



A Rare Solitary Pulmonary Nodule: Clear Cell Carcinoma

Nadir Görülen Bir Soliter Pulmoner Nodül: Clear Cell Karsinoma

Ceyda Mahleç Anar,¹ Tuba İnal,¹ İpek Ünsal,¹ Ahmet Üçvet,² Sülün Ermete,³ Hüseyin Halilçolar¹

Abstract

Clear cell tumor of the lung is a rare benign tumor. The current study presents the case of a 60-year-old man who had an abnormal pulmonary nodule at chest x-ray. A computed tomography (CT) scan of the patient's lung showed a 2x2x1.5 cm solitary nodule in the anterior segment of the left upper lobe. The patient underwent a lobectomy for the tumor. The pathologic examination revealed sheets of large round or polygonal cells with clear cytoplasm and immunoreactive positivity for HMB-45 and NSE. Investigation with PET/CT scan showed no evidence of renal disease. This case provides a very rare example of a solitary pulmonary nodule as clear cell carcinoma. The patient showed no evidence of recurrence or metastasis after three years postoperatively.

Key words: Clear Cell tumor, lung, immunohistochemical, HMB-45.

Özet

Akciğer berrak hücreli tümörü nadir bir benign tümördür. Akciğer grafisinde pulmoner nodül saptanan 60 yaşında erkek hastayı burada sunduk. Akciğer bilgisayarlı tomografisi (BT)'nde sol akciğer üst lob anterior segmentte lokalize 2x2x1,5 cm çapında soliter nodül saptandı. Hastaya lobektomi uygulandı. Patoloji incelemesinde berrak sitoplazmalı poligon hücreler izlendi ve tümör hücreleri HMB-45 ve NSE pozitif boyandı. Tüm vücut PET/CT incelemesinde renal hastalığa rastlanılmadı. Bu olgu clear cell carcinoma olarak soliter pulmoner nodülün çok nadir örneğini göstermektedir. Hasta operasyondan 3 yıl sonra rekürens ya da metastaz göstermemiştir.

Anahtar Sözcükler: Clear cell tumor, akciğer, immunohistokimyasal, HMB-45.

¹Department of Chest Diseases, İzmir Dr. Suat Seren Chest Diseases and Surgery Training and Research Hospital, İzmir, Turkey

²Department of Chest Surgery, İzmir Dr. Suat Seren Chest Diseases and Surgery Training and Research Hospital, İzmir, Turkey

³Department of Pathology, İzmir Dr. Suat Seren Chest Diseases and Surgery Training and Research Hospital, İzmir, Turkey

¹İzmir Dr. Suat Seren Göğüs Hastalıkları ve Göğüs Cerrahisi Eğitim Araştırma Hastanesi, Göğüs Hastalıkları Bölümü, İzmir

²İzmir Dr. Suat Seren Göğüs Hastalıkları ve Göğüs Cerrahisi Eğitim Araştırma Hastanesi, Göğüs Cerrahisi Bölümü, İzmir

³İzmir Dr. Suat Seren Göğüs Hastalıkları ve Göğüs Cerrahisi Eğitim Araştırma Hastanesi, Patoloji Bölümü, İzmir

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Correspondence (İletişim): Ceyda Mahleç Anar, Department of Chest Diseases, İzmir Dr. Suat Seren Chest Diseases and Surgery Training and Research Hospital, İzmir, Turkey

e-mail: drceydaanar@hotmail.com



Clear cell tumor of the lung was primarily described by Liebow and Castleman in 1963 as an extremely rare benign pulmonary neoplasm (1). Clear cell carcinoma is differentiated from epithelial cells and originates from various organs, including the ovaries, endometrium, kidneys, or lungs (2-4). This tumor is also known as a 'sugar tumor' because of the abundant periodic acid-Schiff (PAS) staining positive for glycogen in the cytoplasm. There have been only sporadic cases of this neoplasm in the literature; therefore clinical aspects and differential diagnosis of the tumor are not well established. The current study reports a case of clear cell carcinoma of the lung and discusses the clinical and pathologic features of the tumor.

