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Review Article

ROLE OF RADIOLOGY IN DIAGNOSIS OF LUNG ADENOCARCICONOMA: A REVIEW ARTICLE

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ABSTRACT

Lung cancers are tumours arising from cells lining the airways of the respiratory system. Adenocarcinoma of the lung is one of the main types of lung cancers. Adenocarcinoma of the lung arises from the secretory (glandular) cells located in the epithelium lining the bronchi. Lung cancer is more than twice as common in men as in women. Geographically, the tumour is found worldwide, but it is especially common in countries with a high tobacco consumption. Adenocarcinoma of the lung is the commonest type of lung cancer, accounting for 32% of all cases of lung cancer.

Key words: adenocarcinoma, glandular, bronchi, tobacco

INTRODUCTION

Adenocarcinoma of the lung is the most common type of lung cancer, and like other forms of lung cancer, it is characterized by distinct cellular and molecular features.[1] Lung cancer is the leading cause of cancer-related death for both men and women[2]. The signs and symptoms of this specific type of lung cancer are similar to other forms of lung cancer, and patients most commonly complain of persistent cough and shortness of breath. Like many lung cancers, adenocarcinoma of the lung is often advanced by the time of diagnosis. Once a lesion or tumor is identified with various imaging modalities, such as commuted tomography or X-ray, a biopsy is required to confirm the diagnosis. This cancer usually is seen peripherally in the lungs, as opposed to small cell lung cancer and squamous cell lung cancer, which both tend to be more centrally located, [3] although it may also occur as central lesions. [4] The peripheral location of adenocarcinoma in the lungs may be due to the use of filters in cigarettes which prevent the larger particles from entering the lung. [5]

Signs and symptoms:

The symptoms that the patient exhibits usually reflect the extent of the cancer's spread. Smoking cigarettes is by far the leading risk factor for lung cancer. In fact, cigarette smokers are 13 times more likely to develop lung cancer than nonsmokers. Cigar and pipe smoking are almost as likely to cause lung cancer as cigarette smoking. However, lung cancer that is advanced will cause patients to experience additional signs and symptoms secondary to the cancer spreading to other organ systems. [6]

Most common signs include:

- Cough that does not go away or gets worse
- Hemoptysis (coughing up blood or rust-colored phlegm) [7]
- Weight loss (0-68%)
- Bone pain
- Clubbing
- Fever
- Superior vena cava obstruction- facial, neck, upper torso swelling. This is caused by compression of vasculature by the lung tumor that restricts blood return from the upper body. [8]

Imaging:

Chest x-ray:

Lung cancer may be seen on chest x-ray as a solitary pulmonary nodule or mass. As many as 80% of solitary pulmonary nodules (<4cm diameter) in the over-50 age group are cancer. Chest x-ray may also be used to evaluate the size of the tumour and possible involvement of lymph nodes in the chest. A chest x-ray is often the first imaging test performed when a person presents with cough or chest pain, particularly in the primary

care setting. A chest radiograph may detect a lung nodule/mass that is suggestive of cancer, although sensitivity and specificity are limited.

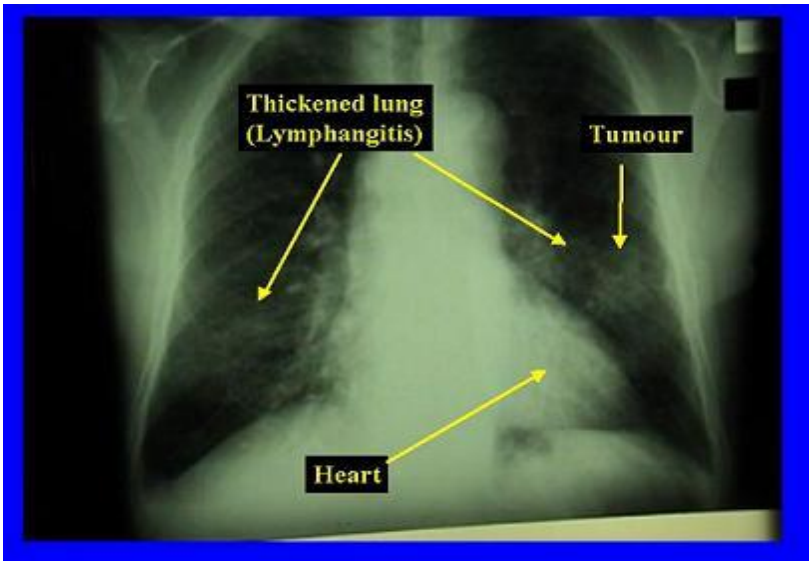

Figure1: Chest x-ray showing tumour

CT imaging:

Provides better evaluation of the lungs, with higher sensitivity and specificity for lung cancer compared to chest radiograph (although still significant false positive rate. [9] CT is more accurate than chest x-ray, and may be particularly useful in identification of lymph node involvement.

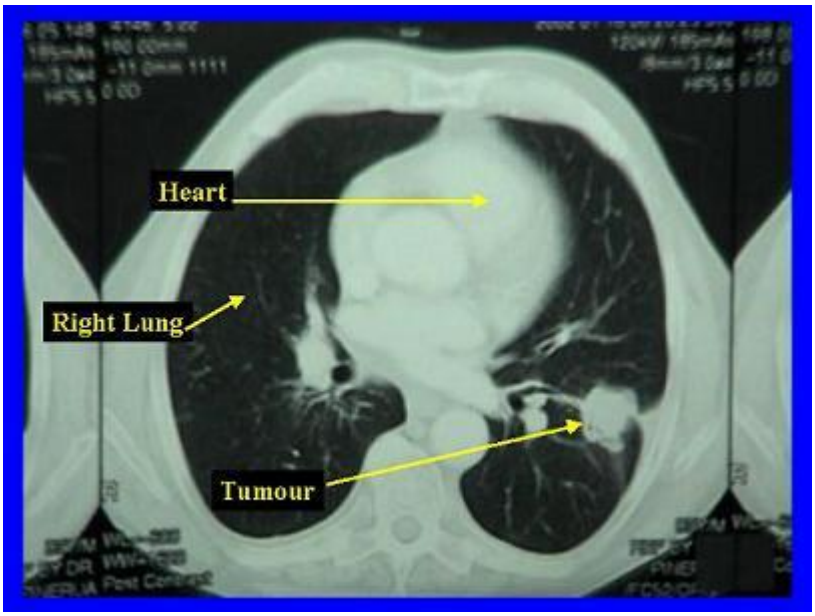

Figure2: CT showing tumour in left lower lobe of lungs

Nuclear medicine imaging, such as PET/CT and bone scan, may also be helpful to diagnose and detect metastatic disease elsewhere in the body. [10] PET/CT uses a metabolically active tracer that allows clinicians to identify areas of the body that are hypermetabolic. Increased uptake of the tracer occurs in malignant cells and areas of inflammation or infection. Integrating the imaging reflective of metabolic activity with normal CT imaging allows for higher sensitivity and specificity compared to PET alone. [11]

MRI is reserved for patients with advanced disease where intracranial, or brain, involvement is likely. It is also helpful for evaluating the extent of chest wall, diaphragmatic, brachial plexus (such as in the case of superior sulcus tumors), or spine involvement.

CONCLUSION

Adenocarcinomas tend to be slow-growing. In this article I have focused mainly on radiological findings of adenoarcinoma of lungs. Treatment of this lung cancer is based upon the specific subtype and the extent of spread from the primary tumor. Chemotherapy, radiation, and surgical resection are used in attempt to eradicate the cancerous cells based upon these factors.

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