Spontaneous Expectoration of Tumor Tissue in a Patient With Adenocarcinoma of the Lung

Nobuaki Ochi MD, Masayuki Yasugi MD, Hiromichi Yamane MD PhD,
Takayuki Tabayashi MD PhD, Norikuni Kawanaka MD PhD, Niro Okimoto MD PhD,
Yasumasa Monobe MD PhD, and Nagio Takigawa MD PhD

Introduction

Expectoration of tumor tissue is a rare presentation in patients with cancer. Thirty cases of various types of tumor, including primary or metastatic lung cancer, have been reported. Endobronchial metastases from various organs are most common, although 9 primary lung cancer cases have been described, including 4 squamous cell carcinomas, 2 bronchogenic carcinoids, one small cell lung carcinoma, one large cell carcinoma, and one mixed type carcinoma.^{1–9} Adenocarcinoma of the lung has never been reported. We describe a case of spontaneous expectoration of a piece of lung adenocarcinoma, which enabled a definitive diagnosis of a local recurrence, and led to substantial relief from dyspnea.

Case Summary

A 56-year-old man with a 30-pack-year smoking history presented with respiratory distress. Recurrence of lung cancer was suspected because he had undergone a left upper lobectomy for lung adenocarcinoma (pT1N0M0, stage IA) 18 months earlier. The physical examination revealed no breath sounds on the left side. Bronchoscopy revealed protrusion of a tumor into the trachea from the left main bronchus (Fig. 1A); however, the biopsy specimen yielded

only necrotic tissue. Two weeks after bronchofiberscopy he was confined to bed due to severe dyspnea and a forceful productive cough. When he presented to our department, stridor was heard in the anterior neck region, and chest computed tomography revealed a huge mass on the left hilum obstructing the left main bronchus and constricting the trachea (Fig. 2A and 2B). S_{pO_2} was 85% on room air, and the S_{pO_2} increased to 95% while receiving oxygen at 5 L/min via an oxygen mask with a reservoir bag. When he had a paroxysmal cough, he expectorated tumor tissue ($18 \times 20 \times 5$ mm, see Fig. 1B) with some bloody sputum. This relieved his dyspnea and forceful cough. The expectorated tumor specimen was pathologically compatible with a recurrence of the previously resected lung adenocarcinoma (see Fig. 1C and D). The stenosis of the trachea was improved on chest computed tomography (see Fig. 2C and D).

Discussion

Tumor expectoration is a rare presentation in patients with various tumors. Since Walshe et al described expectorated tumor fragments in sputum in 1843,¹ 30 cases have been reported (Table). The most frequent tumor was renal cell carcinoma (8 cases, 26.7%),^{10–13,15} followed by primary lung cancer and sarcoma (7 cases each, 23.3% each).^{1–4,6–8,16–21} Twenty-four cases (80.0%) were observed in men. Tumor expectoration occurred at either the initial presentation (36.7%) or at the time of recurrence (46.7%). It was observed immediately after bronchofiberscopy^{3,7,26} in 3 cases, while it occurred spontaneously in the other cases.

Tumors showing endobronchial growth are prone to exfoliate into the airway.^{9,16,17,21} As seen in our case, tumor expectoration might lead to pathological information and could relieve the respiratory symptoms. Histologically, adenocarcinoma accounts for a large proportion of cases in non-small-cell lung cancer worldwide; however, there has been no report of tumor expectoration in a patient with

The authors are affiliated with the Department of General Internal Medicine 4, Kawasaki Hospital, Kawasaki Medical School, Okayama, Japan; with the exception of Drs Kawanaka and Okimoto, who are affiliated with the Department of General Internal Medicine 1, and Dr Monobe, who is affiliated with the Department of Pathology at that institution.

The authors have disclosed no conflicts of interest.

Correspondence: Nagio Takigawa MD PhD, Department of General Internal Medicine 4, Kawasaki Hospital, Kawasaki Medical School, 2-1-80, Nakasange, Kita-ku, Okayama, 700-8505, Japan. E-mail: ntakigaw@med.kawasaki-m.ac.jp.

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Fig. 1. Bronchoscopy revealed protrusion of the tumor into the trachea from the left main bronchus (A). Black-and-white arrowheads indicate the inlet of the left main bronchus obstructed by the tumor and the right main bronchus, respectively. The macroscopic finding of the expectorated tumor tissue (B). The pathological findings of the resected primary tumor (C) and expectorated tumor tissue (D). Adenocarcinoma cells were found in both specimens.

