Case Report

An uncommon presentation of lung cancer - a case report

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Abstract:

Although bronchogenic carcinoma is one of the commonest malignancies affecting both men and women alike, it is more commonly seen in smokers and has a predilection to affect older people. One subtype of Non small cell lung cancer - adenocarcinoma has been described to occur more frequently in non smokers. It is known to affect women more than men and is very commonly seen in Asians and has a reasonably better prognosis compared to other subtypes of adenocarcinoma. Bronchogenic carcinoma is extremely uncommon in younger age group and herein we present the case of a 25 year old non smoking male who presented with cough of 1 month duration and on evaluation was found to have Non small cell lung cancer.

Keywords: Bronchogenic carcinoma, Non small cell lung cancer, young male

Introduction

Malignant neoplasms of lung are typically seen in smokers, past middle age. Recent studies have shown that one subtype of non small cell cancer namely adenocarcinoma is increasingly being detected and in some case series has been documented to be the commonest type of lung cancer. One subtype of adenocarcinoma is seen to occur more commonly in non smoking Asians and has a gender predilection, affecting women more commonly. This subtype on immunohistochemistry is usually positive for either EGFR or ALK mutations, which makes it more responsive for "targeted therapy" with drugs like tyrosine kinase inhibitors and ALK inhibitors. Bronchogenic carcinoma is uncommon in age less than 40 years and especially so, in non smokers. Herein we report the case of 25 year old non smoking male who presented with cough of 1 month duration and on investigation was found to have non small cell lung cancer. The case is being presented because of its rarity and also to highlight the fact that malignancy can never be overlooked in any age group

Case report

A 25 year old non smoking male, software engineer by profession, presented to our hospital for evaluation of cough of 1 month duration. Cough was non productive in nature. He denied having fever, weight loss, breathlessness, wheeze or chest pain. He did not have any relevant respiratory illness in the past. Clinical examination revealed a healthy man, not in any kind of distress. General examination did not reveal any abnormality. His vital signs were normal. Clinical examination of the respiratory system revealed a reduced intensity of breath sounds in the left infraxillary and infrascapular area. Other systems were within normal limits. Laboratory investigation revealed normal blood counts, an erythrocyte sedimentation rate of 32 mm/hour, and

normal hepatic and renal functions. Chest radiograph postero-anterior view revealed the presence of left hilar mass with minimal left sided pleural effusion (Fig 1).

Chest X-ray PA view showing a left paratracheal opacity extending to left hilum and minimal left sided pleural effusion

Sputum gram stain, cultures and acid fast staining were negative. He underwent a pleural aspiration which revealed the presence of exudative pleural effusion (protein-5.3mg%, glucose-75mg%, LDH-478 U/l, Serum LDH-263 u/l). There were 864 cell/mm3 of which 70% were lymphocytes and 30% were polymorphs. Pleural fluid ADA was 6.4. A CT scan of the thorax was taken which showed a large multilobulated mass lesion of size 14 x 8.1 x 6.3 cm involving the mediastinal pleural surface of left hemithorax including the left hilum. Multiple pleural and fissural based nodules were also seen. Moderate left sided pleural effusion was also seen (Figure 2). Since the radiological picture was suggestive of possible malignant process he was subjected to a CT guided biopsy.

Histopathological examination of biopsy specimen revealed patchy areas showing glandular spaces lined by columnar epithelium having vesicular nuclei with mild to moderate pleomorphism. These features were consistent with mucin secreting adenocarcinoma (Figure 3). Endothelial growth factor receptor (EGFR) and Echinoderm microtubule associated protein like 4-anaplastic lymphoma kinase (EML-ALK) mutations were negative. Bronchoscopy was not done because tissue

