease (evenly distributed diffuse small 2 - 3 - mm nodules, with slight lower lobe predominance), pleural effusion, and cavitation. Parenchymal lesions are characterized by dense, homogeneous, or non - homogenous parenchymal consolidation in any lobe (mostly upper lobe predilection) and fibrotic changes.

Mass with or without collapse is the commonest radiological finding in lung cancer. Malignant lesions have irregular margins with radiating strands.

Hilar prominence (in case of central tumors), pulmonary nodule (in case of peripheral tumors), widening of the mediastinum (suggestive of spread to lymph nodes), total or partial atelectasis of a segment, lobe or lung (mechanical effect causing obstructive collapse), unresolving consolidation (pneumonia), cavitation (eccentric, irregular margin with nodularity), elevated diaphragm (caused by phrenic nerve palsy) or pleural effusion.

2.2.2 Computerized tomography (CT) scan

Second step either to follow - up on an abnormal chest X - ray, or to evaluate troublesome symptoms in those with a normal chest x - ray. Centrilobular densities in and around the small airways and "tree - in - bud" appearances were the most characteristic CT features of pulmonary tuberculosis. It is best non - invasive method for lung cancer. Lung mass is not visible on conventional X - rays unless they are larger than 5 - 6 mm in diameter. In the CT images, however, modern CT machines can detect lesions up to 1 - 2 mm in diameter, hence CT is more sensitive than chest radiography and it can accurately tell tumor site, size and invasion to adjoining structures such as mediastinum, chest wall etc.

Here, we discuss the imaging findings of three patients, who were referred to our radiology department at NCH surat, with presumptive diagnosis of pulmonary tuberculosis and had proved malignancy instead.

3. Case Study

3.1 Case 1

Plain chest radiograph of a 56 year old female patient presented with complaints of fever, weight loss, cough, and breathlessness, and has been on AKT regimen for 1 month.



Figure A

Figure A: X - ray Chest (PA view) shows right sided pleural effusion with collapsed right lung. Minimal right sided tracheal deviation is also noted. Prosthetic mitral valve replacement



Figure B

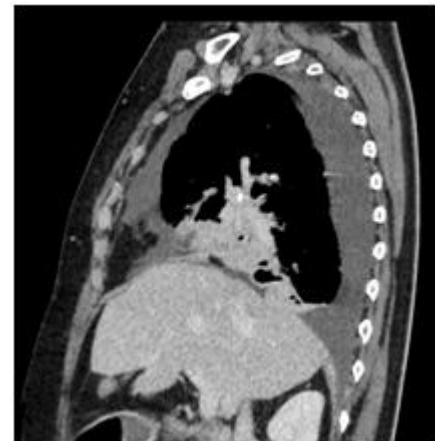


Figure C

Figure B & C: Axial and sagittal sections of contrast enhanced CT scan thorax of the same patient showed heterogeneously enhancing area of collapse consolidated lung with hypodense non - enhancing areas within, involving right middle lobe, and right paracardiac region; with mild pleural effusion.

The patient is advised for histopathological correlation, which turned out to be adenocarcinoma of lung.

3.2 Case 2

Plain chest radiograph of a 50 years old male PLWH patient presented with complaints of chest pain, weight loss, low

grade fever, and chronic cough. The patient was a chronic smoker, and has a past history of pulmonary tuberculosis infection.



Figure D

Figure D: The radiograph shows soft tissue opacity lesion involving right mid lung zone. Contrast enhanced CT scan thorax was advised for better evaluation of the lesion.



Figure G



Figure H

Figure E, F, G & H: Axial and coronal sections of plain and contrast enhanced CT scan thorax of the same patient, shows large well defined heterogeneously enhancing soft tissue density lesion with air bronchograms within involving anterior and posterior segment of right upper lobe.

The diagnosis was equivocal on the CT scan. so, patient is advised for histopathology to rule out malignancy.



Figure E

3.3 Case 3

60 year old female patient referred from peripheral center to NCH with the complaints of chronic cough, low grade fever, weakness, and breathlessness. The patient has been presumptively diagnosed with miliary pulmonary tuberculosis on the basis of chest radiograph, and has taken AKT for almost 2 months.



Figure F

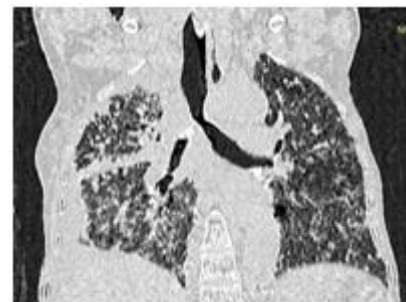


Figure I

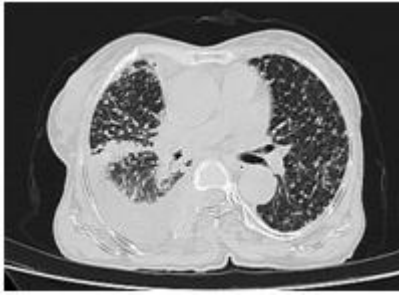


Figure J



Figure K



Figure L

Figure I, J, K & L: Inhomogeneously enhancing ill marginated soft tissue density lesion noted involving right hilar region, encasing the right main bronchus near bifurcation with encasement of upper lobe bronchus.

Multiple mediastinal and perihilar metastatic lymph nodes noted. Moderate amount of right-sided effusion is also noted. Multiple well-defined nodular pulmonary metastases noted scattered in bilateral lung parenchyma, which gave the miliary appearance in the chest plain radiograph.

So it was important to differentiate miliary tuberculosis from the pulmonary metastasis.

4. Conclusion

Similarity in the symptomatology of tuberculosis and lung malignancy had led to the increased incidence of diagnosis of lung cancer at advanced stage. It is important to exclude the diagnosis of lung cancer in the patients with established risk factors for the same before reaching on the diagnosis of tuberculosis and beginning a lengthy treatment regimen. It is better to evaluate the patients with high risk factors for lung malignancy (age > 55 years, history of smoking) with Chest CT scan to rule out the malignancy rather than initiating

tuberculosis treatment on the basis of plain chest radiograph alone.

References

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