

Pulmonary Involvement of Diffuse Large B-cell Lymphoma with Cavitory Lesions

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Abstract Diffuse large B-cell lymphoma (DLBCL) is the most common type of extranodal lymphoma. Typically disease occurs fastly growing nodal or extranodal masses with systemic symptoms. Pulmonary involvement may also occur in DLBCL. Here we present a DLBCL with cavitory lesions in the lung. A 59-year-old male was diagnosed with DLBCL through an endoscopic gastric biopsy that was performed 1.5 years ago. After six course of R-CHOP chemotherapy, the relaps of disease was confirmed with mediastinoscopy. Despite two courses of RICE chemotherapy and one course of R-BAB therapies, the patient was admitted to the intensive care unit with shortness of breath and tachypnea. Thorax computed tomography showed a mass lesion that enclosed and narrowed the right major bronchus and multiple lesions with cavitation. The infections were excluded with bronchoscopy. The patient received pulse steroid therapy, radiotherapy and three courses of Hyper-CVAD chemotherapy. In the control thorax CT, cavitory lesions got smaller, respiratory insufficiency of patient improved. When pulmonary cavitory lesions are observed in patients under follow-up with the diagnosis of lymphoma, the pulmonary involvement of lymphoma should also be considered in addition to the infectious agents.

Keywords: diffuse large B-cell lymphoma, pulmonary cavitory lesion

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1. Introduction

Diffuse large B-cell lymphoma (DLBCL) is the most common type of extranodal lymphoma. Majority of cases occur in the gastrointestinal tract (GI) extranodally. Pulmonary involvement has been reported but it is uncommon, and constitutes less than 1% of cases [1,2,3].

Pulmonary involvement of DLBCL may occur as single or multiple pulmonary nodules, masses, alveolar or interstitial infiltrates, peribronchial or perivascular thickenings, diffuse ground-glass opacities, cavitory lesions and endobronchial lesions [2,3,4,5].

Here we report a case of diffuse large B cell lymphoma associated with a mass and pulmonary cavitory lesions.

2. Case

A 59-year-old male was diagnosed with DLBCL through an endoscopic gastric biopsy that was performed 1.5 years ago. The patient received six courses of R-CHOP (rituximab-cyclophosphamide-doxorubicin-vincristine and prednisone) chemotherapy. Positron emission tomography (PET-CT) was performed to evaluate the treatment response.

It revealed involvement of the mediastinal and hilar lymph nodes, which was not present before. Mediastinoscopy was performed and pathological examination of the lymph nodes showed lymphoma involvement. After the administration of two courses of RICE (rituximab- ifosfamide-carboplatin-etoposide) and one course of R-BAB therapies, the patient was admitted to the intensive care unit with shortness of breath, tachypnea, and impairment of general condition. Chest X-ray of patient showed infiltration on the right paratracheal region (Figure 1). Piperacillin-tazobactam, ciprofloxacin, and oseltamivir treatments were initiated with the suspicion of pneumonia. High resolution thorax computed tomography (CT) showed bilateral lymphangitic involvement with a mass lesion that enclosed and narrowed the right major bronchus and multiple cavitory lesions with thick and irregular walls (the largest one of which had a diameter of 3.5 cm) (Figure 2). Although we thought that it was progression of the disease, bronchoscopy was performed to exclude the infections. Acid resistant basil (ARB) from bronchoalveolar lavage was researched, cultures and polymerase chain reaction (PCR) were done in terms of tuberculosis, candida and other infections. Transbronchial biopsy couldn't be performed from lesion due to high oxygen demand of patient under ononinvasive mechanical

ventilation. Only bronchoalveolar lavage sample was sent. The results of the cultures, ARB, and PCR were negative. Pulse steroid therapy (1 g/day) was administered for three days in order to minimize the existing obstruction of right main bronchus. Then the patient received firstly radiotherapy and three courses of Hyper-CVAD

(fractionated cyclophosphamide, vincristine, doxorubicin, and dexamethasone) chemotherapy. In the control thorax CT, cavitary lesions got smaller (Figure 3). The patient was transferred to the bone marrow transplant unit for stem cell transplantation.

