# Primary Pulmonary Lymphoepithelioma-Like Carcinoma: A Rare Case Report

## Akciğerin Primer Lenfoepitelyoma Benzeri Karsinomu: Nadir Bir Olgu Sunumu

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## ABSTRACT

Primary pulmonary lymphoepithelioma-like carcinoma (PPLELC) is an uncommon histological type of malignancy. It may involve the nasopharynx, salivary glands, lungs, stomach, and thymus. It has been mostly associated with Epstein-Barr virus infection. Herein, we report a rare case of PPLELC in whom the diagnosis was made based on the endobronchial ultrasound and transbronchial needle aspiration sampling in the light of literature data.

**Key Words:** Lymphoepithelioma-like carcinoma, Pulmonary, Epstein-Barr virus, Endobronchial ultrasound, Transbronchial needle aspiration

## ÖZ

Akciğerin primer lenfoepitelyoma benzeri karsinomu (LEBK) kanserin nadir görülen bir histolojik tipidir. Nazofarenks, tükürük bezleri, akciğer, mide ve timus tutulumu ile seyredebilir. Çoğu olguda Epstein-Barr virüs enfeksiyonu ile ilişkilidir. Bu yazıda endobronşiyal ultrason ve transbronşiyal iğne aspirasyonu ile tanılanan nadir bir PPLELC olgusu literatür verileri ışığında sunuldu.

**Anahtar Sözcükler:** Lenfoepitelyoma benzeri karsinom, Akciğer, Epstein-Barr virüsü, Endobronşiyal ultrason, Transbronşiyal iğne aspirasyonu

## INTRODUCTION

Lymphoepithelioma-like carcinoma (LELC) is a variant of undifferentiated carcinoma with a dense lymphoid stroma. Primary pulmonary lymphoepithelioma-like carcinoma (PPLELC), which was first described by Begin et al. (1) in 1987, is one of the uncommon histological types of malignancy. It may involve the nasopharynx, salivary glands, lungs, stomach, skin, liver, breast, cervix, urinary bladder, and thymus (1). In the 2015 World Health Organization (WHO) histological classification of lung tumors, it has been reclassified under "other and unclassified carcinomas" (2). Epidemiological and histopathological studies have shown that PPLELC is associated with Epstein-Barr virus (EBV) infection (3).

Herein, we report a rare case of PPLELC in whom the diagnosis was made based on the endobronchial ultrasound transbronchial needle aspiration (EBUS-TBNA) findings in the light of literature data.

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## CASE REPORT

A 15-year-old male patient presented to the orthopedics and traumatology clinic with a metacarpal fracture of the right hand following a trauma. Before surgery, posteroanterior (PA) chest X-ray showed a homogeneous density. The patient was referred to the chest diseases outpatient clinic. Physical examination revealed normal signs, except for metacarpal bone casting of the affected hand. Laboratory test results were also within the normal range. As the PA chest X-ray showed a homogeneous density in the upper zone of the right lung about 2 cm in size, further examination was performed. Thoracic computed tomography (CT) revealed a 24x31-mm solid lesion with smooth margins in the posterior segment of the right upper lobe (Figure 1A-F). Fiberoptic bronchoscopy showed that all systems were patent until the subsegments without any endobronchial lesion. The positron emission tomography (PET)-CT was performed for staging and demonstrated a 31x29-mm central mass adjacent to the fissure with a maximum standardized uptake volume (SUVmax) of 11.59 in the posterior segment of the right upper lobe, with a SUVmax of 3.25 in the right lower paratracheal lymph node, and with a SUVmax of 3.25 in the right hilar region (Figure 2). All lymph node stations were accessible with EBUS, from the left to the right, and the left interlobar (11L), subcarinal (7), right lower paratracheal (4R), right hilar (10R) lymph nodes, and posterior segment of the right upper lobe (12RK) were sampled using TBNA (Figure 3). The histopathological examination result was compatible with reactive left interlobar (11L), subcarinal (7), right lower paratracheal (4R), and right hilar (10R) lymph nodes. The sections obtained from the 12RK material showed oval-shaped atypical cells with a syncytial appearance, eosinophilic cytoplasm, modestly chromatin-rich nucleus, forming solid islets in the lymphoid tissue specimens.

