

# Diffuse Large B-cell Lymphoma Exhibiting Endobronchial Involvement: A Case Report

## Endobronşiyal Tutulum Gösteren Diffüz Büyük B-Hücreli Lenfoma: Olgu Sunumu

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### Abstract

Diffuse Large B-cell lymphoma is a subgroup of non-Hodgkin's lymphoma. Lymphoma with endobronchial pulmonary involvement is a rarely reported condition. A 64-year-old male patient was admitted to our clinic with complaints of swellings in the neck and in the bilateral upper limbs, along with shortness of breath. A computed tomography of the thorax revealed diffuse mediastinal enlargement with a superior vena cava obstruction, and a huge right hilar mass formation obliterating the anterior segment of the right upper lobe. A diagnostic fiberoptic bronchoscopy showed mucosal irregularity and an endobronchial lesion on the anterior segment of the right upper lobe. A diagnosis of endobronchial lymphoma was made following bronchial biopsies.

**Key words:** Diffuse Large B-cell Lymphoma, Endobronchial, Non-Hodgkin.

### Özet

Diffüz büyük B hücreli lenfomalar non-Hodgkin lenfomaların subtipini oluştururlar. Lenfomaların endobronşiyal invazyonu oldukça nadirdir. Nefes darlığı, boyun ve üst ekstremitelerde şişlik şikayeti olan 64 yaşında erkek hasta kliniğimize başvurdu. Toraks tomografisinde üst mediastende büyümüş lenf nodları, vena cava süperiorda daralma ve sağ hiler büyümüş lenf nodları izlendi. Fiberoptik bronkoskopisinde sağ akciğer üst lob anterior segmentte endobronşiyal lezyon izlendi. Fiberoptik bronkoskopik biyopsi ile endobronşiyal lenfoma tanısı doğrulandı.

**Anahtar Sözcükler:** Diffüz Büyük B-Hücreli, Lenfoma, Endobronşiyal Non-Hodgkin.

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Pulmonary lymphomas may occur as a primary pulmonary malignancy or as a secondary manifestation derived from systemic lymphoma. Primary pulmonary lymphomas are defined as malignant lymphomas that originate in the pulmonary parenchyma or bronchi, with or without hilar lymph node involvement and the absence of any other tissue localization for 3 months following the diagnosis (1). In literature, the prevalence of primary pulmonary lymphoma has been reported in 0.5–1% of malignancies, accounting for <1% of all malignant lymphomas (2). Primary pulmonary lymphoma is rare, as pulmonary tissue contains less lymphoid tissue than other sites. The most common type of primary pulmonary lymphoma is mucosa-associated lymphoid tissue (MALT) lymphoma (2). Secondary pulmonary lymphoma is more common than primary pulmonary lymphoma. Diffuse Large B-cell lymphoma (DLBCL) is a subgroup of non-Hodgkin's lymphoma. Lymphoma with pulmonary involvement has been rarely reported, and endobronchial lymphoma is an exceptional finding. Mediastinal lymphoma has an aggressive behavior due to the close relationship with blood vessels (3). We present here the case of a patient with endobronchial lymphoma, diagnosed with a bronchial biopsy.

## CASE

A 64-year-old male patient presented with a history of neck and bilateral upper limb swelling, as well as shortness of breath for the past 2 weeks. Upon physical examination, swelling to the neck and the bilateral upper extremities, and bilateral dilated superficial veins on the chest were observed. The patient was using inhaler drugs for chronic obstructive pulmonary disease (COPD). The laboratory findings (hemogram and blood biochemistry) were within normal limits. A postero-anterior chest X-ray showed mediastinal and right hilar enlargement (Figure 1A). A contrast-enhanced computed tomography (CT) of the thorax revealed diffuse mediastinal enlargement with a superior vena cava obstruction and a right hilar mass formation obliterating the anterior segment of the right upper lobe (Figure 1C and D). A diagnostic fiberoptic bronchoscopy was performed, revealing mucosal irregularity and an endobronchial lesion in the anterior segment of the right upper lobe (Figure 1B). A histopathological examination revealed diffuse large B-cell lymphoma (DLBCL) infiltration. A bone marrow aspiration biopsy was negative for lymphoma infiltration. Immunohistochemistry showed an expression of vimentin, and a clustering of differentiation 20 (CD20), CD45 and CD19, but not of

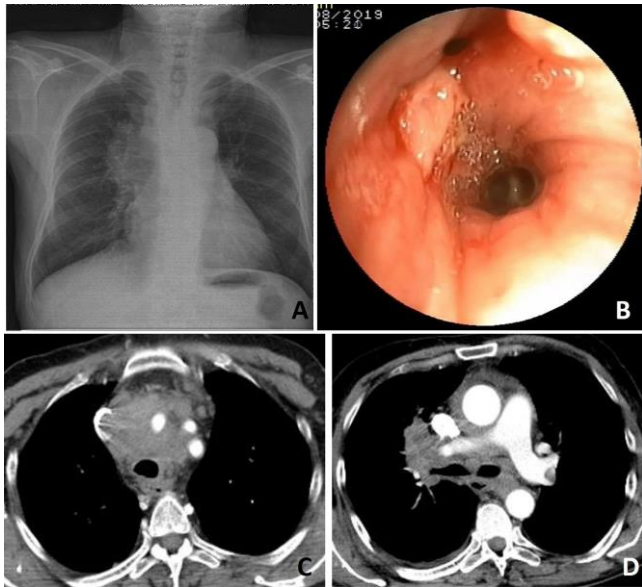
CD3, CD15 or CD30 (Figure 2). Due to the bulky lymph node and superior vena cava syndrome, the patient initially received a 300 cGy dose fraction per day, with a total dose of 3000cGy radiation. A chemotherapy protocol with rituximab, cyclophosphamide, doxorubicin hydrochloride, vincristine and prednisolone (R-CHOP) was started for the treatment of the patient.

