Solitary Pulmonary Metastasis from Carcinoma of the Papilla of Vater

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Pulmonary metastasis from carcinoma of the papilla of Vater is considered to be a late event, and patients can be treated with radiotherapy, chemotherapy, or palliative surgery. However, surgical treatment of an isolated lung metastasis has not been reported. We present a surgical case of solitary pulmonary metastasis from carcinoma of the papilla of Vater. A 51-year-old man underwent pylorus-preserving pancreaticoduodenectomy for Vater carcinoma. During follow-up, chest computed tomography revealed a nodular shadow in the right lung. The pathological examination demonstrated the appearance of the pulmonary tumor resembled that of the previously resected Vater carcinoma, and both tumors showed similar immunostaining properties, leading to the pathological diagnosis of pulmonary metastasis from carcinoma of the papilla of Vater. Isolated pulmonary metastasis from carcinoma of the papilla of Vater is extremely rare, but surgery could be the treatment of choice.

Key words: Vater carcinoma, pulmonary metastasis, surgery, immunohistochemistry

Introduction

Although cases in which carcinoma of the papilla of Vater metastasizes to different organs including the lung are not rare, there has been no report to date on surgical resection for pulmonary metastasis from carcinoma of the papilla of Vater. To the best of our knowledge, this paper is the first to report radical surgery for solitary pulmonary metastasis from carcinoma of the papilla of Vater.

Case Report

A 51-year-old man underwent pylorus-preserving pancreaticoduodenectomy for carcinoma of the papilla of Vater in September 2005. Histological examination revealed a well-differentiated tubular adenocarcinoma, classified as pT2N1M0, stage III. Blood chemistry data were unremarkable, and tumor markers: carcinoembryonic antigen (CEA), sialyl Lewis X-i antigen (SLX), neuron specific enolase (NSE), squamous cell carcinoma related antigen (SCC), and carbohydrate antigen 19-9 (CA19-9), were all within normal limits. His smoking history was 1 pack a day for 30 years. He had no history of drinking, and his past medical and family histories were unremarkable.

He was asymptomatic, but during outpatient follow-up, chest computed tomography (CT) revealed a 4-mm nodular shadow in the right lung segment 8 (S8) in October 2008. The nodule tended to enlarge over time during subsequent follow-up in the outpatient clinic. Although the patient was scheduled for surgery in December 2008, at his request, we followed him as an outpatient again. In April 2009, the tumor enlarged further, and chest X-ray...
film showed a well-defined mass in the right lower lung field (Fig. 1A). Chest CT revealed an 18-mm heterogeneous tumor with irregular borders in the right lung S8 (Fig. 1B). Bronchoscopic brush cytology was nondiagnostic, and the patient refused a CT-guided needle biopsy. At first, we considered that the lung tumor was primary or metastatic lung cancer. Even if it was a pulmonary metastasis from Vater carcinoma, we considered that surgery was indicated in this case, because, during a follow-up period of 18 months, there was no increase in the number of lung metastases or evidence of recurrence at extrapulmonary sites, such as the primary site or the liver. We suggested that the patient should undergo thoracoscopic partial lung resection and intraoperative frozen-section examination; however, he refused this, and requested lobectomy with lymph node dissection. Right lower lobectomy with hilar and mediastinal lymph node dissection was performed in May 2009. Macroscopically, the tumor was located in the basal portion of the lung directly adjacent to the pleura, had irregular borders, and was yellowish (Fig. 1C). Histologically, the tumor was extensively necrotic, and eosinophilic tall columnar cells proliferated, forming tubular structures (Fig. 2). Brush border and goblet cells were observed. Tumor invasion at relatively large blood vessels was prominent, and tumor cells were observed to extensively invade the perivascular stroma. The histological appearance of the tumor resembled that of the previously resected carcinoma of the papilla of Vater (Fig. 2). In addition, the lung tumor and carcinoma of the papilla of Vater showed similar immunostaining properties: cytokeratin 7-negative, cytokeratin 20-positive, CEA-positive, CA19-9-positive (in part), CD10-positive, surfactant apoprotein-negative, and TTF-1-negative (Fig. 3). These findings led to the pathological diagnosis of pulmonary metastasis from carcinoma of the papilla of Vater. Although postoperative chemotherapy is usually administered to such patients, to lower the risk of recurrence, it was not administered in this case because of the patient’s refusal. Fourteen months after the lung surgery, he is free of recurrence.

Discussion

Carcinoma of the papilla of Vater accounts for approximately 0.2% of all gastrointestinal malignancies and has an estimated annual incidence of less than 6 cases per million of the population.1) The 5-year survival rate with this tumor after curative resection has been reported to range from 40 to 60%, in contrast to survival figures of 10%–25% for pancreatic cancer.2) Lymph node metastasis, as in the present case, has been reported to be the most significant pathologic factor influencing tumor recurrence and survival in patients with Vater carcinomas.1, 3, 4) Hsu HP, et al. reported that fifty-seven patients with Vater carcinoma (42%) showed disease recurrence during follow-up after pancreaticoduodenectomy and
regional lymphadenectomy, including 31 liver metastases, 26 locoregional recurrences, 9 peritoneal carcinomatoses, 7 bone metastases, and 6 metastases at other sites, including the brain, lung, and ovary. Thus, local recurrence and hepatic metastasis are two major causes of treatment failure. Radical surgery for a solitary pulmonary metastasis from carcinoma of the papilla of Vater is extremely rare, and, to our knowledge, has not been reported.

His chest surgery was unexpectedly postponed due to his request. As a result, he was followed-up for a total of 18 months since the appearance of the pulmonary nodule, but no other intra- or extrapulmonary recurrent lesions developed. In general, surgery is indicated for patients in whom metastases are confined to the lung, the number of pulmonary metastases does not increase during a long follow-up period, and the primary tumor is adequately controlled. Since the patient met all the

Fig. 2 The histological appearance of the lung tumor resembled that of the previously resected Vater carcinoma (hematoxylin and eosin staining): Top, lung tumor; bottom, Vater carcinoma.

Fig. 3 Immunohistological findings. The lung tumor and previously resected carcinoma of the papilla of Vater showed similar immunostaining properties. Top, Lung tumor; bottom, Vater carcinoma; left, cytokeratin 7 immunostaining; right, cytokeratin 20 immunostaining.
indications for surgery, pulmonary metastasectomy was expected to improve the prognosis. For metastatic colorectal cancer, complete resection can offer only chance of cure. Long-term survival can be expected after the complete resection of pulmonary metastases arising from colorectal cancer, especially in patients with a solitary metastasis. Since no case of surgery for solitary metastasis from Vater carcinoma has been reported, the prognosis for this patient is difficult to predict. We plan to follow him carefully for signs of recurrence.

In this patient, sections from the resected specimen were immunostained for cytokeratin 7, cytokeratin 20, CEA, CA-19-9, CD10, surfactant apoprotein, and TTF-1. Negative staining for TTF-1 and surfactant apoprotein suggests that the adenocarcinoma did not arise from the lung, while negative staining for cytokeratin 7 and positive staining for cytokeratin 20 and CD10 suggest an adenocarcinoma of intestinal origin. Immunostaining is very useful in differentiating between primary and metastatic lung cancer.

In conclusion, we describe the first reported surgical case of solitary pulmonary metastasis from carcinoma of the papilla of Vater. At least empirically, surgery could be the treatment of choice to improve the chances of long-term survival in such patients.

References