

Giant intrapulmonary bronchogenic cyst

Ömer TOPALOĞLU^{1,*}, Alaattin BURAN¹, Sami KARAPOLAT³, Elvan ŞENTÜRK TOPALOĞLU²

¹Department of Thoracic Surgery, Faculty of Medicine, Karadeniz Technical University, Trabzon, Türkiye

²Department of Pulmonology, Faculty of Medicine, Karadeniz Technical University, Trabzon, Türkiye

Received: 22.02.2023

Accepted/Published Online: 06.07.2023

Final Version: 19.05.2023

Abstract

Bronchogenic cysts are common congenital bronchopulmonary malformations that are thought to develop as a result of abnormal budding of the tracheal diverticulum during the embryonic period. A 39-year-old female patient underwent a right lower lobectomy with a right thoracotomy due to a giant intraparenchymal cyst in the lower lobe of the right lung. At the end of the 1-year follow-up period, no clinical and radiological problem was detected in the case. It can be cured by complete resection of the cystic structure without leaving any residue of the cyst wall epithelium.

Keywords: bronchogenic cyst, surgery, intrapulmonary cyst, bronchopulmonary malformations

1. Introduction

Bronchogenic cysts are common congenital bronchopulmonary malformations that are thought to develop as a result of abnormal budding of the tracheal diverticulum during the embryonic period (1). Bronchogenic cysts, usually located in the mediastinum around the trachea and main bronchi, may show intraparenchymal localization, especially in the lower lobes (2).

2. Case Report

A 39-year-old female patient presented to our clinic with complaints of cough, sputum, and back pain. Anamnesis revealed that the patient had frequent lung infections in the last eight years as well as exertional dyspnea that had worsened in the last one month. On physical examination, auscultation revealed a decrease in respiratory sounds in the lower zones of the right lung.



Fig 1. A) A well-circumscribed opaque lesion near the hilar region in the lower lobe of the right lung is visible on posteroanterior chest roentgenogram. B) and C) Axial and coronal section of thorax tomography shows a lesion in the lower lobe of the right lung

Posteroanterior chest X-ray revealed a well-circumscribed opaque lesion in the lower lobe of the right lung, close to the hilar region (Fig. 1A). Thoracic tomography revealed a 43-mm, ovaloid-shaped, well-contoured mass lesion centrally

located in the lower lobe of the right lung containing hypodense material thought to be dense mucoid accumulation and accompanied by sporadic calcifications, and areas of entrapped air lateral to the lesion were detected (Fig. 1B and 1C). When the airways were evaluated using flexible bronchoscopy, no association with the bronchial system was detected, but the right lower lobe bronchus was rotated medially due to external compression.

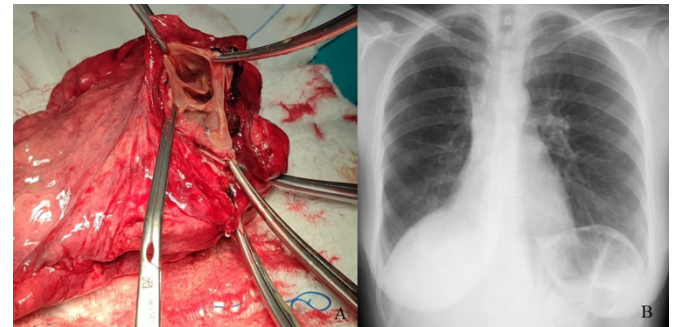


Fig. 2. A) Pathology specimen opened during the operation B) Posteroanterior chest roentgenogram seen at 1 year postoperatively

The subject underwent surgery under general anaesthesia with the preliminary diagnosis of an infected air cyst or an intraparenchymal bronchogenic cyst, and a right posterolateral muscle-sparing thoracotomy incision was made. During exploration, a centrally located lesion in the lower lobe of the right lung was palpated, and it was observed that the right lower lobe was mostly emphysematous. Therefore, a right lower lobectomy was performed. During the operation, the pathology specimen was opened, and it was observed that the cavity was filled with copious amounts of mucoid secretion (Fig. 2A). Histopathological examination showed a cystic

formation with a wall structure, including mucus glands and fibrovascular and cartilage tissues lined with ciliated columnar epithelium, and the diagnosis of an intrapulmonary bronchogenic cyst was made. The patient had no problems during the postoperative period and was discharged on the 5th day. The patient was followed up for one year, and no clinical or radiological issues were detected (Fig. 2B).

