Malignant bronchial ulcer with coexistent pulmonary tuberculosis

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Abstract

Ulceration in the bronchial mucosa is noted rarely in bronchoscopy. In the past, it was frequently encountered in endobronchial tuberculosis. Deep necrotic bronchial ulcers are seen very rarely in clinical practice. Here we are reporting a first-ever case report of malignant bronchial ulcer presenting as necrotic deep bronchial ulcer, in a 70-year-old male, chronic smoker, who complained of breathlessness for 3 months, cough for 3 months, loss of weight and of appetite for 1 month. Bronchoscopy showed a large necrotic ulcer with dense anthracotic pigmentation which bleeds in touch with forceps. Bronchial washings, brushings, endobronchial biopsy were taken from the ulcer which was suggestive of poorly differentiated bronchogenic carcinoma. TBNA from the mediastinal nodes showed the features of caseous necrosis with granulomatous inflammation. Consequently, with the diagnosis of poorly differentiated carcinoma with pulmonary tuberculosis and COPD, the patient was started on anti-tuberculosis drugs, inhaled bronchodilators and referred to an oncologist for chemotherapy.

Introduction

Ulcerations in the bronchial mucosa are not common in bronchoscopy, unlike in endobronchial tuberculosis, besides ulcers in those conditions are usually superficial. Similar superficial ulcerations of bronchial mucosa were noted in patients with adult varicella pneumonia, which presents with deep bronchial ulcers and is associated with poor prognosis [1]; deep ulcers were also noted in patients with Wegener's granulomatosis [2] (Table 1). Here, we are reporting a first-ever rare case report in literature of bronchogenic carcinoma presenting with a deep necrotic bronchial ulcer on bronchoscopy.

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Case Report

A 70-year-old male, chronic smoker with a history of 30 pack/years, came to our hospital with main complaints of breathlessness for 3 months, cough for 3 months, loss of weight and appetite for 1 month. Initially, he was evaluated by a general practitioner, with chest radiograph and basic blood investigations.

The patient was admitted in our hospital and investigated further. Chest radiograph showed diffuse heterogenous opacity involving bilateral lung fields with blunting of costophrenic angles and flattened diaphragm. Blood investigations were within normal limits except for leukocytosis with polymorph predominance. Sputum direct smear for acid fast bacilli was negative. Sputum gram stain showed gram positive cocci in chains.

Computed tomography of chest was done which showed nodular lesions in right upper lobe with fibrotic strands in the apex along with randomly distributed nodules with few mediastinal necrotic lymph nodes. Peribronchial thickening at the level of bronchus intermedius was also noted.

Then, a diagnostic bronchoscopy was performed, which showed large necrotic ulcer with dense anthracotic pigmentation and unhealthy bronchial mucosa at the right secondary carina which bleeds on touch with forceps. Bronchial washings, brushings, endobronchial biopsy were taken from the ulcer. Bronchial wash/brush cytology showed highly cellular smear composed of many reactive bronchial epithelial cells and atypical cells. The atypical cells are round to oval arranged in cohesive clusters and sheets with overlapping nuclei, attempted rossettoid with glandular pattern and scattered single cells suggestive of poorly differentiated bronchogenic carcinoma. Conventional Transbronchial needle aspiration (TBNA) from the mediastinal nodes in subcarinal station showed the features of caseous necrosis with granulomatous inflammation and the cartridge based nucleic acid amplification test (CBNAAT) was positive for *Mycobacterium Tuberculosis*. Hence, with the diagnosis of poorly differentiated carcinoma with pulmonary tuberculosis, the patient was started on anti-tuberculosis drugs on a daily regimen (rifampicin 450 mg, isoniazid 300 mg, pyrazinamide 1500 mg, ethambutol 1200 mg) and referred to an oncologist for chemotherapy.

Discussion

The coexistence of pulmonary TB and bronchogenic carcinoma was first reported by Bayle in 1810 [3]. The simultaneous develop-

Table 1. Case reports in literature on bronchial ulcers.

Study	Findings
Inokuchi *et al.* [1]	A case of varicella pneumonia in a 69-year-old woman with extensive mucosal airway ulcerations from the pharynx to the main bronchi and numerous VZV-infected cells. The authors found that patients with limited or shallow ulcers had favorable outcomes, whereas patients with vast and deep ulcerations had fatal outcomes.
Pauls *et al.* [2]	A 55-year-old male patient who presented with cough and fever posted for bronchoscopy revealed diffuse erythema of the tracheobronchial mucosa with diffusely scattered white plaques. Histopathology described a multifocal ulcerative bronchitis with underlying chronic bronchitis, night sweats and weight loss). These findings in combination with the laboratory data lead to the diagnosis of Wegener's granulomatosis.

ment of unsuspected primary cancer in close vicinity to an active pulmonary tuberculous process can seriously complicate diagnosis, and in most reported cases, a long interval had elapsed before carcinoma was suspected [4].

Various reasons are proposed for association between pulmonary TB and lung cancer by different authors. One hypothesis would be that inflammation associated with infections can contribute to carcinogenesis [5]. Reactive oxygen or nitrogen species produced by activated neutrophils can bind to the DNA, inducing genetic damage and neoplastic transformation [6]. In fact, it has been shown that alterations of the fragile histidine triad gene might be involved in lung carcinogenesis in patients with chronic pulmonary tuberculosis [7-10]. In addition, during tissue repair, there is increased cell proliferation and angiogenesis, and the epithelium is more prone to metaplasia [9,10].

Clinical diagnosis of co-existing TB and cancer is often challenging. This often causes a delay in diagnosis and institution of appropriate treatment and is associated with poor prognosis. Wofford *et al.* [10] reported 34 cases of coexisting carcinoma lung and pulmonary TB and reported the average delay in making the diagnosis when TB and cancer co-exist to be 13 months. Atypical course of TB, presence of pain, radiological evidence of rib erosion and ipsilateral hilar lymphadenopathy casts doubt on the possibility of coexistence of a malignancy.

TB has been known to complicate the course of cancer. Kaplan *et al.* [11] studied 201 patients with cancer who developed TB during the period 1945-1971. High TB prevalence was seen in patients with Hodgkin's disease and lung cancer compared to carcinoma bladder, carcinoma colon.

In our case, patient was diagnosed to have poorly differentiated bronchogenic carcinoma along with coexistent pulmonary tuberculosis. Co-existence of tuberculosis and cancer causes diagnostic dilemma due to the similarities in presentation, leading to delay in the diagnosis and institution of appropriate therapy. Patients with lung cancer are also vulnerable to develop active pulmonary TB due to immunosuppression and malnutrition resulting from the use of intensive treatment modalities such as aggressive chemotherapy.

Conclusions

Even though clinical radiological features suggest tuberculosis, malignancies can coexist with tuberculosis, and this occurrence should be kept in mind while evaluating the patient. Usually, bronchogenic carcinoma usually presents as endobronchial or parenchymal nodules. In our case it presented as deep bronchial necrotic ulcer along with coexistent pulmonary TB. To the best of our knowledge, this is the first case report of malignant bronchial ulcer in literature.

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