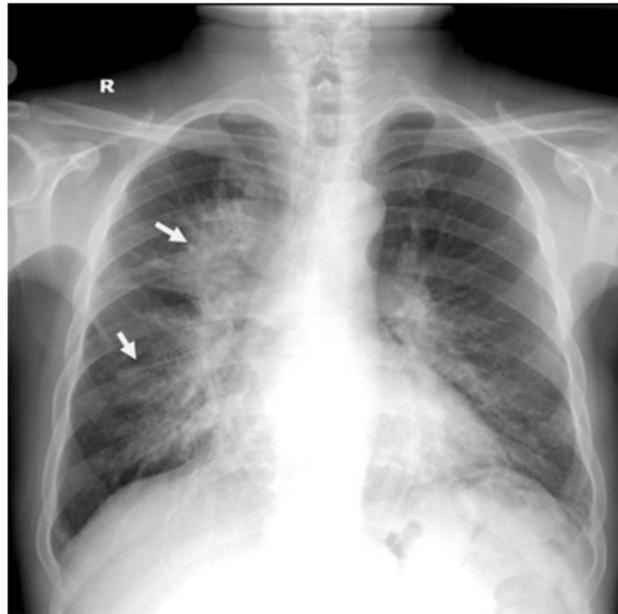


Figure 1. Postero-anterior chest X-ray of patient showing right hilar opacity with cavitary lesions on the right lower zone of lung.

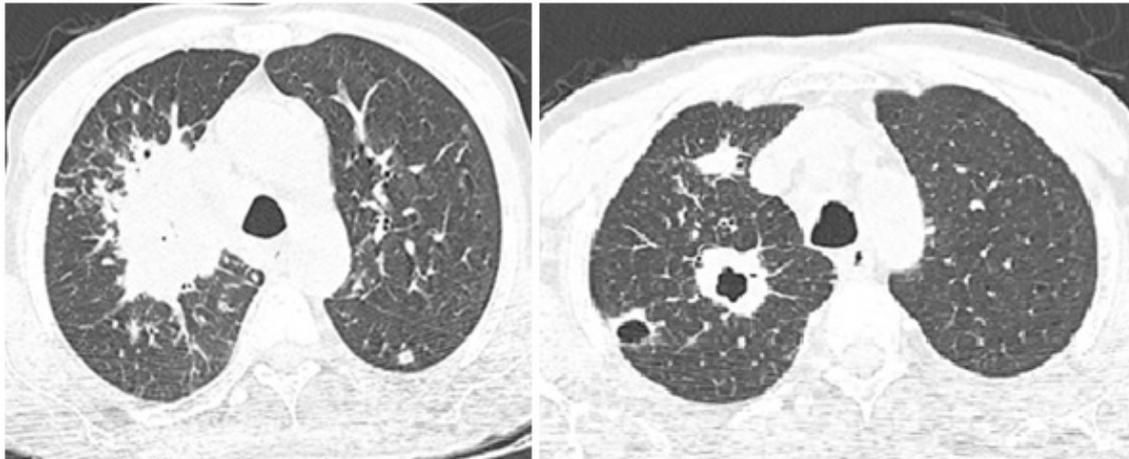


Figure 2. Parenchymal window of computed tomography scan showing in the 7.5x5.5x4.3 cm diameter of right hilar mass and cavitary lesions with thick and irregular walls on the right upper lobe

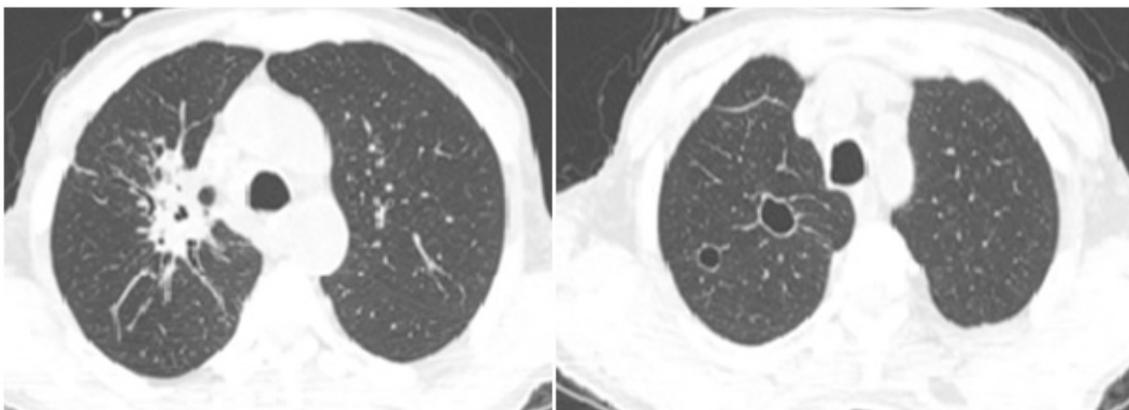


Figure 3. Parenchymal window of computed tomography scan showing the smaller (2.5x2.6x3.1 cm) right hilar mass and cavitary lesions with thin walls and smaller diameter on the right upper lobe