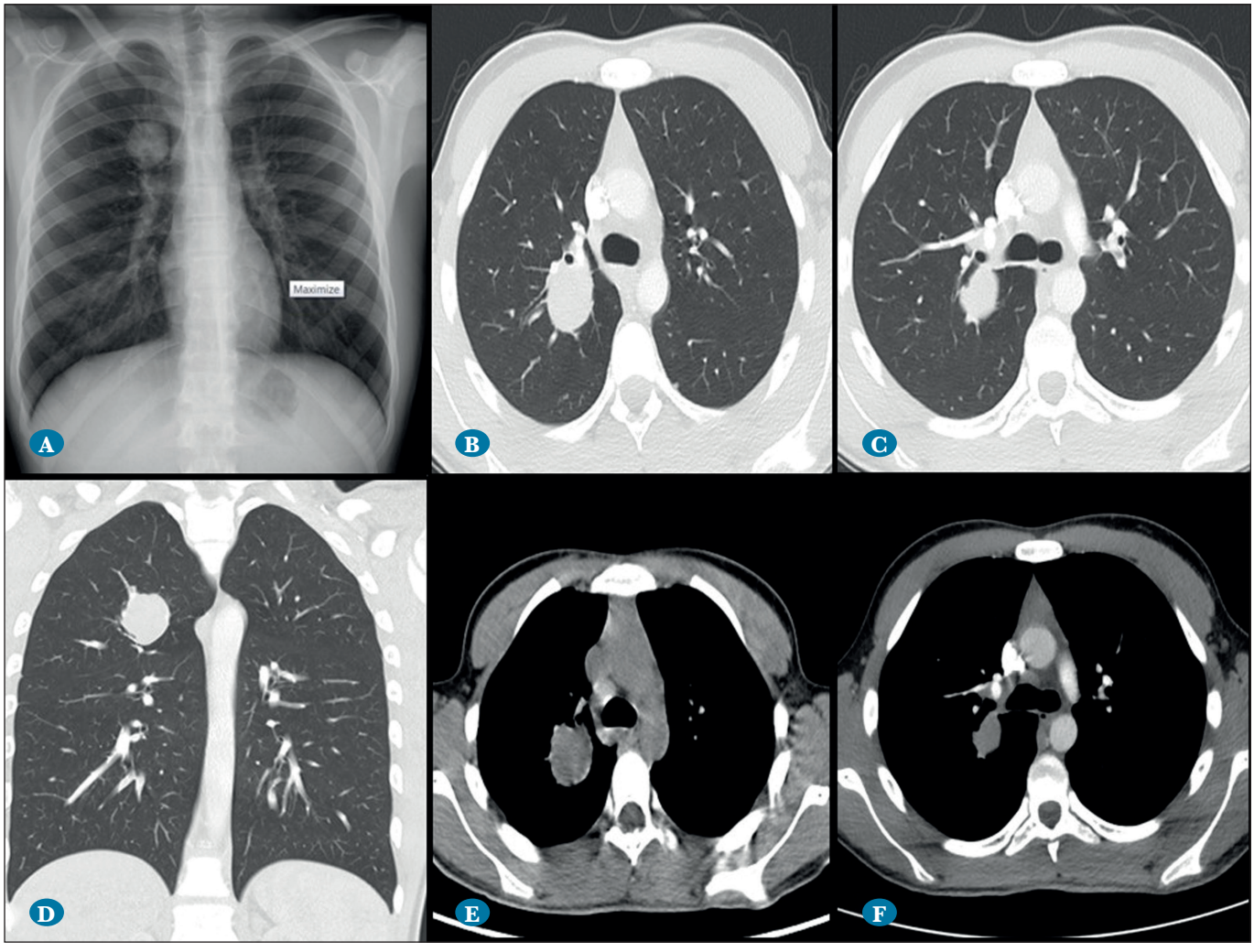


**Figure 1:** Radiological findings **A:** Homogeneous opacity with smooth borders in the right upper zone on posteroanterior radiography. **B, C, D, E, F:** Thorax computed tomography finding; 24x31 mm solid lesion with smooth contours in the right upper lobe central posterior.

Immunohistochemical staining revealed pancreatin, keratin 5/6, P40, and carcinoembryonic antigen (CEA) positivity, and CD45, CD30, and CD20 negativity. Histopathological examination results were reported as PPLELC (Figure 4).

The patient was consulted to the otolaryngology clinic and no nasopharyngeal involvement was detected. Serology test for EBV produced negative results. The patient was then referred to the thoracic surgery clinic and right upper lobectomy was performed. The patient underwent adjuvant chemotherapy due to the presence of a tumor in two peribronchial lymph nodes. He is still under follow-up at the medical oncology clinic.

A written informed consent was obtained from each parent of the patient.

## DISCUSSION

Primary pulmonary lymphoepithelioma-like carcinoma, which is a rare malignancy, accounts for 0.9% of all primary lung tumors and 0.4% of non-small-cell lung cancer (NSCLC) (2,4,5). It has been associated with EBV infection and shows similar morphological features to undifferentiated nasopharyngeal carcinomas (6). For the definite diagnosis of PPLELC, a possible nasopharyngeal origin of the carcinoma must be excluded. In the presented case, the definite diagnosis was made based on the pathological examination and the patient was