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A Case of Synchronous Double Primary Lung Cancer Presenting with Pleomorphic Carcinoma and Adenocarcinoma

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Conflict of interest: None declared

Patient: Male, 69
Final Diagnosis: Lung cancer
Symptoms: Anemia
Medication: —
Clinical Procedure: Lobectomy
Specialty: Oncology

Objective: Rare disease

Background: Recently, synchronous multiple lung cancer (SMPLC) has sometimes been detected as a result of improved radiological imaging, although the occurrence of SPMLC is still rare. To the best of our knowledge, there have been no reported cases of with synchronous double primary lung cancer presenting with pleomorphic carcinoma and adenocarcinoma. We herein report such a case.

Case Report: A 64-year-old male was referred to our institution for an abnormal shadow in the apex of the left lung in April 2012. CT revealed 2 nodules that measured 15 mm in the left S_{1+2b} and 20 mm in the left S_{3c}. We suspected that the lesions were malignant, although the diagnosis could not be confirmed by transbronchial lung biopsy of the lesions. Therefore, we performed the left upper lobectomy. The results of the pathological examination of the nodule in S_{3c} showed adenocarcinoma of pT1aN0M0, stage IA. The nodule in S_{1+2b} was found to be pleomorphic carcinoma, pT1aN0M0, stage IA. In November 2012, the patient underwent an esophagogastroduodenoscopy because of anemia. The image findings showed a gastric ulcer on the greater curvature of his stomach. The pathological examination of the biopsy specimen from the ulcer revealed the metastatic cancer from pleomorphic carcinoma. In addition, abdominal CT revealed bilateral adrenal metastasis. Although the patient received chemotherapy, it was not effective. It was difficult to continue the chemotherapy because his performance status worsened. He died in May 2013.

Conclusions: The present case was associated with a poor prognosis, even though the pathological stage of each tumor was stage IA. The prognosis of SMPLC may be associated with the histologic type, although the prognosis of SMPLC remains unclear due to its rarity.

MeSH Keywords: Lung Neoplasms • Neoplasms, Multiple Primary • Rare Diseases

Full-text PDF: http://www.amjcaserep.com/abstract/index/idArt/892339

Background

Recently, synchronous multiple lung cancer (SMPLC) has sometimes been detected due to improvements in radiological imaging. The original criteria for multiple lung cancers were first reported in 1932 by Warren and Gates [1], who stated each tumor must represent a definite picture of carcinoma, each tumor must be distinct, and that the probability of 1 lesion metastasizing from another must be excluded. In addition, Martini and Melamed [2] indicated that SMPLC requires the existence of tumors in different portions of an organ and different histological types, or the existence in a different lobe or segment.

The occurrence of squamous cell carcinoma with squamous cell carcinoma has been the most frequent type of synchronous double lung cancer [3,4]. To the best of our knowledge, there have been no reported cases dealing with synchronous double primary lung cancer presenting with pleomorphic carcinoma and adenocarcinoma. We herein report such a case.

Case Report

A 64-year-old male was referred to our institution for evaluation of an abnormal shadow on a chest X-ray in April 2012. He had been healthy with no symptoms and had an unremarkable medical and family history, and was a current smoker. The chest X-ray showed an abnormal shadow in the apex of the left lung (Figure 1). Contrast-enhanced CT revealed a nodule with an irregular margin that measured 15 mm in the left S_{1+2b} (Figure 2A). In addition, the image showed another nodule that measured 20 mm in the left S_{3c} (Figure 2B). Enlarged

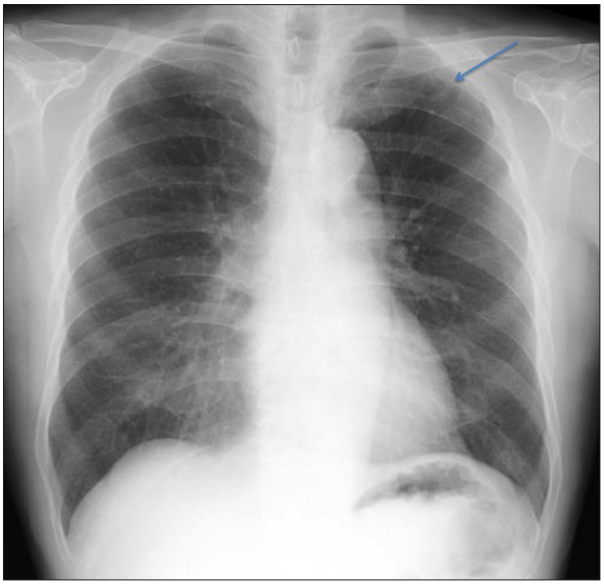

Figure 1. An X-ray showed an abnormal shadow in the apex of the left lung.