3. Discussion

Non-Hodgkin Lymphoma (NHL) is highly heterogeneous groups of diseases in terms of clinical behavior, morphology, cellular origin, etiology, and pathogenesis among hematological tumors. The incidence is approximately 15-20/100.000 per year in USA and Europe. Diffuse Large B-Cell Lymphoma (DLBCL) is the most common NHL group in adults. Its incidence is about 2-3/100.000 per year. In the western countries, 30-40% of all NHL cases are DLBCL. The average age of occurrence is 60-70 years. It is slightly more common in males (M/F=1.2/1) [1-7].

Diffuse Large B-Cell Lymphoma (DLBCL) is an aggressive lymphoma and the survival is less than one year if untreated. The disease typically occurs as a rapid-growing nodal or extranodal mass accompanied by systemic symptoms. About 40% of the cases are extranodal. The disease may start from any part of the body such as the central nervous system (CNS), bones, testicles, soft tissues, salivary gland, female genital organs, kidneys and liver, and the gastrointestinal system (GIS) (stomach or ileocaecal region) in particular [7].

A study investigated the characteristics of 855 NHL patients, 41.4% of who had extranodal involvement, and established that 72% of these patients were DLBCL. Extranodal involvement was most commonly in the GIS and 81% of these cases had gastric involvement [4].

Pulmonary involvement was seen in 24% of NHLs and 38% of Hodgkin lymphomas. Due to the many potential infectious or non-infectious diseases for the differential diagnosis of the pulmonary parenchymal involvement, the diagnosis is based on histopathological confirmation [8,9].

Our case was initially diagnosed with gastric involvement, then mediastinal involvement was found and confirmed with mediastinoscopic biopsies. Finally, the lymphoma resulted in a mass pressuring on the airways and parenchymal cavitory lesions in the lungs. Bronchoscopy was performed and cultures were taken in order to exclude the infectious agents. The histopathological confirmation could not be made through parenchymal biopsy, because the bronchoscopy was performed under emergency condition and under non-invasive ventilation.

The pulmonary cavitory lesions resulted from the parenchymal tissue necrosis and the discharge of such necrotic material into the bronchus. The pulmonary cavitory lesions may be caused by neoplasms (lung cancer, lymphoproliferative disorders, and metastases), collagen tissue diseases, and vasculitis (Wegener's granulomatosis, Churg-Strauss, rheumatoid arthritis, SLE, and PAN), granulomatous diseases (sarcoidosis, eosinophilic granuloma), infections (bacterial, mycobacterial, fungal, and parasitic), vascular diseases (pulmonary infarction, septic embolism), trauma (traumatic pulmonary cysts), pneumoconiosis (silicosis) and bronchopulmonary diseases (infected bulla, cystic bronchiectasis, and bronchogenic cysts). In Turkey, tuberculosis should be excluded in cavitory lesions [10,11,12]. In our case, infectious agents were excluded with bronchoscopy and regression of cavitory lesions were seen with chemotherapy and radiotherapy.

Computerized tomography (CT) is an imaging technique with high sensitivity and specificity to detect

pulmonary pathologies, especially in immunosuppressive patients. Additionally, CT may demonstrate the pulmonary cavitory lesions and their characteristics in detail [12,13]. For the present case, the lesions were detected and followed-up with CT at every step of the diagnosis and treatment.

The most common treatment regimen used in NHL is R-CHOP (rituximab-cyclophosphamide, doxorubicin, vincristine and prednisone) consists of anti-CD20 antibody rituximab in combination with cyclophosphamide, doxorubicin, vincristine, and prednisone. In the present case, this regimen was also used as first line chemotherapy. received R-CHOP therapy at first. On the other hand, there may be recurrence at a rate of 30% after the R-CHOP therapy. One of the post-recurrence recovery therapies is the ifosfamide-prednisone -etoposide (ICE) therapy [1,2,12,13]. RICE chemotherapy regimen was also used in our case after disease relaps.

When pulmonary cavitory lesions are observed in patients under follow-up with the diagnosis of lymphoma, the pulmonary involvement of lymphoma should also be considered in addition to the infectious agents such as tuberculosis, bacteria, and fungi. Thorax CT and bronchoscopy are the specifically recommended techniques for use in the diagnosis and differential diagnosis of such patients.

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