

Case Report

Unusual presentation of lung adenocarcinoma with tonsil and colon metastases: a case report

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Abstract: The metastasis of lung adenocarcinoma to tonsil and colon is a rare event; it indicates advanced disease status and poor prognosis. Here, we present the case of a 66-year-old male who presented with a neck mass; he was diagnosed with tonsil metastasis. Initial chemotherapy resulted in partial response and disappearance of the metastatic lesion of the tonsil, indicating an overall good response to the first round of treatment. However, at 7 months after diagnosis and during the third round of chemotherapy, the patient complained of abdominal pain, which was found to be caused by the metastasis of the disease to the ascending colon. To the best of our knowledge, this is the first case report that investigates the metastasis of lung adenocarcinoma to both the tonsil and colon.

Keywords: Lung adenocarcinoma, metastasis, tonsil, colon

Introduction

Lung cancer is the leading cause of cancer-related deaths in Taiwan; approximately 50% of cases present with distal metastasis. The most common extrathoracic target organs of metastasis of lung cancer are brain, liver, bone, and adrenal glands [1]; however, tonsil and colon metastases are extremely rare. Here, we report the case of a patient with a tonsil mass and neck lymphadenopathy, which are typical manifestations of tonsil cancer; however, the patient was later diagnosed with lung adenocarcinoma. The lung adenocarcinoma had metastasized to the ascending colon during chemotherapy. To the best of our knowledge, this is the first case report investigating the metastasis of lung adenocarcinoma to both the tonsil and colon.

Case report

A 66-year-old male with an unremarkable medical history and who never smoked cigarettes or chewed betel nuts visited our otolaryngology clinic owing to a single tender mass on his left upper neck. Physical examination confirmed

the presence of a 2 × 2-cm firm mass at the left level II and a single whitish mass on the upper pole of the ipsilateral tonsil (**Figure 1**). Contrast-enhanced magnetic resonance imaging of the neck revealed a 3.2 × 2.1-cm lesion of the left tonsil without invasion to the surrounding tissues and a single site of metastatic lymphadenopathy at left level II (**Figure 2A**). Biopsy of the left tonsil revealed a poorly differentiated carcinoma (**Figure 3A**) that was positively stained for CK7, Ber-EP4, p63, and MUC5AC; however, it was weakly positive for CEA and negative for TTF-1, CK5/6, and MUC4. The biopsy results were incompatible with the manifestations of typical primary tonsil cancer, which was originally considered; therefore, further imaging to search for a primary lesion was performed. Abdominal echography and Tc-99 m whole body bone scintigraphy revealed no distal involvement; however, chest radiography revealed an enlarged lymph node in the right inferior paratracheal area and hilum. Chest computed tomography (CT) revealed a 2.8-cm mass in the right upper lung and metastatic lymph node lesions in the mediastinum, both hila of the lungs, and both adrenal glands (**Figure 2B**). Pathological examination of a wedge resection

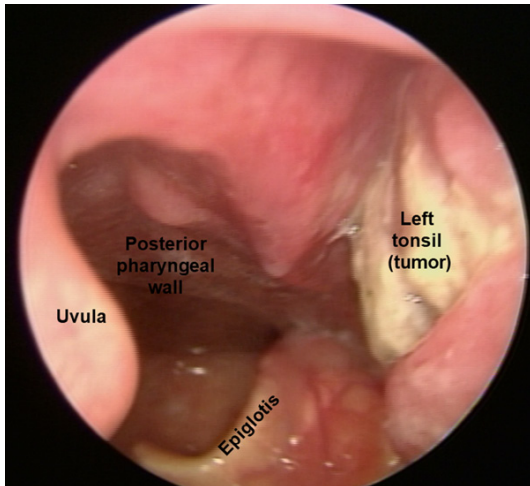


Figure 1. Endoscopy revealed a mass in the left tonsil.

of the right upper lung revealed an invasive, but poorly differentiated, adenocarcinoma (**Figure 3B**). The tumor cells were positive for CK7, focally positive for TTF-1 (**Figure 3C**) and p63, and negative for CK5/6. Genetic analysis revealed a silent Q787Q mutation in exon 20 of the epidermal growth factor receptor gene and no ALK rearrangement.

