CASE REPORT
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# Primary Pulmonary Lymphoepithelioma-Like Carcinoma: A Case Report

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**Abstract**

A 30-year-old woman applied to our hospital because of back pain. Total atelectasis was seen in the left hemithorax at the chest X-ray. Computed tomography (CT) revealed decreased left lung volume and mediastinum deviated to the left hemithorax. Bronchoscopy showed concentric stenosis in the left main bronchus. According to these findings, left thoracotomy and pneumonectomy were performed. Pathologic diagnosis was lymphoepithelioma-like carcinoma.

Lymphoepithelioma-like carcinoma is an undifferentiated carcinoma that shows prominent lymphoid infiltration within the fibrous stroma. It is commonly seen in the nasopharynx. Most recently it was diagnosed as a primary lung tumor.

**Keywords:** lung neoplasms, nasopharyngeal carcinoma, primary pulmonary, lymphoepithelioma-like carcinoma

**Abbreviations:** CT: Computed tomography, LELC: Lymphoepithelioma-like carcinoma, EBV: Epstein-Barr virus

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## INTRODUCTION

Lymphoepithelioma of the nasopharynx is an undifferentiated carcinoma with pronounced lymphocytic infiltration within the fibrous stroma [1]. Recently, tumors with similar morphology, designated as lymphoepithelioma-like carcinoma (LELC), have been described in other sites, including thymus, salivary gland, stomach, skin, cervix and urinary bladder [2]. Rarely, it was diagnosed as a lung tumor.

## CASE REPORT

A 30-year-old woman with no history of smoking, applied to our hospital because of back pain for two months. Total atelectasis was seen in the left hemithorax at the posteroanterior chest X-ray. Laboratory values were within normal limits. Computed tomography (CT) revealed decreased left lung volume and mediastinum deviated to the left hemithorax with enlarged mediastinal lymph nodes (Figure 1). Bronchoscopy showed total stenosis in the left main bronchus. According to these findings, diagnostic thoracotomy and pneumonectomy were performed and a left hilar mass was seen. Pathologic findings revealed an undifferentiated carcinoma suggestive of metastatic nasopharyngeal carcinoma. Removal of the subcarinal lymph node revealed metastasis. Frozen section was not done. CT scan of the head showed no abnormalities in the nasopharynx. Nasopharyngoscopy revealed no tumor, and multiple mucosal biopsies showed no evidence of undifferentiated carcinoma.

The tumor was staged as III A (T3N2M0).

### Pathologic Studies:

Grossly, the tumor was white-gray, firm, and solitary, and measured 9 cm at its greatest diameter. The tumor had infiltrating borders. There was obvious involvement of the major bronchi. Histologically, the tumor appeared as well-defined aggregates of epithelial cells with indistinct cell borders, ovoid vesicular nuclei and prominent nucleoli. There was no product of keratin. These sheets of cells were closely intermingled with inflammatory cells. The inflammatory infiltrate was rich in lymphocytes. Immunohistochemically, epithelial cells were strongly cytokeratin (+) and background lymphoid cells were strongly LCA (+) (Figure 2).

## DISCUSSION

Lymphoepithelial-like carcinoma is an undifferentiated or poorly differentiated squamous cell carcinoma associated with a prominent component of reactive lymphocytes and plasma cells [3]. Histologic features of LELC are similar to those of undifferentiated nasopharyngeal carcinoma. Microscopy shows sheets of large cells with vesicular nuclei and prominent nucleoli, mixed with numerous lymphocytes and plasma cells and, occasionally, granulomas. The lymphoid infiltrate may be so prominent as to suggest lymphoma, from which it is distinguished by the immunocytochemical demonstration of cytokeratin and an absence of the Ki-1 antigen and general leukocyte markers within the tumor cells [4]. Pulmonary LELC is a subtype of large

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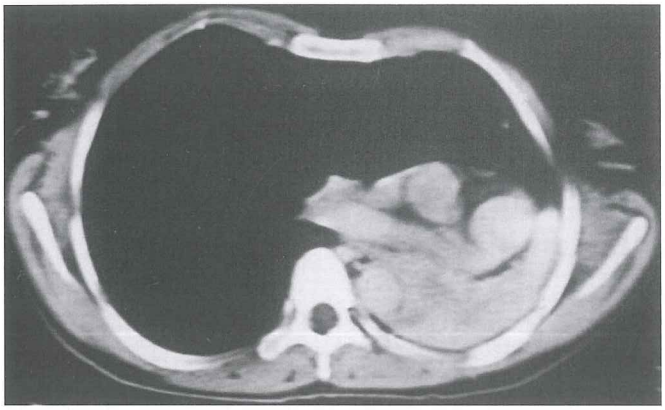

**Figure 1.** Computerised chest tomography showing decreased left lung volume and deviated mediastinum to the left hemithorax.

