

Lung cancer misdiagnosed as sputum negative pulmonary tuberculosis can we avoid this pitfall with the investigations available today

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Abstract

Early lung cancer can masquerade as pulmonary TB especially an endemic area like India. Many early lung cancers have been treated wrongly as pulmonary TB because the clinical and the radiological features for both conditions are similar. We present 2 cases of early lung cancer who were treated wrongly as pulmonary TB. In the first patient we did ultrasound guided Trans Thoracic Needle aspiration(TTNA) and in the second patient we did CT of upper abdomen which revealed the metastasis in Rt adrenal gland. We also review the literature.

Keywords: early lung cancer, pulmonary tuberculosis, Trans Thoracic Needle Biopsy(TTNA) Virtual bronchoscopy, electromagnetic navigation bronchoscopy(ENB), radial endobronchial ultra sound(R- EBUS)

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INTRODUCTION

India has more tuberculosis cases annually than any other country. World Health Organization estimates, lung to be the leading cause of mortality due to cancer in males in India. Higher prevalence of tuberculosis and overlap of its clinical presentation and radiological features with lung cancer creates a scenario where a significant number of early lung cancer patients may get wrongly labeled as tuberculosis. We come across so many Lung cancer patients in our hospital and we present two index cases here.

CASE HISTORY

A 70yrs old male with history of 20 pack years of smoking and type 2 DM presented to us with complaints of cough with expectoration, breathlessness and generalized weakness. On examination of the chest he had bilateral coarse crepts. He was admitted with similar complaints in another tertiary care center 4 months ago and underwent investigations. The CT scanning of the chest suggested the possibility of pulmonary Kochs or Bronchogenic carcinoma of the Left Lung. Brochoscopy did not reveal any abnormality and bronchial washings were negative for malignant cells .So they put him on Antitubercular Therapy empirically. After 2 months of ATT since there was no improvement in his condition he was brought to our hospital .He was given supportive care and investigations were done .Chest x-rays showed consolidation of the left lower lobe, sputum samples were negative for tuberculosis. CECT Chest showed consolidation of the left lower lobe and Pleural Effusion with incidental gall stones and a left solitary renal cyst. Bronchoscopy revealed no abnormality and bronchial washings were negative for AFB and malignant cells. But since the suspicion for malignancy was very high ultrasound guided FNAC was done which proved it to be a case of Squamous cell carcinoma of left lung.

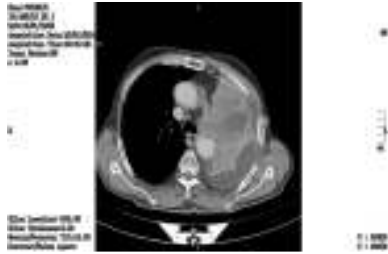


Figure 1: CECT Chest showing consolidation of the left lower lobe and Pleural Effusion

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 alone. This happened in this case.

Case History 2



Figure 2: Chest CT showing consolidation of the posterobasal segment of the left lower lobe and multiple hilar lymph nodes

Another 65yrs old male who was a chronic smoker was admitted with cough with expectoration and breathing difficulty. On examination he had severe pallor, tachypnoea, bilateral coarse crepts in the chest and so a working diagnosis of COPD with Severe anemia was made. Hereceived supportive care. The sputum samples were negative for AFB, CXR showed left lower lobar opacities. Chest CT showed consolidation of the posterobasal segment of the left lower lobe and multiple hilar lymph nodes. But the diagnosis of malignancy was still a doubt. FNAC correlation was advised .A clever CT technician scanned the upper abdomen on his own. There was a large l which cleared the doubt immediately.



Figure 3: Right adrenal metastases

This emphasizes the importance of adhering to the classical teaching that upper abdomen should always be imaged in a case of chest or lung pathology .It would save other unnecessary investigations.