Chemotherapy with six cycles of docetaxel and cisplatin resulted in partial response and disappearance of the metastatic lesion of the tonsil, indicating an overall good response to the first round of treatment. However, the disease rapidly progressed after chemotherapy. Seven months after diagnosis and the third round of chemotherapy, the patient complained of abdominal pain, which was diagnosed as ascending colon cancer via abdominal CT (**Figure 4A**). Biopsy and colonoscopy (**Figure 4B**) revealed metastasis of a poorly differentiated carcinoma, with positive staining for CK7 and p63 and negative staining for TTF-1, CK20, and CDX2, indicating metastasis of the same tumor rather than primary colon cancer. The patient died 13 months after the latest diagnosis.

Discussion

Non-small cell lung cancer (NSCLC) accounts for approximately 85% of all lung cancers, with adenocarcinoma being the most common type. With the increasing incidence of this disease, particularly in women and in nonsmokers, the reported 5-year survival rate is only 4% [2]. Initial presentation of symptoms from meta-

static sites, which lead to NSCLC diagnosis, is rather uncommon.

Because metastasis of any neoplasm to the tonsils is considered very rare, most malignancies of the tonsils are primary sites for the disease. Over a span of 32 years, in a case series of 1535 malignant tonsillar neoplasms, only 12 (0.8%) were metastatic [3], and in a case series of 76 metastatic tonsillar cancers, 12 (15.7%) were diagnosed as lung cancer, most being the small cell type [4]. Metastasis of lung cancer to the gastrointestinal (GI) tract is also rare. In a study involving 8159 cases of lung cancer over a period of 20 years, 29 (0.34%) showed metastasis to the GI tract and only two to the colon [5]. In a recent study involving 2872 consecutive NSCLC patients in China, only one (0.03%) showed metastasis to the tonsil and 7 (0.24%) to the GI tract [6].

Although the routes of metastasis to the tonsil and colon remain controversial, the pathogenesis of colon metastasis is thought to be caused by the spread of tumor cells via the hematogenous and lymphatic routes. The hematogenous route is also considered the most common for metastases to the tonsils [7]. The tonsils have only efferent lymphatics; therefore, lymphatic spread is not expected. Interestingly, a case report claimed that the manner of metastasis to the tonsil was retrograde lymphatic metastasis originating from the carcinoma cells in the cervical lymph nodes [8].

An accurate histopathological diagnosis is critical because the treatment options for metastasis of primary lung cancer to the tonsil versus the colon are very different. In this case, the patient presented with a tender mass of the left neck, and because endoscopy revealed a tonsil mass, the tonsil was thought to be the primary site. However, the initial pathological diagnosis was a poorly differentiated carcinoma of an uncertain origin, which was rather unusual because most primary tumors of the tonsil are squamous cell carcinomas. Chest X-ray and lung biopsy to determine the possible site of the primary tumor yielded similar results. After treatment, the tonsil lesion had disappeared; however, later in the treatment course, the disease had progressed. A colon tumor observed at this time was easily misdiagnosed as the secondary site of the primary cancer because the symptoms and endoscopic find-

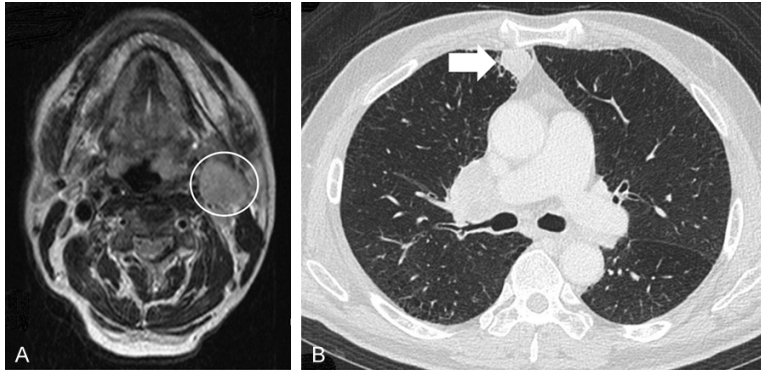


Figure 2. A. Magnetic resonance imaging revealed a mass in the left tonsil. B. Computed tomography revealed a single mass in the right upper lobe.

