Abstract

A young lady presented with cough for three months and dyspnoea for one month along with clinical signs of bilateral consolidation of lung. On CT scan thorax there were bilateral air bronchograms with alveolar filling opacities predominantly in lower lobes. After bronchoscopy when there was presence of suspicious malignant cells on bronchoalveolar lavage fluid, transbronchial lung biopsy diagnosed the case as squamous cell lung cancer. Radiological presentation of squamous cell lung cancer as air bronchogram is not a very common phenomenon and can present a diagnostic challenge to the clinician.

Introduction

Worldwide and in developing countries, lung cancer is the most common type of cancer as well as the leading cause of death from cancer in men. There has been an increase in incidence of lung cancer among females over last twenty years by about 134%, making it the second leading cause of death from cancer among females but it has increased to about 57% in males. Lung cancers usually present with space occupying lesion in lung or signs of metastasis like pleural effusion, lymph node metastasis, superior venacaval syndrome etc. Presentation of lung cancer as consolidation with air bronchograms is atypical one and high index of suspicion is required for its diagnosis, especially in the young. In case of consolidation of lung we consider a diagnosis of pneumonia as the first differential, while keeping the others in mind while the diagnosis of malignancy as the least likely differential diagnosis.

We are reporting a case of squamous cell carcinoma in a 40 year lady presenting as bilateral consolidation with air bronchograms.

Case Presentation

A 40 year-old lady presented with low grade fever, cough with scanty mucoid expectoration for three months and progressive persistent shortness of breath for one month. She had no history of haemoptysis, chest pain, paroxysmal nocturnal dyspnoea and wheeze. She denied any past history of antitubercular drug intake. On admission her dyspnoea was Modified Medical Research Council (MMRC) grade IV without cyanosis. On general
examination there was presence of pallor without any clubbing, jaundice, oedema and palpable lymph nodes. On examination of respiratory system she had signs of bilateral consolidation involving mainly lower lobes like presence of bilateral tubular bronchial breath sounds with crackles and cardiovascular system examination revealed no abnormality. On examination of blood there was neutrophilic leucocytosis with mild anaemia. Blood for HIV1 and HIV2 was negative. Chest X-ray showed bilateral alveolar filling opacities involving all zones (Figure 1). Sputum for acid fast bacilli (AFB) smear, Gram stain, malignant cells for consecutive four days and mycobacterial culture was negative. After admission to our department she had received courses of intravenous empirical antibiotics (piperacillin + tazobactam 4.5 gm 6 hourly for 10 days) and supportive management for her dyspnoea without any improvement after 12 days. CT scan thorax with contrast showed bilateral alveolar filling opacities with presence of alveolar filling opacities involving all lobes predominantly lower lobes and mediastinal lymphadenopathy (Figure 2). Ultrasonography of abdomen was normal. On fibre-optic bronchoscopy there was inflamed mucosa but no intrabronchial growth and bleeding spots and only bronchoalveolar lavage (BAL) fluid and bronchial brushing was taken. BAL for malignant cells and bronchial brushing was reported as suspicious for malignancy. A planned transbronchial lung biopsy performed after five days and reported as round to polygonal cells in sheets with nuclear pleomorphism suggestive of squamous cell carcinoma (Figure 3). Immunohistochemistry of transbronchial lung biopsy sample was positive for cytokeratin 5, p63 and 34betaE12 but negative for thyroid transcription factor 1. Patient was diagnosed as a case of bilateral squamous cell lung cancer presenting as bilateral consolidation. Patient died after 7 days of 1st cycle of chemotherapy (carboplatin + paclitaxel) from respiratory failure.

Discussion

Lung cancer is unusual in patients who are less than 40 years of age and it accounts for only 3% of all lung cancer patients. Histopathologically, adenocarcinoma account for 46-54%, small cell cancer 16-28%, squamous cell cancer (SCC) 12-16% and large cell undifferentiated cancer 8-12% in these subgroup of patients. SCC of the lung is more common in men than women and it is closely related to history of tobacco smoking. So, in young patients fewer SCCs but more adenocarcinomas were found.

SCC of lung most often arises centrally in larger bronchi, and while it often metastasises to locoregional lymph nodes (particularly the hilar nodes) early in its course, it generally disseminates outside the thorax somewhat later than other major types of lung cancer. Large tumours may undergo central necrosis, resulting in cavitation. A squamous cell carcinoma is often preceded for years by squamous cell metaplasia or dysplasia in the respiratory epithelium of the bronchi, which later transforms to carcinoma in situ. Eventually, it becomes symptomatic, usually when the tumour mass begins to obstruct the lumen of a major bronchus, often producing distal atelectasis and infection. Simultaneously, the lesion invades into the surrounding pulmonary parenchyma / interstitium. On histopathology, these tumours range from well differentiated, showing keratin pearls and cell junctions, to anaplastic, with only minimal residual squamous cell features.

Normally intrapulmonary airways are not visible on chest radiographs, but air within bronchi, or bronchioles, passing through opacified lung field may be visible as branching linear lucencies. The resulting image is called an air bronchogram. Two most common causes of air bronchograms are consolidation and pulmonary oedema. Examples of other causes of
Air bronchograms are normal expiratory radiograph, acute respiratory distress syndrome (in adults) or hyaline membrane disease (in neonates), compression atelectasis (e.g. pleural effusion, pneumothorax), scarring (e.g. radiation fibrosis, bronchiecstatic lobe), severe interstitial lung disease (e.g. sarcoidosis), certain neoplasms (notably bronchioloalveolar cell carcinoma, lymphoma).\(^5\) Bronchioloalveolar cell carcinoma and lymphoma grow around airways without compressing them. Therefore, in these diseases, air bronchograms may be visible even on chest radiographs. Air bronchograms in other lung malignancies, such as small adenocarcinomas, may only be detectable on CT.\(^6\) Air bronchograms can occasionally be seen in post obstructive pneumonia, particularly on CT, even though replacement of air by secretions beyond the obstruction might have been expected. Our patient had air bronchogram and alveolar filling opacities on CT scan thorax and proved to be a case of squamous cell lung cancer on transbronchial lung biopsy. There was no report of squamous cell lung cancer with air bronchogram sign on CT scan thorax till date.

References