

## CASE REPORT

# Rapid killer: Lung squamous cell cancer

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**Received:** June 10, 2021

**Accepted:** July 8, 2021

**Online Published:** August 11, 2021

**DOI:** 10.5430/dcc.v8n2p11

**URL:** <https://doi.org/10.5430/dcc.v8n2p11>

## ABSTRACT

**Background:** Lung cancer is one of the leading causes of death despite improvement in treatment modalities such as immunotherapy with chemotherapy and precise radiotherapy. NSCLC is a heterogeneous group of diseases that differs in cytology and includes adenocarcinoma, squamous cell carcinoma, bronchioloalveolar carcinoma, and poorly differentiated carcinoma. Usually, NSCLC, in contrast to SCLC, spreads locally, and the doubling time of squamous cell carcinoma is 133 days which classifies it as a relatively slow-growing tumor.

**Case presentation:** We present the case of a 72-year-old male, recently diagnosed with squamous cell carcinoma in the right upper lobe along with secondary deposits. Few days after diagnosis, the patient had severe respiratory distress. This endobronchial tumor has increased significantly in size upon bronchoscopic visualization causing a complete obstruction of his right main bronchus and hypoxemic respiratory failure requiring intubation.

**Conclusion:** To our knowledge, there are few reported cases where lung adenocarcinoma progressed rapidly over days. Squamous cell carcinoma usually takes 3 to 6 months to double in size, but in our case, the progression was very fast. In the last decade, it was confirmed that the doubling time of a tumor is an independent factor in the prognosis of lung cancer patients. On the other hand, further studies are needed to identify genes associated with rapid progression and a worse prognosis for lung squamous cell carcinoma. Hence, this aggressive tumor is a “rapid killer.”

**Key Words:** Lung Cancer, Hypoxemic respiratory failure, Bronchoscopy, White lung, Squamous cell lung cancer, Volume doubling time

## 1. INTRODUCTION

Lung cancer is one of the leading causes of death worldwide despite improvement in treatment modalities such as combining immunotherapy with chemotherapy and precise radiotherapy. NSCLC is a heterogeneous group of diseases that differs in cytology and includes adenocarcinoma, squamous cell carcinoma, bronchioloalveolar carcinoma, and poorly differentiated carcinoma. Usually, NSCLC, in contrast to SCLC and spread the usual doubling time of squamous cell carcinoma locally is around 133 days which classifies it as a relatively slow-growing tumor.<sup>[1,2]</sup>

## 2. CASE PRESENTATION

We present the case of a 72-year-old male, heavy smoker known to have coronary artery disease treated with angioplasty, hypertension, and recent acute limb ischemia 18 days ago s/p thrombectomy and currently on dabigatran admitted to our institution for investigations of dysphagia to solids and liquids along with odynophagia. Additionally, the patient has a cough with whitish sputum but recently reports presence of blood-tinged sputum for one week. The patient also reports progressive dyspnea over the course of the last two weeks that is currently present on minimal exertion and weight loss

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of 6 kilograms, with a decrease in appetite.

There is no previous exposure to tuberculosis, no significant family history of malignancy, and no recent travel to endemic countries.

The patient had lost significant weight in the last two weeks, and he is not able to tolerate per os medications or food. On the day of admission, a total body injected CT Scan with PO contrast was done to search for an underlying malignancy. It revealed the presence of 2.5 cm × 2.5 cm subpleural airspace opacity abutting the right major fissure surrounded by speculations and minimal ground-glass opacities. A 6 cm × 5 cm × 9 cm enlarged heterogeneous necrotic adenopathy in the intracranial space shows multiple necrotic centers and extends to the right hilum. It surrounds the main pulmonary artery and the right pulmonary veins with subsequent filling defects at the left atrium suggestive of invasion. In addition, these cuts showed significant mass effect and compression of the right mainstem bronchus with approximately 50% narrowing. It also shows compression of the esophagus with subsequent proximal dilatation and stasis in its proximal aspect. Finally, there was also bilateral nodular enlargement of the adrenals.

All these findings were in favor of a right upper lobe primary lung tumor with metastatic disease.

