CASE REPORT

Diffuse Consolidation Form of Bronchoalveolar Carcinoma

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ABSTRACT

This case report describes a patient with diffuse consolidation form of bronchoalveolar carcinoma (BAC) which is a rare type of adenocarcinoma of lung. He was diagnosed on the basis of findings on X-ray and high resolution CT(HRCT) chest later confirmed by open lung biopsy and immuno-histochemical staining. Only supportive treatment could be provided and the patient expired during the subsequent month of follow-up. Traditionally, diffuse consolidation is the radiological presentation in only 20% of patients with bronchoalveolar carcinoma.

Key words: *Bronchoalveolar carcinoma. Adenocarcinoma. Cancer. Consolidation.*

INTRODUCTION

Bronchoalveolar carcinoma (BAC) is classified as a subtype of adenocarcinoma according to the WHO classification of lung and pleural tumours (1999).[1] It is a tumour with distinct epidemiological, biological, clinical, radiological and therapeutic features.

The International Association for Study of Lung Cancer (IASLC) diagnostic criteria for bronchoalveolar carcinoma include absence of another known primary adenocarcinoma, no lesion of central bronchogenic origin, peripheral location, intact interstitial framework and a histology demonstrating malignant cells growing along the alveolar and bronchiolar walls characteristically known as lepidic growth.[2]

Here the authors report a case of bronchoalveolar carcinoma.

CASE REPORT

A 47 years old gentleman presented with 11-months history of progressive dyspnea of Medical Research Council (MRC) grade IV and dry cough. There was no history of orthopnea, paroxysmal nocturnal dyspnea (PND), fever or chest pain.

About 10 months back he was evaluated at a tertiary care hospital where his bronchoscopy was also done and he was started on empirical anti-tuberculous therapy despite the bronchial washings being negative for acid fast bacilli (AFB). He had received ATT for 9 months without any clinical or radiological improvement. His past and family history was unremarkable. He was a smoker with a history of 35 pack years, driver by occupation with no history of exposure to organic/inorganic dusts. He was married with 4 children and there was no history of extramarital contacts.

On general physical examination he had marked finger and toe clubbing, central cyanosis and flapping tremors. Chest examination revealed bilateral bronchial breath sounds with scattered fine end-inspiratory crepitations.

His blood complete picture showed neutrophilic leukocytosis. Arterial blood gases (ABGs) were indicative of type-II respiratory failure and echocardiography showed Cor-pulmonale. His chest X-ray on admission showed bilateral extensive consolidation in mid and lower lung zones as shown in Figure 1.

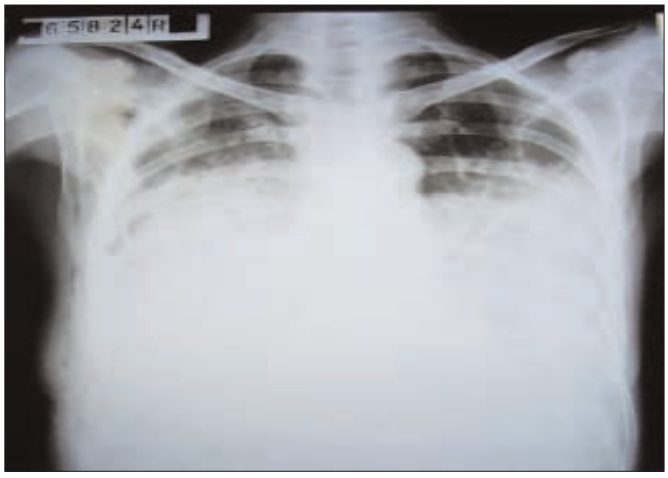

Figure 1: Chest X-ray showing bilateral diffuse consolidation.

Because of chronic nature of the patient's illness, he was advised an HRCT chest which showed widespread areas of consolidations with air-bronchograms along with crazy-paving pattern on pulmonary window as given in Figure 2.

Patient underwent an open lung biopsy which showed non-mucinous bronchoalveolar carcinoma as given in Figure 3. On immuno-histochemical staining it was TTF-1 positive, CK-7 positive and CK-20 negative.

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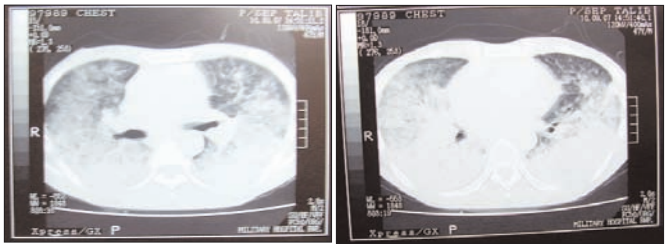

Figure 2: HRCT chest showing bileteral consolidations and crazy-paving appearance.