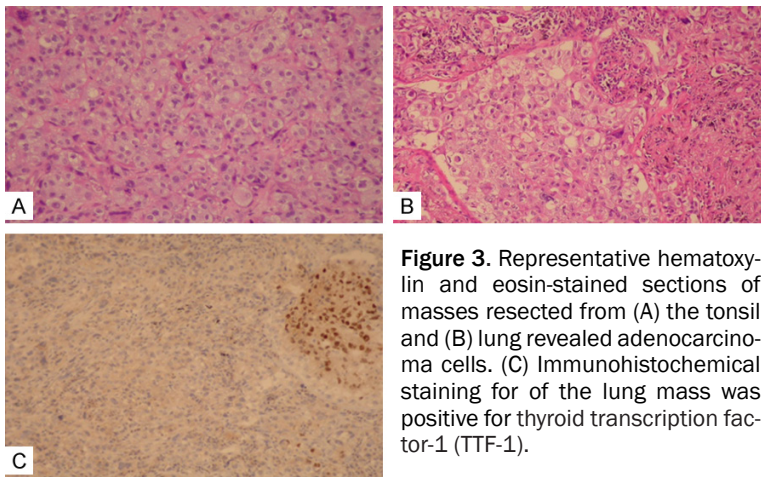


Figure 3. Representative hematoxylin and eosin-stained sections of masses resected from (A) the tonsil and (B) lung revealed adenocarcinoma cells. (C) Immunohistochemical staining for of the lung mass was positive for thyroid transcription factor-1 (TTF-1).

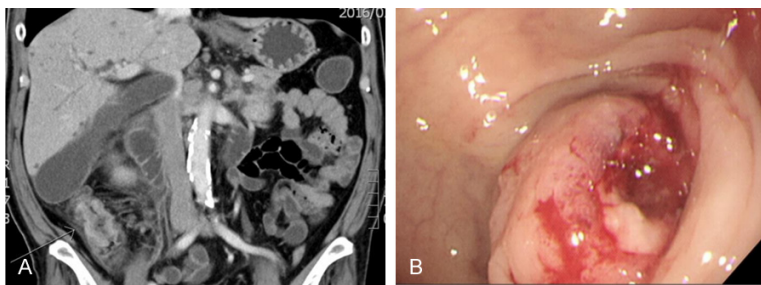


Figure 4. A. Computed tomography revealed a single mass in the ascending colon. B. Endoscopic view of the colonic lesion showing partial obstruction.

ings were similar. Further pathological analysis revealed that the colon lesion was positive for CK7 but negative for CK20 and CDX-2, which were completely different from the typical manifestations of colon adenocarcinoma but were similar to those of the primary lung lesion of this patient.

In this case, unusual metastasis to the tonsil and colon were, in fact, manifestations of

the advanced disease. In a study involving patients with metastasis to more common sites, such as the liver, lymph nodes, bone, and brain, survival was poor for those with disease metastasizing to unusual sites, such as soft tissue, kidney, peritoneum, intestine, pancreas, marrow, eye, ovary, thyroid, heart, nasal cavity, breast, and tonsil [6]. However, owing to continued improvements in targeted chemotherapy regimens and supportive care, patient survival has improved, thereby allowing for detection of unusual metastasis sites.

In summary, metastasis of lung cancer to the tonsil and colon is very rare. Immunohistochemical staining is useful to determine whether a tumor of the tonsil or colon is actually the primary site of cancer or a metastatic lesion. To the best of our knowledge, this is the first case report that investigates metastasis of lung adenocarcinoma to both the tonsil and colon.

Disclosure of conflict of interest

None.

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