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Case Report

Posterior Bronchogenic Mediastinal Cysts: Case Report

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Abstract

Congenital mediastinal cysts are characteristically benign lesion. Among the entities that make up the group, bronchogenic (CB), pericardial, enteric, and thymic cysts, lymphangioma, and esophageal duplication cyst. CB's represent about 50 - 60% of all mediastinal cysts. Characteristically exhibit clinical and radiological polymorphism, besides clinical manifestations that vary from asymptomatic pictures to respiratory failure. The presentation of CB in adults is rare, mostly found incidentally, with an asymptomatic course in most cases. Pulmonary CBs tend to be more symptomatic than those located in mediastinum, and it is estimated that 86.4% of symptomatic patients have complicated cyst. Treatment options depend on the patient's age and symptoms at presentation. For young patients, surgical resection is the only treatment of choice, whereas in asymptomatic adults there are controversies due to the risk of complications or degeneration. A conservative approach is suggested in high-risk patients. We report a case of a female, 30-year-old patient M.A.R.S presented with a mass located in the posterior mediastinum, without previous information. Previous history of COVID-19 infection requiring tracheostomy. Chest tomography with contrast was requested and showed presence of solid mass of oval aspect, without contrast enhancement, with possible origin in the middle mediastinum, compressing the right source bronchus, vein, pulmonary artery, measuring 6.7 x 5.3 x 9.4 cm. The patient maintained the same clinical pattern, asymptomatic and a surgical approach was chosen. As scheduled, an open thoracotomy was performed to remove a cyst in the posterior mediastinum. She returned to the outpatient clinic for postoperative follow-up with a histopathological report compatible with bronchogenic cyst.

Keywords: *Mediastinal Diseases; Rare Diseases; Thoracic Surgery; Public Health; Evidence-Based Practice*

Introduction

Congenital mediastinal cysts are characteristically benign lesions arising from flaws in the embryological development of the anterior intestine and/or the coelomic cavity. Among the entities that make up the group, bronchogenic (CB), pericardial, enteric, and thymic cysts, lymphangioma, and esophageal duplication cyst [1].

CB's represent about 50 - 60% of all mediastinal cysts, and originate from an abnormal protrusion of the anterior bowel between the 26th and 40th days of gestation. Histologically, they are defined as cystic formations containing ciliated columnar epithelial lining, calyceal cells, smooth muscle cells, and cartilaginous tissue [1,2].

The location of CB's depends on the embryological stage of development at which the anomaly occurs. During early development, the cyst tends to occupy the tracheobronchial tree. Cysts that arise later are more peripheral and may involve the lung parenchyma [2]. Generally speaking, they are most commonly located in the middle mediastinum, adjacent to the carina, but can occur anywhere in the mediastinum and chest, such as lungs, pleura, and diaphragm [1,3].

CB's characteristically exhibit clinical and radiological polymorphism, besides clinical manifestations that vary from asymptomatic pictures to respiratory failure due to compression of adjacent structures [2,4,5]. The recommended treatment is complete surgical excision, and the definitive diagnosis is established by histopathological examination of the surgical specimen [2].

In the current literature, reports of BD in the posterior mediastinum are scarce, a fact that makes the management of the condition difficult when the diagnosis is suspected. Thus, we aimed to describe a case in which the diagnosis of BC was confirmed, in order to contribute to better propaedeutics in similar cases.

Case Report

Female, 30-year-old patient M.A.R.S. was referred to the thoracic surgery outpatient clinic due to an imaging diagnosis of a mediastinal mass for investigation. She presented with a mass located in the posterior mediastinum, without previous information. Previous history of COVID-19 infection requiring tracheostomy, significant family history, and continuous medication use. Chest tomography with contrast was requested for better diagnostic definition. Patient returns in 14 days with the result of the requested exam, which showed presence of solid mass of oval aspect, without contrast enhancement, with possible origin in the middle mediastinum, compressing the right source bronchus, vein, pulmonary artery, measuring 6.7 x 5.3 x 9.4 cm, in addition it was visualized small right pleural effusion and ground-glass opacities interspersed by atelectatic streaks and thickening of interlobular septa bilaterally, compromising suggesting post-covid-19 phase. After evaluation of the CT scan, it was then decided to indicate needle biopsy in order to define cytopathological characteristics and evaluate which type of approach is more pertinent: surgical approach or conservative treatment.

In about 2 months, the patient returns to the outpatient clinic remaining asymptomatic. Results of exams show a decrease in the dimensions of the mass. It was decided to request Magnetic Resonance Imaging (MRI). About 4 months later, the patient returned for consultation with the results of the exam, which revealed a cystic lesion in the posterior mediastinum. The patient maintained the same clinical pattern, asymptomatic and with an unchanged physical examination. After evaluating the whole picture, considering that the patient was young, with a low risk of complications and a good functional status, a surgical approach was chosen after discussing the therapeutic options and their respective risks and benefits.

As scheduled, an open thoracotomy was performed to remove a cyst in the posterior mediastinum. It was questioned, from the aspect, bronchogenic cyst. During the intraoperative period, a chest drain was placed, and was removed three days later without further complications. The patient was discharged three days after the surgical procedure, with instructions to return to outpatient care.

One week later, she returned to the hospital complaining of chest pain that had started two days before, in the bilateral periclavicular topography, of mild intensity, worse when moved, without irradiation. Physical examination revealed purulent secretion at the site of the previous chest drain insertion. After laboratory and imaging exams, the patient was released with antibiotics for home use. She returned to the outpatient clinic for postoperative follow-up with a histopathological report compatible with bronchogenic cyst.

Discussion

CB's are rare congenital cystic malformations of the respiratory tract derived from the anterior bowel. The exact epidemiology is unknown, with a prevalence estimate of 1/42,000 - 1/68:000 persons. They are usually located in the mediastinum and are classified according to their location into paratracheal, carinal, paraesophageal (possible presence of fistula) and hilar cysts. However, unusual locations (neck, abdomen or pericardium) are also described [6].

The presentation of CB in adults is rare, mostly found incidentally, with an asymptomatic course in most cases. In oligosymptomatic pictures, complaints such as cough, dyspnea, hemoptysis, fever, and atypical chest pain may be observed [1,5]. Pulmonary CBs tend to be more symptomatic than those located in mediastinum, and it is estimated that 86.4% of symptomatic patients have complicated cyst [7].

In extreme situations, especially in the pediatric age group, the cyst can cause compression on adjacent structures, manifesting clinically as a medical emergency [1,5]. Cyst enlargement, infection, rupture, hemorrhage, or malignant transformation are factors associated with increased risk of compression of adjacent structures [5].

Treatment options depend on the patient's age and symptoms at presentation. For young patients, surgical resection is the only treatment of choice, whereas in asymptomatic adults there are controversies due to the risk of complications or degeneration. A conservative approach is suggested in high-risk patients [8].

A multidisciplinary approach is fundamental for a correct diagnosis and therapeutic success. After surgical excision, close follow-up is necessary to evaluate the improvement of lung function, especially in children [6].

Conclusion

Congenital mediastinal cyst is a rare condition that exhibit clinical and radiological polymorphism, besides clinical manifestations that vary from asymptomatic pictures to respiratory failure. Early diagnosis of this condition is essential for early surgical therapy, since surgical treatment reduces the chances of the patient presenting with complications, thus providing a better quality of life for those affected.

Conflict of Interest

We declare that no author has a conflict of interest.

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