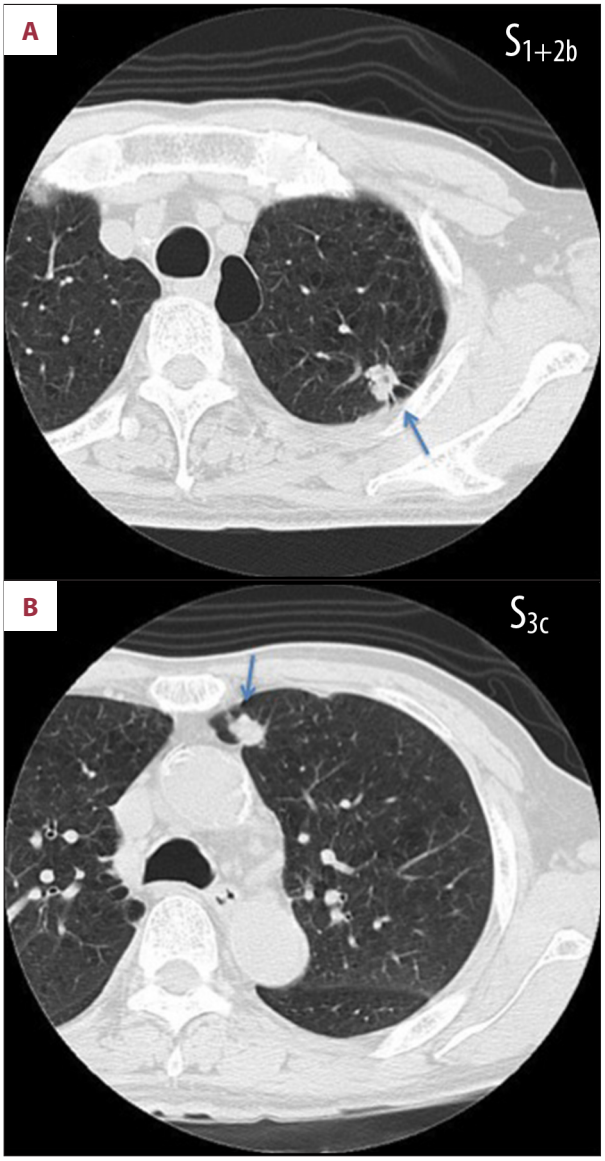

Figure 2. (**A**) Chest CT showed a nodule with an irregular margin that measured 15 mm in the left S_{1+2b}. (**B**) Chest CT showed a nodule with an irregular margin that measured 20 mm in the left S_{3c}.

lymph nodes were not detected in the mediastinum. The levels of serum tumor markers such as CEA, CYFLA and ProGRP were within normal ranges. There were no other signs of distant metastasis based on a CT scan of the chest, abdomen, and pelvis, or by brain MRI.

We suspected that the lesions were primary lung cancers, although the diagnosis could not be confirmed by transbronchial lung biopsy. In May 2012, we performed left upper lobectomy, and a pathological diagnosis of lung cancer was confirmed based on the results of a flash-frozen section biopsy of the nodule in the left S_{3c}, although the biopsy of the nodule in the

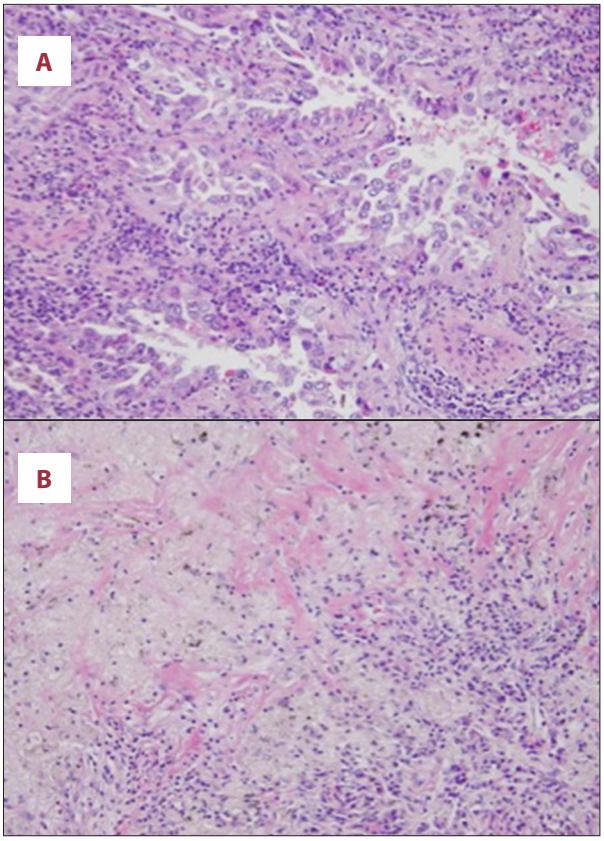

Figure 3. The results of the histological examination of the lung specimens showed the differentiated adenocarcinoma with the papillary growth of tumor cells and destruction of alveolar epithelium in the left S_{3c} (**A**) and the pleomorphic spindle and epithelioid cells with necrotic areas (**B**).

left S_{1+2b} showed necrotic cells and no malignant cells. There were no intraoperative complications, and the patient had an uneventful recovery. The final results of the pathological examination of the nodule in the left S_{3c} showed adenocarcinoma of pT1aN0M0, stage IA. The nodule in the left S_{1+2b} was diagnosed as pleomorphic carcinoma, pT1aN0M0, stage IA (Figure 3). There was no lymphovascular invasion by either lesion.