Fig. 2. Computed tomography showed a huge mass on the left hilum, obstructing the left main bronchus and constricting the trachea (A and B). The arrow indicates the airway obstruction caused by the tumor growing into the trachea. The stenosis of the trachea improved after the tumor tissue was expectorated (C and D).

Table. Characteristics of Cases of Tumor Expectoration

First Author	Sex	Age (y)	Tumor Type	Supraclavicular fossa	Primary or Not	Size (cm)
Maytum ¹⁰	M	63	Renal cell cancer	Kidney	ND	1.0
Seiler ¹¹	F	39	Renal cell cancer	Kidney	Recurrence	ND
Gerle ¹²	M	51	Renal cell cancer	Kidney	Primary	1.0
Jariwalla ¹³	M	34	Renal cell cancer	Kidney	Recurrence	1.0
Jariwalla ¹³	M	61	Renal cell cancer	Kidney	Recurrence	< 5.0
Jariwalla ¹³	M	43	Renal cell cancer	Kidney	Recurrence	2.0 × 2.0
Eissler ¹⁴	F	42	Renal cell cancer	Kidney	ND	ND
Daryanani ¹⁵	M	55	Renal cell cancer	Kidney	Recurrence	4.0 × 2.0
Dixit ⁷	M	60	Lung (large cell)	Lung	Primary	1.2 × 1.1
Kern ⁴	M	68	Lung (mixed)	Lung	Primary	2.5 × 0.6 × 1.5
Kaira ⁸	M	77	Lung (small)	Lung	Recurrence	3.0 × 2.5 × 1.0
D'hour ⁶	M	58	Lung (squamous)	Lung	ND	ND
Mital ¹	M	55	Lung (squamous)	Lung	Primary	3.0 × 2.0
Goldstein ²	M	78	Lung (squamous)	Lung	Primary	2.0 × 1.0 × 0.5
Wigton ³	M	51	Lung (squamous)	Lung	Primary	Almond size
Curry ¹⁶	F	12	Sarcoma	Bronchus	Primary	1.5 × 1.0
Lee ¹⁷	M	59	Sarcoma	Bronchus	Primary	1.0 × 1.0 × 2.0
Clark ¹⁸	M	44	Sarcoma	Supraclavicular fossa	Recurrence	ND
Sharma ¹⁹	M	57	Sarcoma	Right foot	Recurrence	5.0
Brade ²⁰	M	42	Sarcoma	Right patellar tendon	Recurrence	2.5 × 1.0
Wigton ³	ND	ND	Sarcoma	ND	ND	ND
Watanabe ²¹	M	34	Sarcoma	Bronchus	Primary	7.5 × 2.0 × 1.5
Rubin ²²	ND	61	Colon cancer	Colon	ND	ND
Zias ²³	M	75	Colon cancer	Colon	Recurrence	ND
Ghetie ²⁴	M	75	Colon cancer	Colon	Recurrence	2.3 × 1.2 × 1.7
Gómez ²⁵	M	43	Colon cancer (rectal)	Colon	Recurrence	4.0
Córdoba ⁵	M	71	Carcinoid	Bronchus	Primary	1.0
Kelly ⁹	M	25	Carcinoid	Bronchus	Primary	1.8 × 0.6 × 0.5
Sutton ²⁶	M	25	Melanoma	Left pectoral area	Recurrence	1.5 × 2.0
Sutton ²⁶	F	26	Melanoma	Left forearm	Recurrence	Cupful

ND = not described

adenocarcinoma of the lung. One explanation for the phenomenon may be the characteristics of the disease: the primary site is usually located in the peripheral lung and would be unlikely to involve a central airway, leading to tumor expectoration. Conversely, squamous cell carcinoma of the lung often involves central lesions.

In conclusion, we experienced spontaneous expectoration of a piece of lung adenocarcinoma. Kelly et al stated that physicians might ignore such specimens, presuming them to be phlegm or blood clots.⁹ We should be aware that the expectorated tissue might lead to a pathological diagnosis, even in adenocarcinoma of the lung.

Teaching Points

Tumor expectoration is a rare presentation in patients with various tumors. To date, 30 cases have been reported. The most frequent tumor was renal cell carcinoma, followed by primary lung cancer and sarcoma. The patient's spontaneously expectorated material should not be discarded, and should be fixed and examined by a pathologist, since it can provide diagnostic information.

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