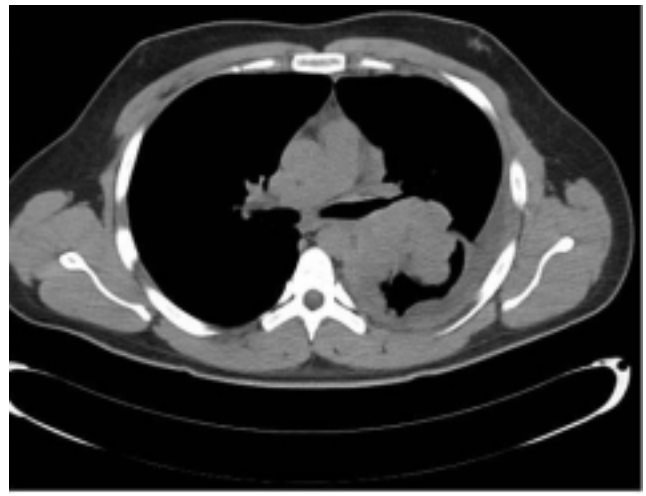

Fig. 2: CT thorax showing a multilobulated mass with left pleural effusion

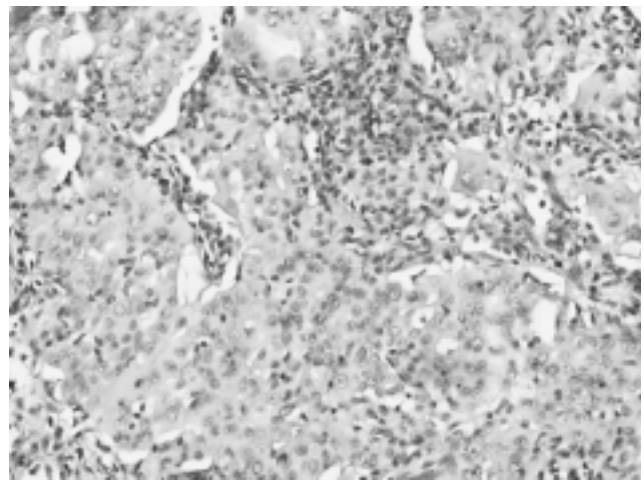

Fig. 3: Histopathology section (H and E, 400 X) showing tumor cells stained with PAS-D.

diagnosis was reached with CT guided biopsy itself. He was worked up for distant metastases with MRI brain, CT abdomen, Bone scan and PET CT scan, none of which showed any evidence of metastases elsewhere. He was started on chemotherapy with cisplatin and pemetrexed and after 4 cycles of chemotherapy has shown significant reduction in size of the tumor.

Discussion

Lung cancer is the leading cause of death worldwide[1] and it is among most common causes of cancer in india particularly in men with around 63000 new cases reported each year[2]. In patients under 25 years of age NSCLC is exceedingly rare, having an incidence rate for 2002-2006 of 0.3 per 100,000. Over the past four decades, there has been a shift in the pathologic distribution of NSCLC. Prior to the 1970s, squamous-cell carcinoma was

the most common histological type of NSCLC, however, after 1975, there has been a dramatic increase in the incidence of adenocarcinoma, making it the predominant histological subtype of NSCLC[3]. Presently, there is not much data on the distribution of the histological subtypes in India. A review article from 2004 stated that squamous-cell carcinoma was still the predominant histological subtype of NSCLC in India[4]. A more recent study found that adenocarcinoma accounts for 44% of NSCLC, while only 26% are squamous-cell carcinoma.[5]

Traditionally the strongest risk factors for lung cancer are tobacco use and age. The increase in the incidence of adenocarcinoma was thought to be mainly attributable to a change in smoking pattern and an increased preference for filter cigarettes that have low tar, but high nitrate content.[6] Earlier studies reported that the increased incidence of adenocarcinoma was confined to smokers. In contrast, recent studies found a statistically higher occurrence of adenocarcinoma in non-smokers as compared to smokers. This is supported by other studies in the literature. Thus, our case and other recent studies suggest that the increase in adenocarcinoma is not solely due to a change in pattern of cigarette smoking, but must be due to non-smoking-related factors, since the increase is demonstrated in non-smokers as well.[7,8] NSCLC occurring in young people have a higher incidence of adenocarcinoma especially in female patients, and most cases show no history of tobacco use. Genetic factors are known to play a role in the development of lung adenocarcinoma, and familial genetic clustering of lung cancer has been found. Common gene mutations in KRAS, EGFR, and p53 have been associated with a higher risk for development of lung adenocarcinoma. Survival in this group of patients remains highly variable with some studies showing a promising response to targeted therapy using novel drugs like Geftinib and Crizotinib. One study found no difference in survival between lung adenocarcinoma patients more than and less than 30 years of age [9]. Similarly, a retrospective study of patients younger than 50 years of age compared with those older than 50 found no difference in survival or in time to disease progression[10]. Survival in these young patients is associated primarily with stage, but it is not dependent on sex, age younger or older than 30 years, smoking history, histological type, or degree of differentiation. Overall the survival and prognosis of NSCLC in young patients remains dismal.

The aim of presenting this case report is to underline the fact that bronchogenic carcinoma can occur in any age group, and in non smokers and that it should be always considered as a differential diagnosis in any patient who presents with symptoms and radiological findings similar to what our patient had.

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