## DISCUSSION

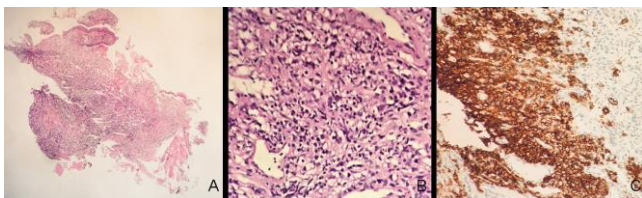
We report here on a rare case of lymphoma with endobronchial involvement, diagnosed by bronchoscopic biopsy. Lymphoma refers to malignant tumors that originate in the lymph nodes or in other lymphoid tissues (4). DLBCL is a subgroup and an aggressive form of non-Hodgkin lymphoma, and accounts for approximately 30% of all lymphomas (5). In a retrospective study of 1,221 patients with extranodal DLBCL, Takahashi et al. (6) reported lung involvement in 3.7% of cases. Lymphoma may present as mediastinal lymphadenopathy and as an isolated mediastinal mass. Pulmonary lymphoma with endobronchial involvement usually presents as a bulky lesion in the mediastinum, and is associated with symptoms related to local compression (7). The pathogenesis of endobronchial Hodgkin lymphoma is unclear. The mechanism is presumed to be a contiguous transmural spread from the adjacent lymph nodes, but may also arise in mucosa-associated lymphoid tissue (8). The differential diagnosis of lymphoma with pulmonary involvement includes mycobacterial and fungal infections, Wegener granulomatosis, Langerhans cell histiocytosis and other pulmonary malignancies (9). Endobronchial lymphoma is classified into two types, according to the pattern of involvement: diffuse submucosal infiltration (type I), and localized solitary mass (type II) (10). Type I includes diffuse submucosal infiltrates originating from hematogenous or lymphangitic spread in the presence of systemic lymphoma; while type II includes airway involvement by a localized mass due to the direct spread of lymphoma from the adjacent lymph nodes, or arising out of bronchus-associated lymphoid tissue (11). The pattern of involvement in the current patient was a localized solitary mass.

Routinely, mediastinoscopy or other invasive surgical procedures are preferred for the obtaining of an exact diagnosis, although Endobronchial Ultrasound-transbronchial needle aspiration (EBUS-TBNA) can be used as an alternative option (12). Due to the difficulties in confirming a diagnosis of the lymphoma subtype from a small volume specimen in EBUS-TBNA, the recommen-

dation of EBUS-TBNA for the evaluation of suspected lymphoma is controversial. The diagnostic sensitivity of EBUS-TBNA for lymphoma is lower than for lung cancer, although to avoid invasive surgical procedures, EBUS-TBNA may still be considered as the initial investigative technique for suspected lymphoma (13). Recently, EBUS-TBNA has been reported to be useful in the diagnosis of mediastinal lymphoma. Of 1,471 cases that underwent EBUS-TBNA for isolated mediastinal masses and/or lymphadenopathy, 27 patients (1.8 %) were diagnosed with lymphoma (14). In the present case, endobronchial lymphoma was diagnosed via bronchoscopic biopsy rather than EBUS-TBNA. By performing a fiberoptic bronchoscopy and obtaining biopsy samples showing tumor infiltration on the right upper lobe of the right lung, the diagnosis of lymphoma was made without the use of EBUS-TBNA.



**Figure 1:** Chest X-ray showing enlargement of the right mediastinal and hilar region (A), Bronchoscopic image endobronchial vegetation right upper lobe of the right lung (B), Thorax tomography enhancing lymph node with superior vena cava obstruction (C), Enhancing right hilar lymph node (D)



**Figure 2:** Hematoxylin and eosin (H&E) staining of the lung biopsy demonstrate diffuse proliferation (H&EX40) (A), Lung biopsy demonstrate diffuse proliferation, high power (H&EX200) (B), Immunohistochemistry staining of the lung biopsy shows positive for CD20 (X200) (C)

Lymphoma with endobronchial involvement is rare, and a diagnosis of endobronchial lymphoma with bronchoscopic biopsy has been rarely reported in literature. A systematic, careful examination of the bronchial system for a diagnosis of mediastinal mass lesions is crucial. Bronchoscopic biopsies for a diagnosis of endobronchial lymphoma with huge mediastinal lesions may contribute to histological diagnoses through the use of minimally invasive procedures, avoiding the need for EBUS or mediastinoscopic interventions.

## CONFLICTS OF INTEREST

None declared.

## AUTHOR CONTRIBUTIONS

Concept - İ.G.Ç., D. Ö., Ç.Ö., Ş.Ç.1, F.Y., E.G.; Planning and Design - İ.G.Ç., D. Ö., Ç.Ö., Ş.Ç.1, F.Y., E.G.; Supervision - İ.G.Ç., D. Ö., Ç.Ö., Ş.Ç.1, F.Y., E.G.; Funding - İ.G.Ç., E.G.; Materials - İ.G.Ç., E.G.; Data Collection and/or Processing - İ.G.Ç., E.G.; Analysis and/or Interpretation - İ.G.Ç., E.G.; Literature Review - İ.G.Ç., E.G.; Writing - İ.G.Ç., E.G.; Critical Review - İ.G.Ç., E.G.

## YAZAR KATKILARI

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