Lung Squamous Cell Carcinoma in a Young Female Never Smoker: A Case Report

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A lung squamous cell carcinoma complicated by lung abscess was found in a 38-year-old female never smoker. After a transbronchial lung biopsy, she complained of chest pain and had a persistent fever. A right middle lobectomy was performed to alleviate her symptoms and complete surgical resection was achieved. She reported no exposure to factors that increase the likelihood of lung cancer. Unknown factors or the patient’s lung cancer susceptibility might cause the disease. Survival time is generally shorter in young patients than old patients, but careful observation and aggressive treatment can improve prognoses. A case such as this is rare in the extant literature.

Keywords: lung cancer, squamous cell carcinoma, never smoker, young patient

Introduction

We treated a young female with lung squamous cell carcinoma, who had never smoked.

She reported no exposure to risk factors that have been linked to lung cancer in the literature. The rarity of this case and its possible implications demand our consideration.

Case Report

A 38-year-old woman was referred to Kobe City Medical Center General Hospital for treatment of squamous cell lung cancer complicated by lung abscess with chest pain, productive cough, and persistent high fever after a transbronchial biopsy. Three weeks before admission to hospital, the patient presented with right chest pain. She underwent a bronchoscopy because of an abnormal shadow in the right middle lobe of a chest radiograph. She was diagnosed with squamous cell carcinoma of the lung. Five days after the transbronchial biopsy, the patient developed a 39°C fever, which continued for 10 days despite treatment with antibiotics. She was a housewife and had never smoked. Though her husband was a smoker, he never smoked in their house. She did not have any family history of lung cancer or other neoplasm.

The patient had a leukocytosis of 22700/mm³ with 87% neutrophils and C-reactive protein (CRP) level was 18.3 mg/dl on admission. The serum values of squamous cell carcinoma-associated antigen (SCC) and cytokeratin fragment (CYFRA) were both within normal range.

A chest radiograph and computed tomography (CT) scans showed a mass with niveau formation in the right middle lobe (Fig. 1) and mediastinal lymph nodes swelling. The clinical findings led to a diagnosis of lung squamous cell carcinoma, cT3N2M0, stage IIIA, with lung abscess. Because the lesion caused her uncontrollable symptoms, she underwent a right middle lobectomy.

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Received: May 24, 2012; Accepted: January 21, 2013
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Whole surface of the right lung was densely adherent to the chest wall, and a large amount of thick pus was evacuated from the cavity. The tumor did not invade other lobes. There were no lymph node metastases according to the intraoperative diagnosis. Thus, tumor was completely resected. The pathological diagnosis was well differentiated squamous cell carcinoma without any lymph node metastases. Macroscopic findings showed that the resected tumor was $70 \times 60 \times 53$ mm and had a huge cavity whose thick wall was lined with cancer tissue (Fig. 2). Microscopic examination revealed vascular and lymphatic invasion, but no pleural invasion by cancer cells (Fig. 3). Thus, the patient was given a diagnosis of pT2bN0M0 stage IIA disease according to the International Union Against Cancer staging system.

After surgery, her temperature slowly came down, and she was discharged. Postoperative adjuvant therapy was not done because of patient’s refusal. Local recurrence with pleural dissemination was found four months later. Only palliative treatments were performed to meet the patient’s expectation after recurrence. The patient was confirmed alive 14 months after surgery.

**Discussion**

Lung cancer in young people is uncommon. It has been reported that only 1.2% to 2.7% of patients with lung cancer are under 40 years of age. However, previous studies show that within the younger group, women are more highly represented than in the older group. Reports also show that adenocarcinomas are more frequent than squamous cell carcinomas and comprise the majority of tumors among young patients, never smokers, and female patients with lung cancer, respectively. Cigarette smoking is the major risk factor for lung cancer in young people. The smoking rate among young patients with lung cancer is 45% to 97% in western countries. However, the frequency of smokers among young female patients with lung cancer in Japan and other Asian countries is lower than in western countries. The proportion of female lung cancer patients who have never smoked is as high as 70%. Therefore, it is important to seek causal factors for lung cancer other than active smoking, especially in Japanese female patients.

Factors other than active smoking that have been suggested include environmental tobacco smoke, indoor air pollution (e.g. coal and cooking fumes), a family history of lung cancer, occupational and environmental agents (e.g. radon, asbestos, and heavy metals), hormonal effects including hormone replacement therapy, pre-existing lung diseases, human papillomavirus infection, and others. The woman in this case study, however, had not been significantly exposed to any of these factors. Other factors, such as unknown environmental carcinogens or genetic susceptibility, might contribute to the development of lung cancer.

Young patients with lung cancer often have advanced stages at presentation. It has been suggested that this is due to the high malignant nature and/or the delayed diagnosis resulting from a low degree of suspicion of...
cancer. Many studies have highlighted the poor prognosis for young lung cancer patients compared to that of older patients. However, other studies find a better survival rate for younger patients. Yet other studies find no differences in survival rates between the two groups. They speculate that this is because younger patients can be managed in a more aggressive fashion than older patients because of their better overall medical conditions. In the present case, the early recurrence of lung cancer may be attributed not necessarily to age, but rather to the expulsion of tumor content during the operation.

Conclusion

We report a case of squamous cell lung carcinoma in a young female who has never smoked. This case is rare because of the patient’s sex, age, histology and background. The risk factor for lung cancer is unclear. Because the rarity of the disease often delays the correct diagnosis of cancer, it is very important for all clinicians to consider the possibility of lung cancer in young patients. The consideration and aggressive treatment may lead to an earlier diagnoses and a better prognosis.

Disclosure Statement

We declare that we have no conflict of interest with any financial organization.

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