Intradiaphragmatic Bronchogenic Cyst: A Very Rare Diaphragmatic Mass: Case Report

İntradiyafragmatik Bronkojenik Kist: Diyafragmanın Çok Nadir Bir Kitlesi

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ABSTRACT Primary tumors of the diaphragm are rare. Isolated intradiaphragmatic bronchogenic cyst is extremely rare. We report a case of intradiaphragmatic bronchogenic cyst with a 55-year-old woman presenting with left upper abdomen pain symptoms. Imaging studies of the chest, computerized tomography (CT) revealed a left posterior mediastinal mass that abutted into the left diaphragmatic crus and showed no enhancement after contrast administration on CT. A posterolateral thoracotomy was performed including partial diaphragmatic resection. The histopathological examination revealed a diagnosis of bronchogenic cyst.

Key Words: Bronchogenic cyst; multidetector computed tomography; thoracic surgery

ÖZET Diyafragmanın primer tümörleri nadir görülür. İzole intradiyafragmatik bronkojenik kist oldukça nadirdir. Bu çalışmada, sol üst abdominal ağrı semptomları ile başvuran 55 yaşındaki kadın olguda intradiyafragmatik bronkojenik kist vakası sunulmuştur. Akciğer görüntüleme çalışmaları sırasında; bilgisayarlı tomografi, sol diyafragma kurusu ile bitişik, kontrast madde sonrası kontrast tutulumu göstermeyen posterior mediastinal kitle ortaya çıkardı. Posterolateral torakotomi ile birlikte parsiyel diyafragmatik rezeksiyon yapıldı. Histopatolojik inceleme bronkojenik kist tanısını ortaya koydu.

Anahtar Kelimeler: Bronkojenik kist; çok kesitli bilgisayarlı tomografi; torasik cerrahi

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Primary tumors of the diaphragm are rare. Intradiaphragmatic bronchogenic cysts are extremely rare have been reported.[1-3] Bronchogenic cyst probably results from defective growth of the lung bud during fetal development. Generally, bronchogenic cysts are located within the mediastinum, typically near the carina. They rarely occur in the anterior mediastinum or the inferior aspect of the posterior mediastinum. Other less common locations include the lung parenchyma, pleura, and diaphragm.[2,3] The diagnosis of bronchogenic cysts is important since surgical resection may be required to treat the patients.

We report a case of intradiaphragmatic bronchogenic cyst with a 55-year-old woman presenting with left upper abdomen pain symptoms.

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CASE REPORT

A 55-year-old woman was admitted to our hospital with recurrent pain symptoms and discomfort in the left upper abdomen. Physical examination was normal. Laboratory examinations did not reveal any significant abnormalities. The mass was not visualized on chest roentgenogram and abdominal ultrasonography (Figure 1). Contrast-enhanced computed tomography demonstrated a 47x33x45 mm hypodense, smooth-margined mass without calcifications abutted into the left diaphragmatic crus. The density of mass was higher than that of water. No contrast enhancement was observed within the mass (Figures 2a-d). On the basis of imaging findings, the diagnosis was considered to be a complex cystic lesion. Echinococcus serology was negative.

The patient was thus referred to surgery for resection of a presumed left diaphragmatic benign lesion. A posterolateral thoracotomy was performed with complete resection of tumor from the diaphragm (Figures 3a-b). Histopathologic examination of surgical specimen revealed bronchogenic cyst (Figures 4a-b).

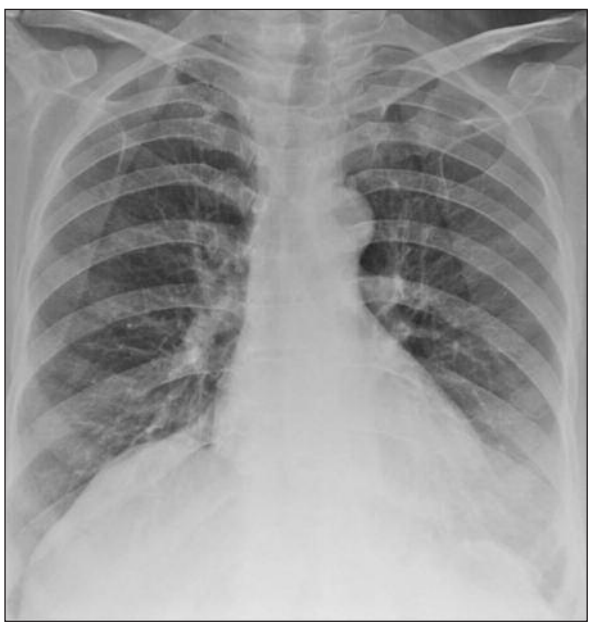

FIGURE 1: Chest roentgenogram was normal.