DISCUSSION

In no other part of the body had there been so much difficulty in differentiating a malignancy from a benign disease process other than in the lungs. Due to the high prevalence and radiological similarities between TB and Lung cancer and several other factors like lack of awareness, inadequate infrastructure and socio-economic factors in developing countries, a large number of lung cancer patients initially get wrongly treated for TB. But not even one of the reasons cited above can be let to encourage complacency on our part in diagnosing, as the treatment for both are entirely different, with disastrous consequences. Each type of lung cancer is clinically and genetically distinct. Small cell lung carcinomas are best treated by chemotherapy, because almost all of them are metastatic at presentation. The NSCLCs may be curable by surgery if limited to the lung. Even with many incremental improvements in thoracic surgery, radiation therapy, and chemotherapy, the overall 5-year survival rate is only 16%. The 5-year survival rate is 52% for cases detected when the disease is still localized, 22% when there is regional metas-tasis and only 4% with distant metastases⁹.Only early-diagnosis of lung cancer

can increase the chance of tumor resectability and timely chemo-radiotherapy may provide better quality of life. Even though Pulmonary tuberculosis and lung cancer have overlapping symptoms, a careful history taking and examination can help in differentiating between the two .A history of tobacco smoking is usually present in cases of lung cancer while it may or may not be present in tuberculosis. The common symptoms of lung cancer at presentation are change in character of chronic cough, hemoptysis, dyspnea, hoarseness of voice, chest pain, unexplained weight loss and loss of appetite, non-resolving pneumonia and superior vena cava syndrome .Fever in tuberculosis is low grade with evening rise, whereas in lung cancer, it is non-specific. If the weight loss is sudden, it indicates malignancy rather than pulmonary tuberculosis in which weight loss is gradual⁸. The overall Sensitivity of various investigations in diagnosing Lung Cancer is as follows¹

Table 1:

Investigation	Overall sensintivity
Sputum cytology	66%
Flexible Bronchoscopy	88% in central, endobronchial lesions

R-EBUS (radial endobronchial ultrasound)	73%,
EMN (electromagnetic navigation bronchoscopy)	71%,
TTNA(Transthoracic needle aspiration)	90%,
Pleural fluid cytology	72%,
Closed pleural biopsy	38% to 47%
Image-guided closed biopsy	75% to 88%
Thoracoscopic biopsy of the pleura	95% to 97%.

From the above facts, it is very obvious that none of the available investigations have 100% accuracy in diagnosing lung cancer. A prudent combination of the available modalities is very important in avoiding misdiagnosis. A Sputum cytology may be the initial cost effective test, followed by CXR and CECT chest. 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 alone. Socytohpathological evidence is must be resorted to reach a definite diagnosis of lung cancer. we will not discuss the radiological features here only to emphasize the above concept. There are a battery of investigations which are widely available these days .The most important one is Flexible bronchoscopy with or without Brush biopsy or Bronchioalveolar lavage. The sensitivity of traditional Flexible bronchoscopy is high for endobronchial disease and poor for small peripheral lesions less than 2 cm in diameter. Adding more sensitivity, in the recent years several guided-bronchoscopy techniques like electromagnetic navigation bronchoscopy (ENB), virtual bronchoscopy (VB)combined with narrow band imaging , radial endobronchial ultrasound (R-EBUS)guided transbronchial needle aspiration , ultrathin bronchoscope have been developed³⁻⁷.A meta-analysis in 2012 showed that the diagnostic yield of such guided bronchoscopic techniques is definitely better than that of traditional transbronchial biopsy². So, guided bronchoscopy has been suggested as an alternative to or be complementary to TTNA for tissue sampling of endobronchial Pulmonary Nodule and even in the evaluation of peripheral pulmonary lesions². Early detection of lung cancer can also be done with techniques like laser induced fluorescence endoscopy and spectrofluometry. The gold standard against which bronchoscopic modalities are compared is Transthoracic needle aspiration cytology².The sensitivity of TTNA is excellent for malignant disease, but TTNA has a higher rate of pneumothorax than do bronchoscopic modalities. Thoracoscopic biopsy

of the pleura has the highest diagnostic yield for diagnosis of metastatic pleural effusion in a patient with lung cancer.

CONCLUSION

Even in endemic areas, every lung opacity is not pulmonary tuberculosis. We must think twice before stamping a case as smear negative tuberculosis based on the radiological findings alone. Electromagnetic navigation bronchoscopy (ENB), virtual bronchoscopy (VB)combined with narrow band imaging , radial endobronchial ultrasound (R-EBUS)guided transbronchial needle aspiration , ultrathin bronchoscope, laser induced fluorescence endoscopy, spectrofluometry must be resorted to whenever the diagnosis is in doubt.

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