


Diffuse large B-cell lymphoma presenting with cavitory lung disease

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Introduction

Diffuse large B-cell lymphoma (DLBCL) is the most common histological subtype of non-Hodgkin's lymphoma (NHL). DLBCL can arise in nodal or extranodal sites, such as gastrointestinal tract, testes, thyroid, skin, breast, bone, or brain. Pulmonary involvement in patients with DLBCL is uncommon, accounting for 4% of patients with NHL [1]. However, DLBCL occasionally presents with cavitory lung disease. This can lead to incorrect diagnoses based on imaging findings alone. We herein report a case in which a patient with DLBCL presented with cavitory pulmonary disease and review pertinent literature on similar adult cases.

Case Report

A 71-year-old man presented with a month history of appetite loss, weight loss, and fatigue, and a week history of cough which had not been improved by levofloxacin to our outpatient clinic. He had no fever or night sweats. On admission, he was afebrile and physical examination revealed a swelling of the lymph node on the right neck. Laboratory studies showed white blood cell count of 15,900/mm³ with 93.5% neutrophils, C-reactive protein of

Abstract

Diffuse large B-cell lymphoma (DLBCL) with cavitory lung disease is rare and is often difficult to differentiate from primary lung cancer, granulomatous disease, or an infectious disease based on imaging findings alone. We herein report a case in which a patient with DLBCL presented with cavitory lung disease and splenic mass, which was diagnosed by transbronchial biopsy. DLBCL should be considered as a differential diagnosis in patients with cavitory lung diseases who have rare metastatic lesions for primary lung cancer, such as intra-abdominal lymph nodes or spleen.

15.9 mg/dL, serum lactate dehydrogenase level of 380 (normal range: 118–223 U/L), serum calcium level of 11.3 mg/dL, serum pro-gastrin-releasing peptide level of 89.1 pg/mL (normal range: 0–81.0 pg/mL), and serum soluble interleukin 2 receptor (sIL-2R) level of 7910 U/mL (normal range: 0–613 U/mL). The computed tomography (CT) demonstrated a large mass with a cavity on the right hilar area (8.4 × 6.3 cm in size); two satellite nodules on the left lower lobe (1.4 × 1.1 and 1.1 × 0.9 cm in size); right cervical, mediastinal, and intra-abdominal lymphadenopathy; and a splenic mass (9.0 × 8.3 cm in size) (Fig. 1). With a suspect of a primary lung cancer, endobronchial ultrasound-guided transbronchial needle aspiration for the lymph node station 7 and transbronchial biopsy for the mass in the right hilar area were performed. The histopathological analysis revealed atypical cells with lymphoid nucleus, and CD 20 and CD 79a+ were positive and Ki-67 was 97% on immunostaining. The diagnosis was consistent with DLBCL. The patient was treated with rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP) chemotherapy. On the 15th day of R-CHOP, chest X-ray showed the mass in the right hilar area was reduced. Soon after that, candidemia developed and respiratory failure progressed rapidly. Despite the antibiotic treatments, the patient succumbed on the 22nd day of