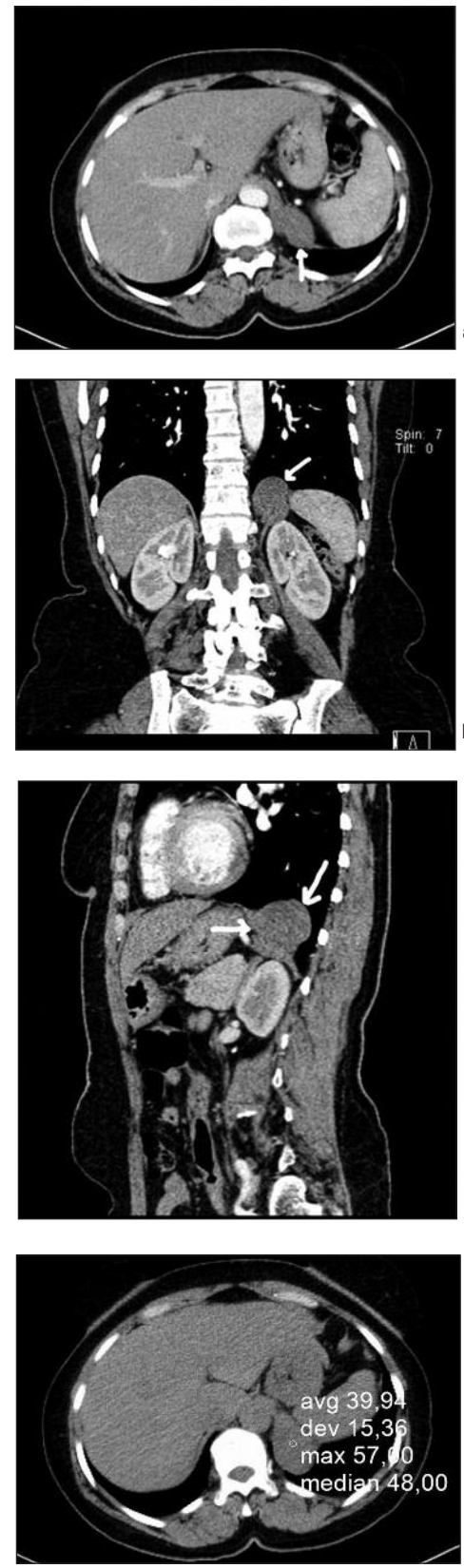

FIGURE 2: An axial **(a)**, coronal **(b)** and, sagittal **(c)** contrast enhanced CT images showed left diaphragmatic mass (arrows). The density of mass was higher than that of water in axial nonenhanced CT image **(d)**.

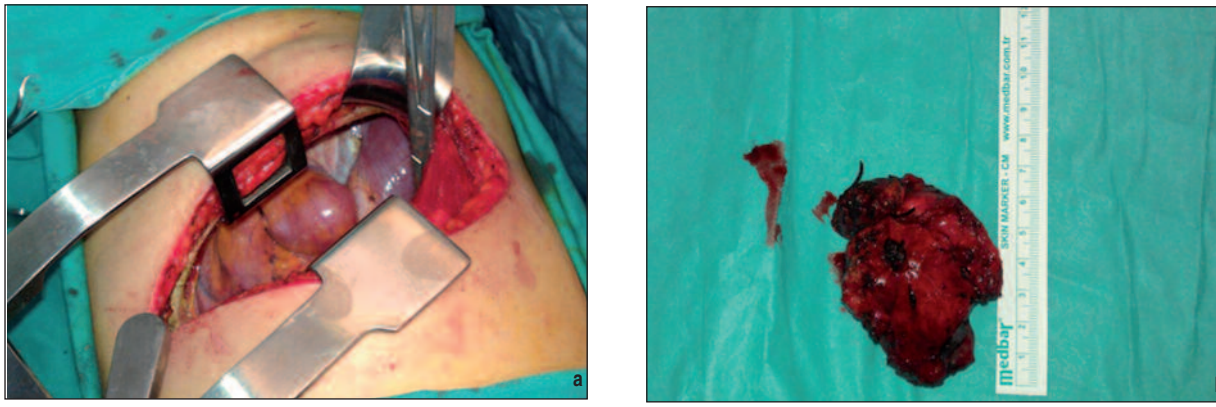

FIGURE 3: The conventional surgical approach is a posterolateral thoracotomy was made **(a)**; Tumor was completely resected from the diaphragm **(b)**.