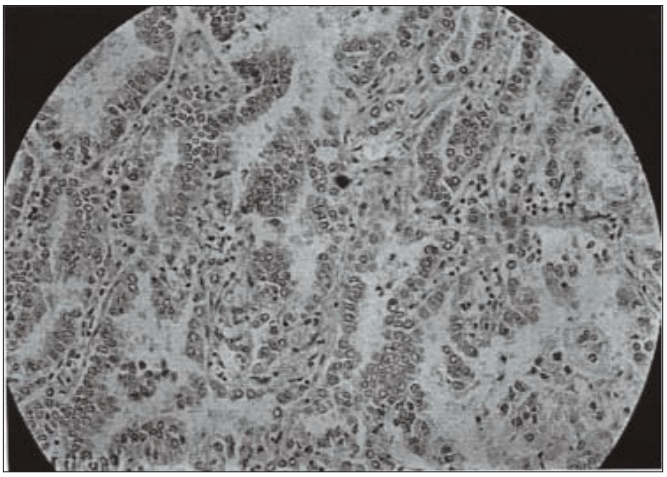

Figure 3: Bronchoalveolar carcinoma with lepidic pattern of growth on H and E slide.

He was given supportive treatment including oxygen, bronchodilators, short course of steroids and antibiotics on as needed basis. He was labelled as diffuse consolidation form of non-mucinous bronchoalveolar carcinoma and because of the advanced nature of the patient's illness, he was considered for improvement of quality of life (QOL) only. The patient died during the subsequent month of follow-up.

DISCUSSION

Bronchoalveolar carcinoma comprises 2-9% of primary lung neoplasms with a peak incidence in 6th to 7th decade of life and a slight male predominance; 70% of patients are smokers. It is known to occur in scarred lung due to previous infection, certain occupational groups including construction, wood and paper mill workers, sugar cane farmers and a peculiar infection in sheep known as jaagsiekte indicate that probably viruses may be implicated.[4] This patient was relatively young and heavy cigarette smoking was the probable risk factor in his case.

The exact pathogenesis of the disease is unknown but it is believed that adenocarcinoma and bronchoalveolar carcinoma develop due to a common pre-cancerous lesion known as atypical adenomatus hyperplasia(AAH) with certain mutations including k-ras, TTF-1, 8q, 17p and epidermal growth factor tyrosine kinase (EGFR-TK) favouring stem cells to proceed towards pure BAC pathway.[5]

Bronchoalveolar carcinoma is classified on the basis of histology into non-mucinous (80%) and mucinous (20%) types. Non-mucinous BAC originates from Clara cells or type-II pneumocytes and on immuno-histochemical staining they are TTF-1 positive, CK-7 positive and CK-20 negative. The patients with this type of tumour may remain asymptomatic for a long time and usually have a better prognosis.[6] This patient also suffered from non-mucinous type of BAC and this may be the reason that he remain undiagnosed for 11 months. About 60% of patients with BAC are asymptomatic at presentation. Cough, dyspnea and chest pain are the usual features. Bronchorrhea though a disabling symptom is rare occurring in only 20% of patients with mucinous histology. Respiratory failure frequently occurs because of the underlying shunt physiology. This patient presented with cough and dyspnea and had respiratory failure which is in accordance with the known features.

Bronchoalveolar carcinoma is grouped into four type, based on their radiological presentation. About 50% of patients present as a solitary pulmonary nodule (SPN) or a mass, 20% as local consolidation, 20% as bilateral diffuse consolidation and 10% as multiple pulmonary nodules (MPNs). Diffuse consolidation and multiple pulmonary nodules are grouped as multifocal BACs due to aerogenous spread of the disease. "Crazy paving appearance" and "CT angiogram sign" are important ancillary radiological features.[7] The patient in this case had diffuse consolidation form of bronchoalveolar carcinoma and showed crazy-paving appearance on the HRCT chest which is a very rare presentation of BAC.

The diagnosis rests on the radiological presentation and histology. Sputum cytology is diagnostic in 80% of patients with diffuse disease. Transbronchial biopsy can show the characteristic lepidic growth but it cannot explain the vascular and stromal invasion. Open lung biopsy remains the Gold standard.[8,9]

This patient had dry cough so his sputum cytology was not possible. Patient could not undergo a bronchoscopy with transbronchial biopsy because he was in respiratory failure which is a relative contraindication to the procedure. His diagnosis was, therefore, established on open lung biopsy.

Around 25% of patients with BAC have multifocal disease and this along with bronchorrhea, mucinous-type histology and mediastinal lymphadenopathy are associated with a poor prognosis. This patient had multifocal disease so the prognosis was already poor and coupled with the delay in diagnosis, he could survive only a month after diagnosis.[3]

The definite treatment is surgical, offered to patients with stage I/II disease. Patients with multifocal disease can only be given chemotherapy which has poor response in BAC.[10] The patient in this case was not a candidate for surgery as he had multifocal disease.

Chemotherapy was also not offered because these tumours are generally chemo-resistant so he was given supportive care only and he died peacefully at home.

There are occasions when uncommon conditions like bronchoalveolar carcinoma would present ambiguously and empirically treated for the tuberculosis. It is clinical challenge requiring endeavour to reach a diagnosis as realistically as possible. Otherwise, such patients are treated erroneously losing valuable time and cure.

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