



SEE THE UNSEEN : BRONCHOGENIC CYST

Cardiothoracis

Dr. Prerna Singh	MBBS, DrNB CTVS, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi
Dr. Vijay Gupta	MS, MCh CTVS, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi
Dr. Ankit Jain	MS, MCh CTVS, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi
Dr. Rohan Gupta	MBBS, MD Medicine, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi
Dr. Mayank Swarnkar	MBBS, DNB Radiology, Rajiv Gandhi Super Speciality Hospital, Tahirpur, Delhi

ABSTRACT

Bronchogenic cyst is foregut derived malformation mostly detected incidentally. Also can be seen in adults until the pressure symptoms occur. As in our case, patient reported in 5th decade of life which was causing him respiratory distress. Patient was managed by surgical excision of cyst and was discharged in a stable condition.

KEYWORDS

INTRODUCTION :

Mediastinal masses are not uncommon but still they are incidentally discovered or when causing compression and causing symptoms.

CT is the best modality to see the nature of lesion, the site and to avoid additional tests and misguiding biopsies. The cystic nature of lesion and presence in mediastinum is the investigation of choice for identifying bronchogenic cyst.

Bronchogenic cyst are foregut derived cystic malformation of the respiratory tract (1). These are the most common primary cyst of mediastinum. Approximately 80% are in mediastinum, rest may be seen in lung parenchyma (3).

Mediastinal mass syndrome (MMS) is an entity which has not been studied in detail. The perioperative planning is also important as the compression may pose a huge challenge so multidisciplinary approach involving thoracic anaesthetist, ENT surgeon is needed for favourable outcomes.

Majority are in favour of complete resection of the cyst even in asymptomatic patients. Although partial excision with de-epithelialization is an alternative as we did in our case due to presence of vital structures adjacent to the cyst (4).

Case Presentation :

A 48 year old man came to OPD with complaints of chest heaviness and on supine position having breathing difficulty. Clinical examination showed a soft swelling on left supraclavicular region, compressible, non pulsatile. SpO₂ 97% on room air.

Rest lab investigations were normal. Chest radiography (Figure 1) showed well defined opacity in the left upper zone silhouetting left lateral mediastinal border.

Eventually patient was planned for CT Scan which revealed cystic lesion with a density of 30 HU extending from D1 to D5 vertebra, likely benign.

USG guided FNAC was performed which was negative for atypical/malignant cells and cytomorphological findings favour cystic nodule.

Diagnosis of bronchogenic cyst was made and patient was planned for surgery. Right thoracotomy was done. Swelling was present which was opened, blackish serous fluid was removed, the cyst was excised partially and marsupialization was done with cauterizing the epithelium of the cyst. We were unable to excise the cyst completely due to its close proximity to vital structures. Post operative Chest radiography (Figure 2) showed a well expanded lung. Patient was eventually discharged on 4th post operative day and was asymptomatic on

subsequent follow up visits.

DISCUSSION :

International Thymic Malignancy Interest Group (ITMIG) has introduced a new classification of mediastinal compartment based on cross sectional imaging dividing mediastinum into three compartments : Pre vascular (Anterior), visceral (middle) and paravertebral (posterior) compartments.

The specifics of anatomic structures helps to identify the lesion more readily and accurately.

Bronchogenic cyst can be easily identified on imaging in visceral compartment. Although it may be found in any compartment, it is most commonly seen in visceral compartment (5).

Bronchogenic cysts are cystic malformation of respiratory tract (1). The abnormality of embryonic vertebral bud at 28th to 40th day of gestation causes a fluid filled cavity. Late presentation of cyst involves lung parenchyma. Their incidence are very rare 1 per 40k to 60k admissions.

Bronchogenic cysts are extrapulmonary, intrapulmonary, rarely in pericardium and diaphragm (1). Generally patients are asymptomatic and are diagnosed incidentally. Patients usually present in OPD due to pressure symptoms on trachea causing respiratory distress, or oesophagus causing dysphagia, and less commonly due to pain either because of ruptured cyst or extensive stretching causing pleuritic pain. Rarely they may present with haemoptysis or pneumothorax (3).