3. Discussion

Bronchogenic cysts are usually located in the mediastinum around the trachea and main bronchi. However, 15% of cases demonstrate intraparenchymal localization, especially in the lower lobes. While most cases are asymptomatic, they may present with symptoms such as chest pain, cough, and dyspnea as a result of infection and rupture or compression of the adjacent structures by the bronchogenic cyst (2). Posteroanterior chest X-ray and thoracic tomography are sufficient for radiological diagnosis (3). In these examinations, bronchogenic cysts are often seen as oval or circular homogeneous solitary opacities with smooth borders, thin walls, and no calcifications. The cyst content may be of fluid or soft tissue density. Due to the high protein and calcium oxalate content in mucoid cysts, the radiodensity measurement value may be more than 100 HU. Air is rarely observed in the cyst (3). The differential diagnosis should consider a lung abscess, hydatid cyst, infected air cyst, and tuberculosis. Surgery is the main treatment modality for bronchogenic cysts, even in asymptomatic cases, because of future complications, the risk of malignant transformation, and the successful results of surgical treatment (1). It can be cured by complete resection of the cystic structure without leaving any residue of the cyst wall epithelium. Although total excision is sufficient in mediastinally located bronchogenic cysts, wedge resection, segmentectomy, or lobectomy may be needed in intraparenchymal bronchogenic cysts (4). Among the surgical techniques that can be applied for this purpose are thoracotomy, VATS and mediastinoscopy. Recently, VATS has become a frequently used method with the help of developing technology. A study showed that thoracoscopic excision used in the treatment of mediastinal bronchogenic cysts has similar results to the approach with thoracotomy (5). Jung et al. showed in their series of 113 cases that the VATS approach is reliable and has encouraging results. In addition, they recommend VATS excision as a primary treatment option

(6).

Although rare, adult-onset intrapulmonary bronchogenic cysts should be considered in the differential diagnosis of pulmonary space-occupying lesions. In intraparenchymal bronchogenic cysts, the extent of resection is determined by the size of the cyst, its localization, and complications such as emphysema or destruction that may develop in the lobe in which the cyst is located.

Conflict of interest

The authors declared no conflict of interest.

Funding

No funding was used for the study.

Acknowledgments

None to declare.

Authors' contributions

Concept: O.T., A.B., E.S.T., Design: O.T., S.K., Data Collection or Processing: O.T., E.S.T., Analysis or Interpretation: O.T., S.K., E.S.T., Literature Search: O.T., A.B., E.S.T., Writing: O.T., S.K.

Ethical Statement

This study was conducted ethically in accordance with the World Medical Association Declaration of Helsinki as revised in 2000. Written informed consent was obtained from the patient or the next of kin for publication.

References

1. Yanik F, Karamustafaoglu YA, Balta C, Yoruk Y. Bronchogenic cysts: Analysis of 13 operated cases. *Okmeydanı Tıp Dergisi* 2018; 34(1): 24-30.
2. Gutiérrez GS, Gutiérrez FG, Bastianelli GA, Vaccarino GN. Bronchogenic cyst in an unusual location. *Asian Cardiovasc Thorac Ann.* 2021; 29(1): 44-6.
3. Yıldız OO, Cinar E, Karaoglanoglu N. Bronchogenic cyst with atypical radiological appearance and localization, case report. *Van Tıp Derg* 2019; 26(1): 114-6.
4. Ribet ME, Copin MC, Gosselin BH. Bronchogenic cysts of the lung. *Ann Thorac Surg* 1996; 61(6): 1636-1640.
5. Martinod E, Pons F, Azorin J, et al. Thoracoscopic excision of mediastinal bronchogenic cysts: results in 20 cases. *Ann Thorac Surg.* 2000;69(5):1525-1528.
6. Jung HS, Kim DK, Lee GD, et al. Video-assisted thoracic surgery for bronchogenic cysts: is this the surgical approach of choice?. *Interact Cardiovasc Thorac Surg.* 2014;19(5):824-829.