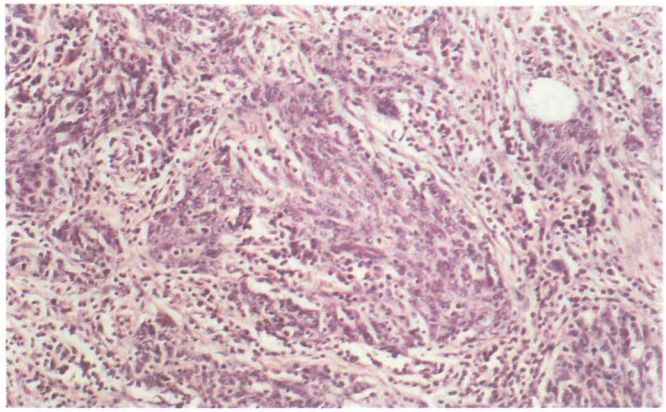

**Figure 2.** Tumor cells are arrenged in broad sheets of large cells seperated by an inflamed stroma (haematoxylin & eosin staining, x 100).

cell carcinoma of the lung according to the 1999 World Health Organization histologic typing of lung and pleural tumors [5].

Lymphoepithelioma of the lung is regarded as a distinct clinicopathological entity. Pulmonary lymphoepithelioma affects adults of all ages, and the sexes are affected equally. There is no strong association with cigarette smoking. Approximately half of the patients are asymptomatic, whereas others present with various pulmonary symptoms. The tumor usually forms a solitary, discrete, subpleural nodule, but some patients have extensive bilateral disease at presentation. Major bronchi are not usually affected [3,4]. Ooi et al. documented CT features of advanced LELC [6]. According to that paper, the LELC tumors were significantly larger (mean maximum diameter 7.1 cm) than non-LELC non-small cell lung cancer tumors. They were closely associated with the mediastinum with well-defined edges and a predilection for peribronchovascular nodal spread and vascular encasement. Similar to their findings, in our case the left main bronchus was obstructed with tumoral tissue and the tumor diameter was 9 cm.

Epstein-Barr virus (EBV) has been associated with a number of lymphoid neoplasms, including endemic Burkitt's lymphoma, Hodgkin's disease, and post-transplantation and HIV-associated lymphoproliferative disease. EBV has also been found within epithelial neoplasms, including undifferentiated nasopharyngeal carcinoma and LELC. A strong association between EBV and LELC of the lung has been well documented by serologic and molecular biologic analysis, particularly in patients of Asian descent, but such an association is lacking in Caucasians [1,3]. In our patient, EBV immunoglobulin G was found serologically positive. For lymphoepithelioma that occurs in other sites, such as the skin, cervix, vagina and urinary bladder, there is no known association with EBV [7].

The diagnosis is usually made following surgical resection. The fine-needle aspiration cytologic features of two cases of LELC of the lung have been described in the literature. The cytologic differential diagnosis of LELC would include granulomatous inflammatory diseases (especially tuberculosis), malignant lymphoma, melanoma and metastatic sarcoma [2].

The diagnosis of primary pulmonary LELC can be confirmed through clinical history and the absence of a primary lesion in the nasopharynx. Endoscopic examination and random biopsies of the nasopharynx, together with CT or preferably magnetic resonance imaging, are often necessary to exclude primary nasopharyngeal carcinoma [8]. In our case, since the nasopharyngoscopy revealed no tumor and multiple mucosal biopsies showed no evidence of undifferentiated carcinoma, the tumor was regarded as primary pulmonary LELC.

Lymphoepithelioma-like carcinoma is also reported to have low metastatic potential despite being a malignant neoplasm [6]. The behavior of lymphoepithelioma of the lung is reported to be highly variable. Frequently, pulmonary lymphoepithelioma is associated with a better survival rate than other large cell carcinomas of the lung [4,7]. The two- and five-year overall survival rates for patients with pulmonary LELC were 79.9% and 53.5%, respectively, versus 59.5% and 39.1%, respectively, for patients with non-LELC. Age, sex, smoking and pathologic subtype are not significantly related to survival, but tumor recurrence and necrosis (5% or more of tumor) are associated with poor prognosis [5].

Tumors in the early stage of the disease without evidence of metastasis have been treated successfully with resection and, in some cases, with adjuvant radiation [1]. There have been some reports of the use of chemotherapy in LELC of the lung resulting in significant tumor reduction [1,8-10]. In our case, metastatic mediastinal lymph

nodes were detected and radiotherapy was given to the mediastinum after the resection. At the 20-month follow-up, the patient had no evidence of disease.

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