The next day patient was scheduled for bronchoscopy and was found to have an endobronchial necrotic lesion in the right mainstem bronchus without complete obstruction, biopsies were taken, and so a significant bleed happened. To note that since admission patient was switched from dabigatran to enoxaparin, and it was appropriately held before biopsies as per protocol. Bronchoalveolar lavage was also done and sent for cytology.

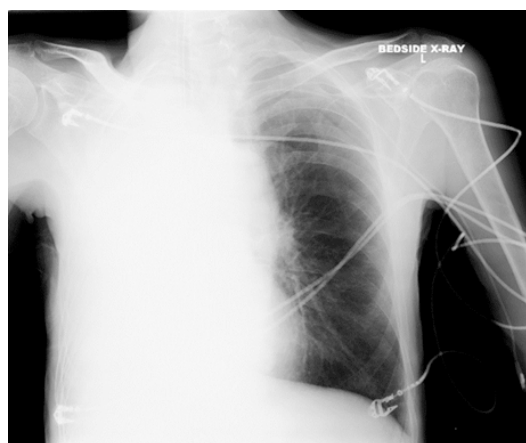
Preliminary results of the pathology were in favor of a squamous cell carcinoma in the right main bronchus invading the esophagus and right atrium.

Awaiting final pathology patient was treated for post obstructive pneumonia with antibiotics. (piperacillin/tazobactam)

Three days later, the patient had severe respiratory distress. He had absent air entry at the right lung on physical exam along with dullness to percussion in addition to severe hypoxemia refractory to high flow oxygen. The patient was diagnosed with hypoxemic respiratory failure and underwent urgent endotracheal (ET) intubation. Chest X-ray post-intubation showed complete right side white-out lung compatible with pulmonary collapse despite the proper position of the ET Tube 3 cm above the carina (see Figure 1). Urgent Chest CT confirmed the right white lung with possible alveo-

lar bleed etiology. Urgent bronchoscopy done showed blood obstructing the orifice of the right main bronchus; the blood was aspirated, showing at that time a complete obstruction of the right mainstem orifice by a necrotic mass that is friable and bleeds upon minimal manipulation (see Figure 2). This tumor has significantly increased in size compared to the initial bronchoscopy. The procedure was complicated by severe desaturation; hence selective intubation of the left was done under direct bronchoscopic vision.

The patient was started on high-dose steroids as a trial to decrease the airway edema and reduce the size of the endobronchial tumor. Antibiotics were continued.



**Figure 1.** AP chest X-ray showing Total opacification of the right lung field with a marked shift of the heart and mediastinum to the right with an endotracheal tube in good position 3 cm above the carina



**Figure 2.** Bronchoscopic image showing an endobronchial lesion occluding the right main bronchus with mucosal damage. Patent left main bronchus is also noted.

### 3. DISCUSSION

The best explanation is that the endobronchial tumor is the initial source of hemoptysis, and it has rapidly progressed over few days along with bleed to cause complete occlusion of the right mainstem bronchus, causing acute deterioration and the need for intubation and mechanical ventilation.

Later on, pathology from the right endobronchial lesion and the BAL confirmed the diagnosis of a poorly differentiated squamous cell carcinoma CK7+, CK20-, p63+, TTF1- along with high expression of 34BE12.

In fact, NSCLC is a heterogeneous group of diseases, but it is usually slow growing.<sup>[1-3]</sup> Some cases in the literature described adenocarcinoma as a tumor that has a rapid growth in tumor volume, but this was mainly within several weeks. To our knowledge that are no or few reported cases where lung adenocarcinoma progressed that rapidly over days. Squa-

mous cell carcinoma usually takes 3 to 6 months to double in size, but the progression was very fast in our case. In the last decade, It was confirmed that the doubling time of a tumor is an independent factor in the prognosis of lung cancer patients.<sup>[3,4]</sup> On the other hand, further studies are needed to identify genes associated with rapid progression and a worse prognosis for lung squamous cell carcinoma.<sup>[5]</sup> In the future, when identifying this tumor, physicians and oncologists should be more aggressive and maybe initiate high-intensity chemotherapy earlier.

Hence, this aggressive tumor is a "rapid killer" since it rapidly grew and obstructed the main bronchus creating a severe respiratory failure and deterioration of the patient within few days.

### CONFLICTS OF INTEREST DISCLOSURE

The authors declare they have no conflicts of interest.

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