CASE

A 61-year-old man was admitted to the hospital due to an abnormal shadow on the chest x-ray. Thorax computed tomography (CT) scans showed a solitary nodule of approximately 20 mm in diameter in the anterior segment of the left upper lobe, with round and smooth margins (Figure 1). There were no significant findings in the physical examination and laboratory studies. Fiberoptic bronchoscopy showed no stenosis of the bronchi, and cytological examination of the bronchial aspiration was negative. A positron-emission tomography scan showed the nodule to be fludeoxyglucose F 18 avid, with a maximum standard uptake value of 12.2 (Figure 2). A transthoracic fine needle aspiration biopsy was done and the cytology of the biopsy was benign. The patient underwent surgery and an upper lobectomy was performed by thoracotomy. The mediastinal lymph nodes were conventionally scavenged. Light microscopy (H&E staining) showed sheets of large round or polygonal cells with clear cytoplasm and thin walled blood vessels (Figure 3a). The immunohistochemical examination showed the tumor was immunoreactivity for HMB-45 and NSE (Figure 3b and c). However, the tumor cells were negative for cytokeratin, vimentin, epithelial membrane antigen (EMA), S-100, and thyroid transcription factor-1 (TTF-1). Investigation with PET/CT scan before surgery showed no evidence of renal cell carcinoma. Thus, the tumor was diagnosed as a clear cell tumor of the lung. The stage of the tumor was T1BN0M0 and the

patient was followed for three years after surgery, without evidence of recurrence or metastasis.

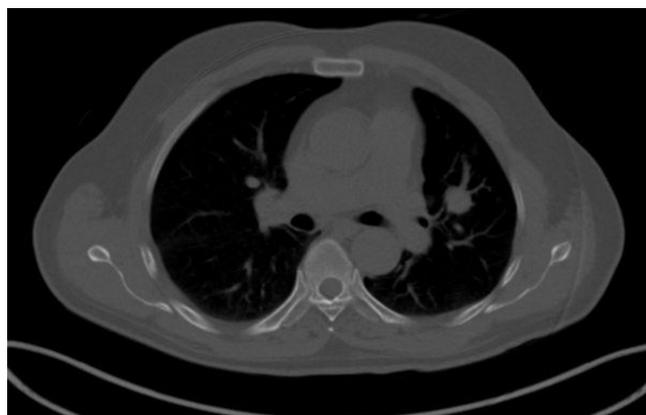


Figure 1: A solitary nodule of approximately 20 mm in diameter in the anterior segment of the left upper lobe.



Figure 2: The nodule to be fludeoxyglucose F 18 avid, with a maximal Standard uptake value of 12.2.

DISCUSSION

Clear cell carcinoma of the lung is an exceedingly rare entity, and to our knowledge there are a few cases in

the literature (5-10). The tumor usually occurs between the ages of 40 and 60 years without any gender difference. Most patients in whom the tumor was found in routine examinations were asymptomatic, except for several cases with symptoms such as hemoptysis (5) or fever (6). Radiologic findings usually demonstrated a clearly demarcated solitary nodule in the peripheral lung. In the present case, a round pulmonary nodule was incidentally noticed in a routine examination and there were no clinical symptoms.

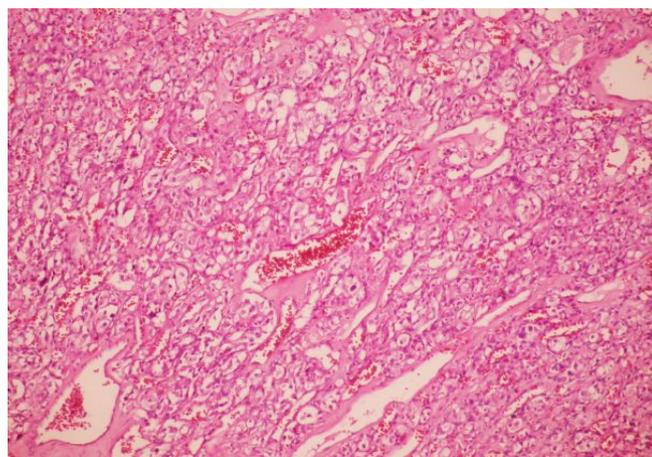


Figure 3a: H&E staining of the tumor cells (H&E 200X).