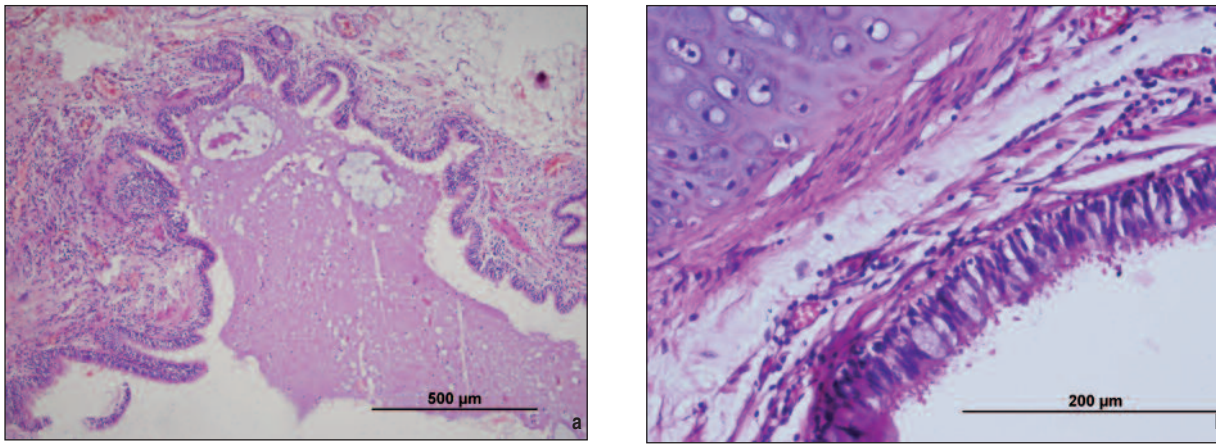

FIGURE 4: Histologic section revealing cartilaginous and ciliated epithelial components (HE, ×10) **(a)**; Histologic section revealing ciliated epithelial components (HE, ×40) **(b)**.

DISCUSSION

Primary tumors of the diaphragm are rare. Mesothelioma, fibroma, lipoma, lymphoma, metastases, isolated cases of hemangiopericytoma, solitary fibrous tumor, lipoma, and neurilemmoma have been reported. An intradiaphragmatic location of bronchogenic cysts is very rare.[1-3]

Bronchogenic cyst probably results from defective growth of the lung bud during fetal development. They are lined by pseudostratified ciliated columnar epithelium, typical of the respiratory system, and frequently are associated with smooth muscle, mucous glands, or cartilage in the cyst wall. The fluid content of the cyst contain variable amounts of protein and can be serous, hemorrhagic, or highly viscous and gelatinous with an appearance of clear to milky white to brown.[4]

Bronchogenic cysts can be present in any part of the mediastinum but are most commonly located in the middle or posterior mediastinum, near the carina (50%), in the paratracheal region (20%), adjacent to the esophagus (15%), or in a retrocardiac location (10%). Most occur in contact with the tracheobronchial tree and within 5 cm of the carina. A subcarinal location is most frequently seen. They rarely occur in the anterior mediastinum or the inferior aspect of the posterior mediastinum. Other less common locations include the lung parenchyma, pleura, and diaphragm.[4]

Bronchogenic cysts appear as smooth, sharply marginated, round or elliptical masses on plain ra-

diographs. Computed tomography findings usually include well-defined, rounded or elliptical masses with low attenuation.[5] The wall of a bronchogenic cyst appears thin. Cyst wall calcification may rarely occur. Because of the variable composition of the fluid contained within bronchogenic cysts, their attenuation on CT is highly variable. Half of bronchogenic cysts are of water attenuation; in the other half, the CT density ranges from being higher than water to higher than muscle. It may be difficult to differentiate high-attenuated bronchogenic cysts from solid lesions. Lack of enhancement on contrast enhanced CT images may be helpful in differentiation bronchogenic cysts from solid masses.[5]

Magnetic Resonance Imaging (MRI) is valuable in assessing cysts that do not appear fluid-filled on CT. High signal intensity is characteristically seen within cysts on T2-weighted sequences regardless of the nature of the cyst contents, but a variable pattern of signal intensity may be seen on T1-weighted sequences, presumably because of variable cyst contents and the presence of protein or mucoid material and/or hemorrhage. A high intensity on T1-weighted images reflects high protein content and is common. On MR imaging, the signal intensity on T2-weighted images is very high and homogeneous, suggesting a cystic lesion.[6] Because this finding maybe seen in some solid tumors, gadolinium injection is recommended, as bronchogenic cysts do not enhance. Atypical features of bronchogenic cysts have been described in rare situations: high protein concentrations in cysts produce low signal intensity on T2-weighted images a nonspecific fluid-fluid level has also been shown.[7]

Evaluation of bronchogenic cysts depends on size of the cyst and symptoms of the patients. Small, asymptomatic cysts can be followed. However, enlargement of bronchogenic cysts over years is typical, and rapid enlargement associated with pain indicates hemorrhage or infection. Because of their tendency to enlarge, bronchogenic cysts are traditionally treated with complete surgical resection. The conventional surgical approach is a posterolateral thoracotomy. Chang et al. showed that video-assisted thoracoscopic surgery (VATS) is also effective and safe.[8] A laparoscopic approach was chosen by Zügel et al.[9]

In our case a posterolateral thoracotomy was made protecting serratus anterior muscle and tumor was completely resected. Any complication was occurred. No recurrence was noted by CT-scan after 12 months.

The diagnosis of bronchogenic cysts is important since surgical resection may be required to treat the patients. Although bronchogenic cysts are mostly arise from middle or posterior mediastinum they can be arise from diaphragm as in our case.

In conclusion; as a radiologist and clinicians, we should keep in our mind; when a mass is revealed in the diaphragmatic crus, the differential diagnosis must be included the bronchogenic cyst.

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