Location of the cyst is an important factor for the symptoms to be felt by the patient. Differential to consider for bronchogenic cyst are hydatid cyst, tuberculosis, infected bulla, duplication cyst, fungal disease, vascular malformation.

In chest radiography, presence of Silhouette sign should arise the suspicion of mediastinal abnormality. CT is the investigation of choice. The density is variable on CT scan showing water to calcium content. Benefits being to localisation, descriptive features, cystic component and importantly invasions of adjacent structures.

CT – Generally bronchogenic cyst manifests as single smooth round mass with low attenuation (0-20 HU). Internal heterogeneity may occur due to infection and hemorrhage.

MR imaging can be done for doubtful lesions to clarify cystic to solid mass. Also in a set of patients where intra venous contrast is contraindicated due to deranged kidney function or allergy to contrast. As in our case the probable diagnosis was made on CT scan.

Surgical resection of cyst via thoracotomy alleviates symptoms.

Complete excision of cyst has been recommended in literature but the presence of vital structures in the mediastinum leaves the surgeon with no choice rather to do partial resection of cyst like we did in our case. Literature suggests in cases of partial resection de-epithelialization should be done. We did excision of the cyst with marsupialization and cauterizing the epithelium (4).

In our case cyst was approximately 5 cm in size. The cyst was opened and blackish fluid was evacuated and sent for routine and microscopic examination. The cyst was also sent for histopathological and culture.

Even in asymptomatic patients, the cyst should be excised to prevent the complications. Malignant transformation is rare but has been documented in literature where bronchogenic cyst was transformed to enteric adenocarcinoma, bronchioalveolar carcinoma, squamous cell carcinoma, carcinoid tumour. Thus surgical resection is warranted (2). In intrapulmonary bronchogenic cyst, lobectomy is the surgery of choice.

Macroscopic findings are soft, smooth spherical swelling that contains clear to haemorrhagic fluid and microscopically it is a ciliated pseudostratified columnar epithelium of respiratory type (1).

Minimally invasive technique VATS have been recently in use for excision of cyst. Advantages being less scarring, shorter hospitalization.

CONCLUSION:

Bronchogenic cyst are rare and are generally asymptomatic. Even in asymptomatic patients, the cyst should be excised to reduce the morbidity. Total surgical resection is the treatment of choice.

Images :



Figure 1: Chest radiography showed well defined opacity in the left upper zone silhouetting left lateral mediastinal border.



Figure 2 : Post operative Chest radiography showed a well expanded lung.

REFERENCES:

1. Limaief F, Mlika M. Bronchogenic Cyst. [Updated 2023 Jan 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK536973/>
2. Symptomatic mediastinal mass in a 32-year-old male Florit Marcuse, Marijke Rutten, Rick Schreurs, Hester A. Gietema, Prisca Theunissen, Jos G. Maessen Breathe Jun 2021, 17 (2) 210029; DOI: 10.1183/20734735.0029-2021

3. Sarper A, Ayten A, Golbasi I, Demircan A, Isin E. Bronchogenic cyst. Tex Heart Inst J. 2003;30(2):105-8. PMID: 12809250; PMCID: PMC161894.
4. T.M. Monaghan, J.D. Thomas, T. Hussain, A bronchogenic cyst causing chest pain and dysphagia, *QJM: An International Journal of Medicine*, Volume 104, Issue 6, June 2011, Pages 539–541, <https://doi.org/10.1093/qjmed/hcq074>
5. ITMIG Classification of Mediastinal Compartments and Multidisciplinary Approach to Mediastinal Masses
6. Brett W. Carter, Marcelo F. Benveniste, Rachna Madan, Myrna C. Godoy, Patricia M. de Groot, Mylene T. Truong, Melissa L. Rosado-de-Christenson, and Edith M. Marom RadioGraphics 2017 37:2, 413-436