Case Report

CT-guided needle biopsy in the diagnosis of lung adenocarcinoma accompanied by extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue: a rare combination

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Abstract: We report a rare case of lung adenocarcinoma accompanied by extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT). The patient was a 66-year-old male presented with 1 month history of recurrent cough and hemoptysis. Chest CT showed solitary ground-glass opacity (GGO) in the upper lobe of the right lung and mediastinal lymph node enlargement in station 3p. A CT-guided transthoracic needle biopsy was performed. Tissue specimens of the GGO revealed a typical adenocarcinoma. Histopathologic diagnosis of mediastinal lymph node was extranodal marginal zone lymphoma of MALT. Because of its rarity, extranodal marginal zone lymphoma of MALT should be considered in the differential diagnosis when we encounter mediastinal lymphadenopathy in patients with lung adenocarcinoma.

Keywords: Lung adenocarcinoma, mucosa-associated lymphoid tissue, lymphoma, CT-guided needle biopsy

Introduction

Mediastinal lymphadenopathies of lung cancer are generally considered as metastatic carcinoma and extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT) is a mature B-cell neoplasm that typically follows an indolent clinical course [1, 2]. Here, we present a case of lung adenocarcinoma accompanied by mediastinal lymphadenopathy. CT-guided transthoracic needle-core biopsy of the mediastinal lymph nodes revealed extranodal marginal zone lymphoma of MALT. Lung adenocarcinoma accompanied by MALT lymphoma is very rare; to our best knowledge, this tumoral combination has not been previously reported.

Case report

A 66-year-old man was admitted due to recurrent cough and hemoptysis for 1 month. He had smoked for 30 years with one pack per day. His vital signs were normal, and physical examination revealed no abnormalities. The results of laboratory tests were in the normal range, with the exception of CYFRA21-1 of 4.08 ng/mL (the reference value is less than 3 ng/mL). Chest CT was performed, revealing a solitary ground-glass opacity (GGO) with a diameter of 12 mm×17 mm located in the upper lobe of the right lung (Figure 1); this finding was accompanied by mediastinal lymph node enlargement in station 3p (Figure 2).

The patient signed informed consent, and tissue specimens of the GGO in the right lung, which were acquired via CT-guided transthoracic needle biopsy (Figure 3), revealed a typical adenocarcinoma (Figure 4). Tissue specimens of the enlarged mediastinal lymph node in station 3p, which were obtained via CT-guided transthoracic needle biopsy (Figure 5), showed infiltration of small atypical cells resembling centrocyte-like lymphocytes. An immunohistochemical study was performed using the Dako-Envision method. The atypical small lymphocytes were positive for CD20, CD23, CD99, Bcl-6 and Bcl-2 but were negative for CD3ε, CD5, cyclin-D1 and TdT (Figure 6). Ki-67 label-
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The pathological diagnosis was MALT lymphoma of the mediastinal lymph node. The patient refused any treatment and discharged against medical advice. This patient is still alive after half a year’s follow-up.

Discussion

GGO is a common lung imaging finding. A study by Goo found that pure GGOs with a size of 10 mm or larger and irregular and burr-like boundaries were closely associated with lung cancer [3]. Moreover, the patient in our case was an elderly male long-term smoker and, therefore, exhibited a high risk for lung cancer. A previous meta-analysis of CT-guided transthoracic needle biopsy for the evaluation of the pulmonary GGO lesions reported sensitivity and specificity values of 0.92 and 0.94, respectively [4]. To confirm the diagnosis, CT-guided transthoracic needle biopsy was performed, and the histopathological exam showed that the GGO in the upper lobe of the right lung of the patient was an adenocarcinoma.

The typical pattern of lymphatic drainage from the lung corresponds to a linear model of dissemination malignancy initiating from the tumor, spreading to intrapleural lymph nodes and subsequently reaching the hilar lymph nodes (N1). Next, the lymphatic drainage reaches the ipsilateral mediastinal lymph nodes (N2) in a downstream manner, i.e., from the nodes.

![Figure 1. A GGO in the upper lobe of the right lung (arrow).](image1)

![Figure 2. Mediastinal lymph node enlargement in station 3p (arrow).](image2)

![Figure 3. CT-guided transthoracic needle biopsy of the lung.](image3)

![Figure 4. Histopathologic examination (400×) of the GGO in the lung reveals adenocarcinoma.](image4)
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most proximal to the hilum to the most distal nodes [5]. The hilar lymph nodes of our patient were normal, but the mediastinal lymph nodes located in station 3p appeared to be swollen. This finding was very unusual, and the histopathological exam revealed the presence of MALT lymphoma.

MALT lymphoma is a B cell lymphoma originating from the mucosa-associated lymphoid tis-
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This lymphoma represents an independent type of non-Hodgkin’s lymphoma that comprises 7-8% of all B cell lymphomas and up to 50% of all primary gastric lymphomas [6]. MALT lymphoma can occur at any age but is more common in the elderly. The clinical manifestations of MALT lymphoma vary depending on the location. Because their overall development is relatively slow, these lymphomas are classified as indolent lymphomas. The stomach is the most commonly involved site, although MALT lymphoma can arise from many non-gastrointestinal sites, including the thyroid gland, salivary glands, the ocular adnexa, the respiratory system (lungs, throat, and bronchi), the skin, the breasts, the genitourinary tract and the dura [7]. However, lymph node involvement is relatively rare. To evaluate the potential site of the lymphoma, systematic examinations were performed, including cranial magnetic resonance imaging, ultrasound of the thyroid and breast, gastrointestinal endoscopy, bronchoscopy, PETCT, and skin and eye exams. However, we did not find any suspicious lesions in other locations. Primary MALT lymphoma in the mediastinal lymph nodes is extremely rare, and to our best knowledge, this type of tumoral combination has not previously been reported in the literature.

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) biopsy is commonly used in the diagnosis of mediastinal lymphadenopathy. The sensitivity of EBUS-TBNA for the diagnosis of lymphoma was reported to be 86.7-90.9% [8, 9]. The transbronchial needle biopsy technique is also safe and effective for the diagnosis of mediastinal lymphadenopathy. For instance, a study by Hu found that the overall diagnostic accuracy of needle-core biopsy for the pathologic diagnosis of lymphoma was 85%-87% [10]. A high reproducibility of this diagnosis was observed among pathologists. Thus, this author suggested that needle-core biopsy should be considered as the first-line procedure for cases of suspected lymphoma [10]. In the current case, we performed a CT-guided transthoracic needle-core biopsy of the mediastinal lymph nodes and obtained a definitive diagnostic result, and no complications related to needle-core biopsy occurred.

In summary, we reported a rare case of lung adenocarcinoma accompanied by extranodal marginal zone lymphoma of MALT. Definite pathologic diagnosis was acquired by CT-guided transthoracic needle-core biopsy. Enlarged mediastinal lymph nodes in patients with lung adenocarcinoma are not always metastatic carcinoma.

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Disclosure of conflict of interest

None.

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