Pulmonary Lymphoma Misdiagnosed as Pneumonia

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Abstract Pulmonary lymphoma is a very rare cause of lung tumors which occurs in less than one percent of primary malignant lung tumors. When seemingly pneumonia does not respond to treatment, the possibility of malignant lymphoma should always be considered. Here, we report two cases of pulmonary lymphoma misdiagnosed as pneumonia.

Keywords Lung · Primary pulmonary lymphoma · Mucosa-associated lymphoid tissue · Intravascular large B-cell lymphoma

Pulmonary lymphoma is a rare, but possible cause for non-resolving pneumonia. It occurs in less than one percent of primary pulmonary malignancy and can be classified into two categories: primary pulmonary lymphoma (PPL) and secondary pulmonary lymphoma with extrathoracic involvement (SPL). However, PPL and SPL cannot be distinguished from one another histopathologically, and their symptoms, radiologic features, and laboratory findings can be nonspecific and misleading [1, 2]. Here, we present each case of pulmonary lymphoma misdiagnosed as different types of pneumonia.

Case 1 A 54-year-old never-smoker woman visited our pulmonary outpatient clinic because of abnormal chest X-ray finding of left lower lobe haziness on routine check-up (Fig. 1). Vital signs were stable and auscultation sounds were normal in heart and lungs. Laboratory tests were unremarkable. Computed tomography (CT) scan of chest showed ill-defined ground-glass opacities (GGO) and patchy consolidation in both lower lobes (Fig. 1). Bronchoalveolar lavage was done and showed many lymphocytes, epithelial cells, and alveolar macrophages. Interestingly, Oil-Red-O staining revealed some lipid-laden macrophages (Fig. 2), which suggests lipid pneumonia. Detailed history-taking disclosed that she had aspirated a sip of olive oil 6 months ago. The presumptive diagnosis of lipid pneumonia was made and she was followed-up. After 3 months, a low-dose chest CT was taken which showed slightly increased consolidation on left lower lobe.

The patient was admitted to go through percutaneous needle biopsy. The pathologic result revealed atypical lymphohistiocytic infiltration, consistent with malignant lymphoma (Fig. 2). Final diagnosis was extranodal marginal zone lymphoma, also called as mucosa-associated lymphoid tissue (MALT) lymphoma. She received 6 cycles

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Fig. 1 MALT lymphoma of lung misdiagnosed as lipoid pneumonia. Initial chest X-ray upon referral showing “wet” chest, with haziness in left lower lobe (a). Initial CT scan showing ill-defined GGO and patchy consolidation on both lower lobes (b)

Fig. 2 Histopathologic results of the first case. An Oil-Red-O stained smear of bronchoalveolar lavage showing lipid laden macrophages (a). The pathologic result of percutaneous needle biopsy revealed atypical lymphohistiocytic infiltration, consistent with marginal zone lymphoma. H&E staining (left) and positive staining for CD-20 (right) (b)

of R (rituximab)-CVP (cyclophosphamide, vincristine, and prednisone) chemotherapy, resulting in complete remission for 24 months.

Case 2 A 75-year-old male was referred to us from other hospital with a diagnosis of non-resolving pneumonia. According to the records, he had been admitted for fever of two-weeks duration. Over five hospital days in that hospital, he gradually developed cough with non-purulent sputum. Plain chest radiography showed patchy, bilateral but mainly right-lung dominant infiltrations (Fig. 3). Intravenous piperacillin/tazobactam and levofloxacin were given for a month but his symptoms and signs deteriorated. From the history and characteristic CT findings (Fig. 3), presumptive diagnosis of cryptogenic organizing pneumonia (COP) was made and the patient was given glucocorticoid. The response to methylprednisolone was dramatic (Fig. 3). However, tapering glucocorticoid resulted in aggravation of his condition repeatedly. High-fever persisted and pancytopenia developed with increased total bilirubin. At this point, he visited our hospital for second opinion.

We suspected the presence of certain malignancy and performed bone marrow examination. There was possible large B-cell lymphoma involvement in the marrow. On the next day, the patient received biopsy of lung via video-assisted thoracoscopic surgery, which finally revealed pulmonary involvement of intravascular large B cell lymphoma (IVLBCL) accompanied by cytomegalovirus infection (Fig. 4). He was given R (rituximab)—CHOP (cyclophosphamide, doxorubicin, vincristine, prednisone) chemotherapy and ganciclovir, but his condition deteriorated and he expired.

Fig. 3 IVLBCL misdiagnosed as cryptogenic organizing pneumonia. Initial chest X-ray at outside hospital (**a**). Changes in chest X-ray after initiating steroid treatment (**b**). Chest CT scan of 10th hospital day, before administration of glucocorticoid (**c** and **d**)

Fig. 4 Pathologic result of VATS lung biopsy showing pulmonary involvement of intravascular large B-cell lymphoma accompanied by CMV infection. The atypical cells are distributed in perivascular and intra-vascular location at pulmonary capillaries and arterioles in H&E stain (*left*) (**a**). The results of immunohistochemistry of CD20 was positive (*right*) (**b**)

Compliance with Ethical Standards

Conflict of interest None.

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