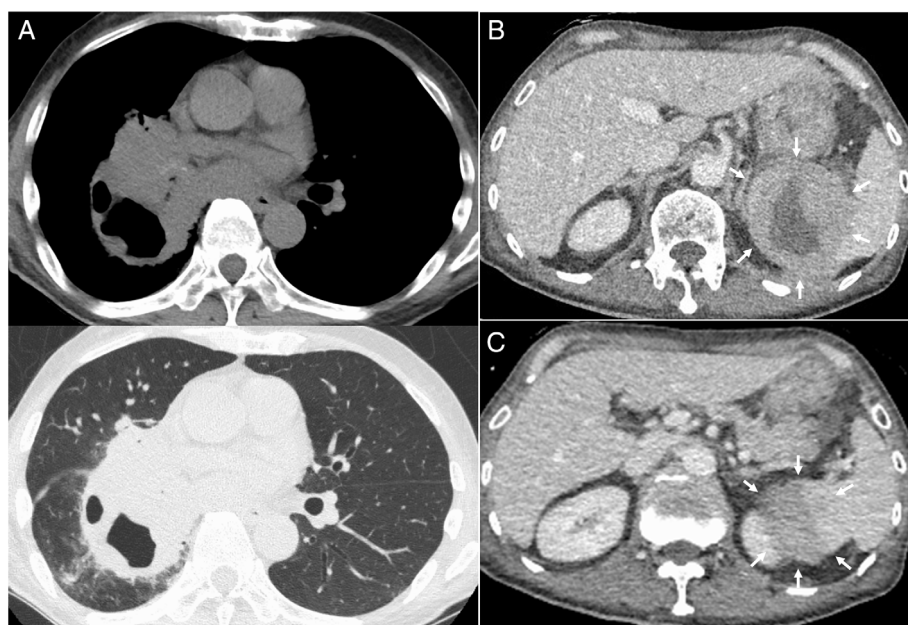


Figure 1. Computed tomography (CT) axial images. (A) A large mass with a cavity on the right hilar area (8.4 × 6.3 cm in size). (B, C) A splenic mass (9.0 × 8.3 cm in size) with low-density area indicating necrotic lesion.

R-CHOP because of acute respiratory distress syndrome due to candidemia.

Discussion

We report a case of a 71-year-old man with DLBCL presented with cavitary lung disease. It has previously been reported that pulmonary lymphoma presented a variety of radiographic patterns, such as masses, consolidation, nodules, and ground-glass opacity [1]. However, DLBCL with pulmonary cavitation is very rare.

We searched on PubMed to find reports of DLBCL with cavitary lung diseases; only four cases were found in the literature (Table 1) [2–5]. In all four cases, the initial diagnosis after bronchoscope was not DLBCL; two were lung abscesses, one was granulomatosis with polyangiitis, and in the remaining case transbronchial biopsy specimens

revealed no malignant cell but only granulomatous infiltration. All four cases were finally diagnosed of DLBCL by surgical biopsies. As for non-pulmonary lesions, one case had splenic extranodal lesion, and another case showed gastric extranodal lesion, which were all atypical metastatic lesions for primary lung cancer.

In this case, the primary lung cancer was suspected from the CT findings, but ultimately, transbronchial biopsy diagnosed DLBCL and chemotherapy could be started. As splenic lesion, which is rare metastatic lesion for primary lung cancer, was identified from the beginning in this case, DLBCL should have been considered in the differential diagnosis. Although the mechanism causing cavitation is uncertain, DLBCL with high malignancy, leading to a tendency to necrosis, may be likely to be accompanied by cavity formation. In this case, Ki-67 was 97%, suggesting a very high grade of malignancy. Furthermore, the level of

Table 1 Clinical features of DLBCL cases with pulmonary cavitation.

	Miyahara (2001) [2]	Yamane (2011) [3]	Matsumoto (2015) [4]	Insiripong (2018) [5]
Age	27	68	80	80
Sex	Male	Female	Male	Male
C.C.	Cough	Cough, haemoptysis	Fever	Dyspnoea
Extrapulmonary lesions	N/A	Stomach	Spleen	N/A
Initial diagnosis after bronchoscopy	GPA	Non-diagnostic	Lung abscess	Lung abscess
Treatment	CHOP	R-CHOP	Prednisolone and antibiotics	R-CHOP

C.C., chief complaint; CHOP, cyclophosphamide, doxorubicin, vincristine, prednisolone; DLBCL, diffuse large B-cell lymphoma; GPA, granulomatosis with polyangiitis; N/A, not applicable; R-CHOP, rituximab, cyclophosphamide, doxorubicin, vincristine, prednisolone.

serum sIL-2R, which has been reported that it correlates with disease activity in patients with malignant lymphoma, was high in this case. The evaluation of serum sIL-2R may further aid in the diagnosis of DLBCL.

In conclusion, pulmonary lymphoma with cavitation is low frequency, and it is difficult to radiologically differentiate lymphoma from infection, primary lung cancer, or granulomatosis with polyangiitis. It is important to consider the lymphoma as differential diagnosis and to consider bronchoscopy or surgery when cavitory lung disease is observed.

Disclosure Statement

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

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