referred to the otolaryngology clinic, where no nasopharyngeal involvement was detected. It is most commonly seen in adults, without sex predominance (7). The majority of the patients are from Asian countries and Southern China where the prevalence of EBV is very high (8).

Despite minimal association with a smoking history, the mean age of the patients with PPLELC has been reported to be 10 years younger than those with other histological subtypes of NSCLC (9). In a study, Qin et al. (9) evaluated 85 patients aged 26 to 79 years and reported a mean age of 54 years for PPLELC. In the aforementioned study, 71.8% of the patients were younger than 60 years and 72.9% of the patients had no smoking history. Similarly, our case was also young and a non-smoker.

It has been well established that EBV plays a major role in the etiopathogenesis of PPLELC. It is mainly associated with LELC of foregut-derived tissue, pharynx, salivary gland, thymus, and lung. No association between EBV and LELC of the skin, breast, vagina, cervix, and bladder has been demonstrated in the literature (10,11). Similarly, no EBV positivity was established in our case.

In previous reports, PPLELC has been associated with bronchial and vascular involvement, as well as mediastinal and hilar lymph node involvement presenting as

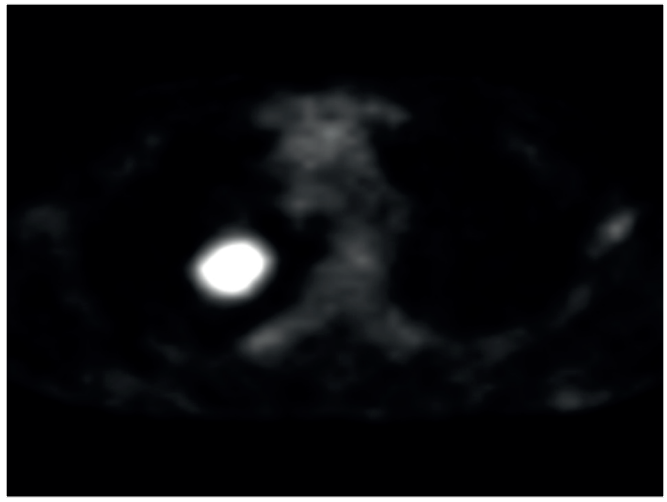

**Figure 2:** Positron emission tomography-computed tomography showing lymph nodes. Increased metabolic activity uptake in the central mass approximately 31x29 mm in size, adjacent to the fissure of the upper lobe of the right lung (SUVmax: 11.59).