The patient received regular follow-up without adjuvant chemotherapy. In November 2012, 6 months after the left upper lobectomy, the patient began having mild anemia, with hemoglobin values as low as 8.4 g/dL, although he had a baseline hemoglobin concentration of approximately 13 g/dL. He received a transfusion of packed red cells and underwent esophagogastroduodenoscopy (EGD) and a colonoscopy as work-up for the anemia. The EGD showed a gastric ulcer on the greater curvature of his stomach (Figure 4). The pathological examination of the biopsy specimen of the ulcer revealed metastatic cancer from pleomorphic carcinoma. Besides the gastric metastasis, abdominal CT revealed bilateral adrenal metastasis.

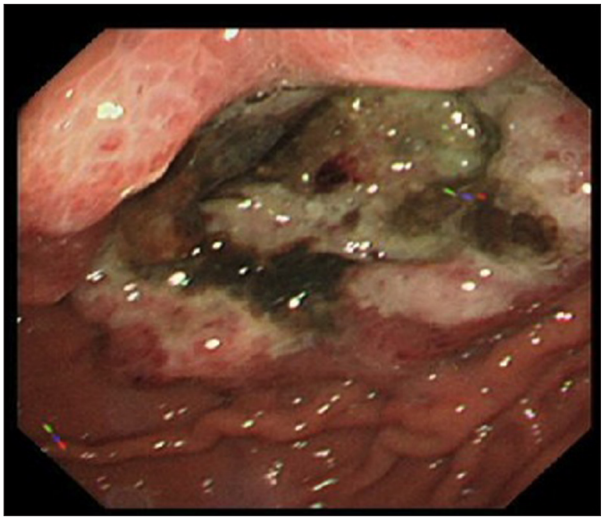

Figure 4. Esophagogastroduodenoscopy showed a gastric ulcer on the greater curvature of the stomach.

The patient received chemotherapy with carboplatin and pemetrexed, but it was not effective. Furthermore, it was difficult to continue the chemotherapy because his performance status worsened. He died on May 2013.

Discussion

The occurrence of SPMLC is rare, and the incidence of synchronous multiple primary lung cancers ranges from 1% to 7% according to clinical trials [2]. Among these cases, those of the bilateral type comprise 60–70%, while the unilateral type is been comparatively rare [5,6]. With regard to the histological types of SPMLC, the occurrence of squamous cell carcinoma and squamous cell carcinoma has been the most common, followed by squamous cell carcinoma and small cell carcinoma, and squamous cell carcinoma and adenocarcinoma [3,7].

The prognosis of SMPLC remains unclear. Whereas the overall survival rate (OS) of patients diagnosed with SMPLC had been reported to be significantly lower than in patients with single primary lung cancers (SPLC) [8], Yu et al. reported that there was no significant difference in OS between SPMLC and SPLC [9]. While tumor size is thought to an important predictor of OS in SMPLC [9,10], the presence of lymphovascular invasion and the histology of SMPLC do not significantly affect OS according to Yu et al. [11,12]. However, the present case was associated with a very poor prognosis, despite the fact that the T stage of each tumor was T1a. This may be associated with the histology of 1 of the tumors, which was pleomorphic carcinoma, because the pathological examination of the gastric ulcer confirmed metastasis of the lung pleomorphic carcinoma, and the other metastasis was also thought to have originated from pleomorphic carcinoma.

Pleomorphic carcinoma of the lung is rare, accounting for 0.3% to 1% of all lung malignancies [13]. Pleomorphic carcinoma was first classified as a carcinoma with pleomorphic, sarcomatoid, or sarcomatous elements by the World Health Organization in 1999, and in the 2003 Classification of Lung Cancers was defined as a poorly differentiated non-small cell carcinoma, which includes squamous cell carcinoma, adenocarcinoma, and large-cell carcinoma that contains spindle cells or giant cells, and cancers that contain at least 10% spindle cells or giant cell areas [14].

Pulmonary pleomorphic carcinoma was associated with a poor prognosis in previous studies, even when early-stage disease was diagnosed and resected [15]. In addition, pulmonary pleomorphic carcinoma showed a poor response to chemotherapy [16]. The prognosis of affected patients is generally poorer than that of patients with other types of non-small cell lung cancer [17]. These previous findings of pulmonary pleomorphic carcinoma were also noted in our present case.

Conclusions

In conclusion, the prognosis of SMPLC may be associated with the histological type. To the best of our knowledge, there have been no reported cases dealing with synchronous double primary lung cancer presenting with pleomorphic carcinoma and adenocarcinoma. Therefore, more thorough scientific documentation is needed on survival of SMPLC cases with pleomorphic carcinoma.

Conflict of interest statement

Naohiro Taira and the other co-authors have no conflicts of interest to declare.

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