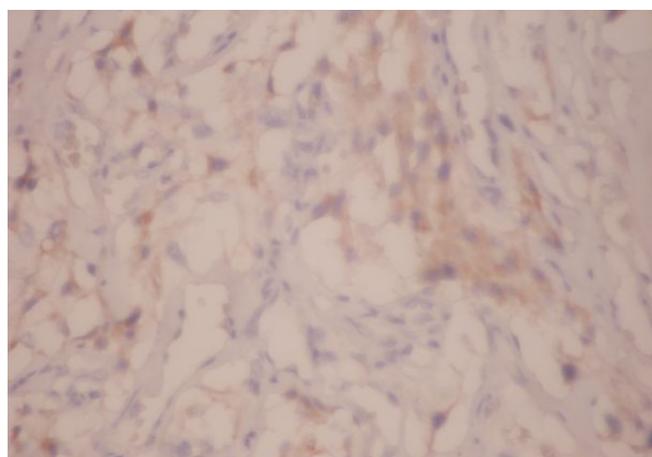


Figure 3b: Tumor cells show positive immunohistochemical staining for HMB-45.

Takanami et al. (10) reported a case of a clear cell tumor of the lung diagnosed by transbronchial biopsy. However, all other reported cases were diagnosed by surgically resected samples (5,7,8). The current case was also diagnosed by surgical resection.

A clear cell tumor of the lung is also known as a 'sugar tumor', because there are numerous glycogen granules in the cytoplasm. Therefore, PAS staining is necessary

for diagnosis. In the present case, the tumor was negative for PAS Staining. No mitotic figures or necrosis were observed.

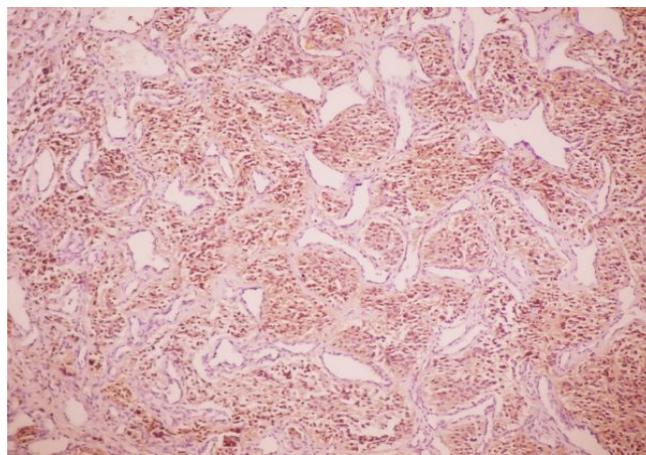


Figure 3c: Tumor cells show positive immunohistochemical staining for NSE (200X).

Immunohistochemical studies with HMB-45, S100 protein, vimentin, and others reported in previous literature (5-10) were analyzed. The major immunohistochemical features of pulmonary clear cell were HMB-45, S-100 protein, vimentin, and NSE. There was no reactivity for cytokeratin, EMA, and chromogranin. The specific feature of clear cell tumor is positive for PAS staining without mitotic figures or necrosis. In the present case, the immunoreactivity for HMB-45, NSE, and vimentin were positive.

Clear cell tumors of the lung are generally cured by surgical resection. Lobectomy, segmentectomy, and partial resections have been reported treatment options. Although the tumor is generally considered benign, there are some reports of clear cell tumor of the lung in the literature that presented metastases many years after the primary pulmonary resection (9). The patient in the current study has been monitored for three years postoperatively without any signs of recurrence or metastasis.

CONFLICTS OF INTEREST

None declared.

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