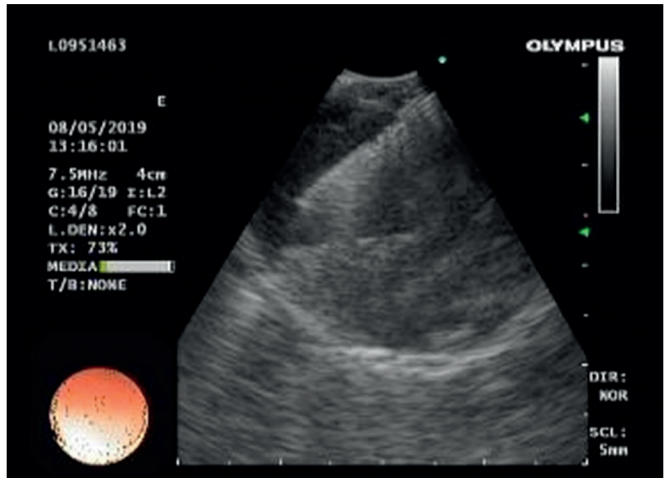


**Figure 3:** Sampling using endobronchial ultrasound and transbronchial needle aspiration.

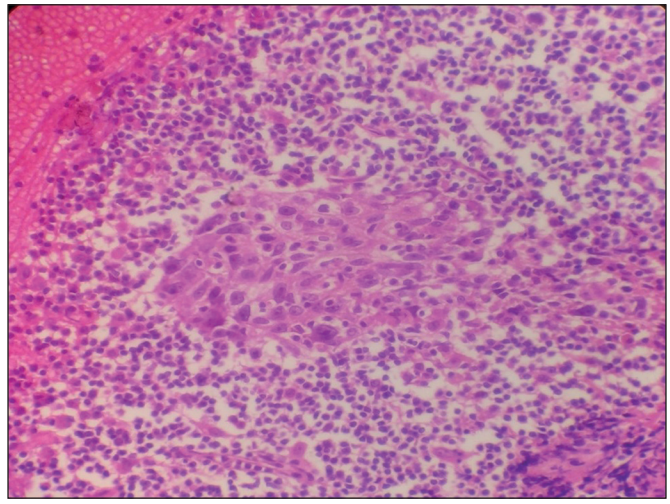

**Figure 4:** Histopathological evaluation result showing PPLELC. Epithelial cells in syncytial pattern in lymphoid stroma (HEXx200).

centrally-located tumors (12). However, Hoxworth et al. (13) reported peripheral, nodular lesions with irregular margins in their three cases with early-stage PPLELC without lymphadenopathy. In the presented case, thoracic CT showed a solid lesion with smooth margins in the posterior segment of the right upper lobe. The PET-CT also demonstrated low-intensity F-18 fluorodeoxyglucose ($^{18}$F-FDG) uptake in the mediastinal and hilar lymph nodes. Based on the EBUS and TBNA results, the mediastinal and hilar lymph nodes were found to be reactive. The disease stage was T1cN0M0 and the patient underwent surgery.

## CONCLUSION

In conclusion, PPLELC is a rare variant of NSCLC. Considering the fact that it affects younger individuals than those with other histological subtypes of NSCLC and with a minimal association with the smoking history, PPLELC should be always considered in the differential diagnosis in young patients presenting with a mass. Even in non-endemic regions for EBV, the radiologists, pathologists, and clinicians should be on alert for PPLELC. A nasopharyngeal origin of carcinoma and other lung diseases must be ruled out before the definite diagnosis of PPLELC.

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