

Mediastinal bronchogenic cyst with radiological signs requiring surgical intervention

Cerrahi girişim gerektiren radyolojik bulgular ile seyreden mediastinal bronkojenik kist

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Mediastinal bronchogenic cysts are one of the most common thoracic surgical challenges. In this article, we present an interesting case in a 58-year-old female patient with non-specific symptoms where radiological findings were helpful in determining surgical intervention rather than conservative management. The patient was discharged with full recovery.

Key words: Bronchogenic cysts; radiology; surgical indication.

Mediastinal cysts are benign masses that represent 12-18% of all primary mediastinal tumors. They are classified based on their etiology as either bronchogenic, enterogenous, neuroenteric, or mesothelial. Bronchogenic cysts are congenital lesions resulting from the embryological development of the tracheobronchial tree, and 45% of primary mediastinal tumors are bronchogenic cysts.^[1] These are usually found within the lungs or the middle or posterior mediastinum and are generally asymptomatic, unless they attain a large size and cause compressive symptoms. They are usually detected as an incidental radiological finding.^[2]

We present the case of a mediastinal bronchogenic cyst in a female with radiological findings that warranted further intervention.

CASE REPORT

A 58-year-old female presented with chest pain radiating to the back that was associated with dyspnea and a dry cough. Her past medical history included

Mediastinal bronkojenik kistler, göğüs cerrahisinde sıklıkla karşılaşılan zorluklardan biridir. Bu yazıda, 58 yaşında bir kadın hastada konservatif tedavi yerine cerrahi girişime karar verilmesinde yardımcı olan radyolojik bulgular ve özgün olmayan semptomlar ile birlikte seyreden ilginç bir olgu sunuldu. Hasta şifa ile taburcu edildi.

Anahtar sözcükler: Bronkojenik kistler; radyoloji; cerrahi endikasyon.

gastroesophageal reflux disease, arthritis, and atrial fibrillation. The cardio-respiratory examination was unremarkable, and an electrocardiography (ECG) yielded normal results. In addition, the patient had normal troponin levels. Her chest pain was attributed to her reflux disease.

A chest radiograph done in the emergency room (Figure 1) showed a widened mediastinum with an apparent cavity and an air-fluid level of 6x7 cm protruding towards the right hemithorax. A computed tomography (CT) scan of the chest (Figure 2) revealed loculated mediastinal air and fluid collection that had shifted to the esophagus on the right side. Mediastinal lymphadenopathy was noticed. A full blood count revealed a white cell count (WCC) of $17 \times 10^3/\text{mm}^3$.

As there were radiological signs of infection, cefotaxime, flucoxacillin, and metronidazole were prescribed, and a decision was made to surgically remove the cyst. A right posterolateral thoractomy was performed, and the cyst was dissected off the anterior



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surface of the trachea and totally excised with the contained pus.

Her histology showed heavy chronic inflammation along with the presence of seromucinous glands on the inner surface of the cyst, suggesting that it was bronchogenic in origin. Fluid from the cyst sent for culture came back as sterile, indicating that the cyst was a sterile abscess. The patient had an uneventful recovery, and the postoperative chest X-ray showed a normal mediastinum. The WCC settled to $9 \times 10^3/\text{mm}^3$, and the patient was totally asymptomatic. She was discharged home four days later.

DISCUSSION

Bronchogenic cysts happen as a result of abnormal ventral budding or branching of the tracheobronchial tree during embryologic development and may be filled with clear, serous fluid or thick mucoid material.^[3] They can occur in any part of the mediastinum, but most are located near the carina in the middle or posterior mediastinum. They are less commonly found within the lung parenchyma, pleura, or diaphragm.

Bronchogenic cysts may appear at any age, but they are more common in the fourth and fifth decades of life and are generally detected in a routine radiological study.^[4] The majority are asymptomatic; however, they may occasionally cause symptoms secondary to compression of adjacent structures, infection, or hemorrhage into the cyst. These symptoms include chest pain, cough, dyspnea, fever, and purulent sputum.^[5]

On chest radiographs, bronchogenic cysts appear as sharply marginated areas of increased opacity

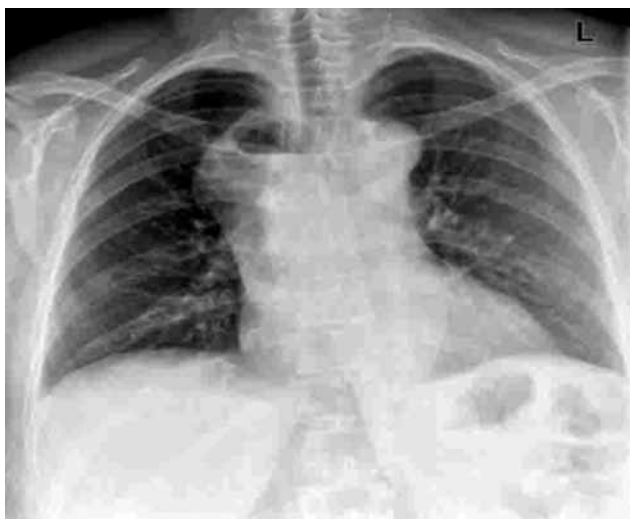


Figure 1. Chest radiograph showing a widened mediastinum with a cavity protruding towards the right hemithorax with an air-fluid level.

that can be either round or oval in shape. They are typically located in the paratracheal or subcarinal lymph nodes. Their main differential diagnoses are pleuropericardial cysts which usually adhere to the heart or diaphragm and contain thinner serous fluid since they are lined by mesothelial cells.^[6] When the cyst is infected or if it communicates with an airway or digestive tract, an air bubble is produced inside, giving the typical “air-fluid level” appearance.^[7] This was evident in our case.

Bronchogenic cysts are smooth and appear as round or elliptical masses on CT scans. They have an imperceptible wall as well as uniform attenuation. Based on the analysis of cyst fluid, calcium is a major factor that contributes to high attenuation on these scans.^[8] Furthermore, CT-scans are usually diagnostic; therefore, we prefer to not perform biopsies of the cysts due to the higher risk of infection.

Malignant transformation is very rare, with only five cases having been reported in the literature.^[9] Surgical removal should be performed in symptomatic patients while treatment of asymptomatic and uncomplicated patients remains controversial. Conservative treatment is recommended for asymptomatic patients by many authors. One reason for this is the lack of available long-term follow-up data, making it difficult to know the natural history of the cysts. Another factor is the very low risk of malignant transformation. In addition, improved diagnostic radiological methods (CT scanning and MRI) have been developed, and better diagnostic tools are now available which can help avoid unnecessary surgical thoracotomies.^[7] We advocate a follow-up CT scan every six months in cases with small asymptomatic cysts. However, further intervention is warranted as the cysts increase in size, more symptoms develop, and radiological signs of infection appear.



Figure 2. Preoperative computed tomography scan showing a cyst with an air-fluid level anterior to the trachea.

Some authors believe an aggressive surgical approach is acceptable for asymptomatic patients due to the potential risk of infection and malignant transformation.^[10] Video- assisted thoroscopic (VAT) surgical resection is a viable option for mediastinal cysts,^[11] but we were discouraged from using this approach due to the large size of the cyst in our case.

In conclusion, we advocate the excision of asymptomatic mediastinal cysts that show an air-fluid level on plain chest X-rays or CT scans since this is usually a sign of infection or, less commonly, an indication of communication with the esophagus or airway. However, conservative treatment may be reasonable for asymptomatic cysts if these radiological signs are absent.

Declaration of conflicting interests

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