Bronchogenic Cyst in a young Child

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Abstract

Bronchogenic cysts are rare cystic disease of the mediastinum in children. They are often asymptomatic and are diagnosed incidentally. Symptoms, if present are due to compression of the adjacent structures or the added infection. A 5 year old female child was referred to our thoracic surgery department with history of fever for 2 days. She had recurrent respiratory tract infection in the past needing treatment. CT revealed a cystic mass in the mediastinum. Video Assisted Thoracoscopic Surgery (VATS) excision of the cyst was done. The patient recovered uneventfully and the histopathological examination revealed it to be a bronchogenic cyst.

Key words: *Bronchogenic Cyst, Mediastinum, VATS*

Introduction

Bronchogenic cysts are developmental anomalies that occur during embryogenesis. They can arise anywhere in the mediastinum or within the pulmonary parenchyma and, not commonly, below or within the diaphragm.[1] Bronchogenic cysts are often asymptomatic and discovered as incidental findings. They may turn symptomatic due to compression of adjacent structures as they increase in size or from development of infection.[2] We report a case of a 5-year-old female child who was incidentally diagnosed with an asymptomatic bronchogenic cyst and underwent successful thoracoscopic excision under general anesthesia.

Case report

A 5 year old female child was admitted with history of fever for 2 days. She had been treated with antibiotics at other hospitals previously and had past history of repeated chest infections. There was no significant family and medical history. Examination revealed normal findings on Chest, cardio-vascular system and abdomen. There were no indications of

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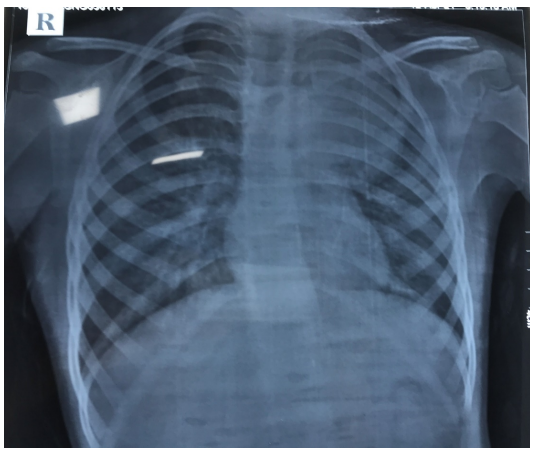
immunodeficiency, allergic diseases, or any aspiration episodes.

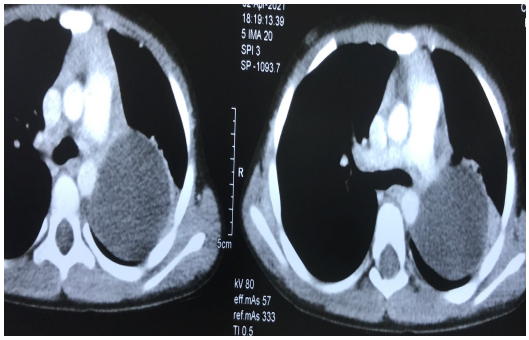
The child had been hospitalized several times previously and minimal diagnostic work-ups had been carried out. The results were mostly unremarkable on routine hematological and biochemical studies. However, her chest X-ray (CXR) films showed homogenous opacity in the left upper and middle zone of lungs (Fig.1). Computed tomographic scan (CT) revealed well defined cystic lesion 7 x 7 cm in the apico-posterior segment of left upper lobe (Fig. 2). The lesion was abutting the arch of aorta and descending thoracic aorta medially, left pulmonary artery anteriorly, posterior and lateral chest wall, and was surrounded by lung parenchyma in rest of the area. The lesion appeared to have suspicious communication with the left upper lobe bronchus. Consolidation collapse of lingular segment of the left upper lobe was seen.

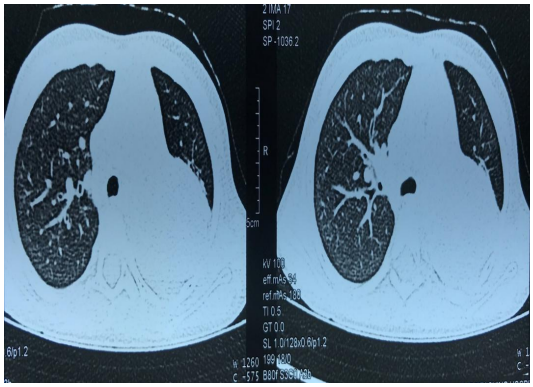
Fig. 1. : CXR.



With the provisional diagnosis of bronchogenic cyst, patient was taken for VATS under general anesthesia. She was put on right lateral position.

Fig. 2. CT chest.





Three 5 mm ports (one for 30 degree telescope and two for hand instruments) were introduced with creation of CO2 pneumothorax of 3 mm of Hg and gas flow rate of 1 Liter/ minute.

A cystic lesion of 7x7x7 cm containing mucoid content on aspiration was found. Cyst was densely adhered to left main bronchus and Left Pulmonary artery (Fig. 3)

Post-operative period was uneventful and the child recovered smoothly. Post-operative CXR was normal (Fig. 4). Histopathological examination showed cyst with fibrous wall lined by ciliated columnar cells. Underlying stroma showed few inflammatory cells. Atypical cells were not seen and the

tissue diagnosis was consistent with bronchogenic cyst.

Fig. 3. Intraoperative finding.

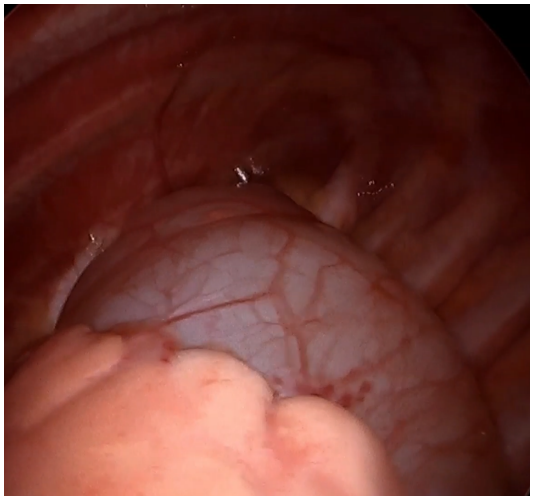
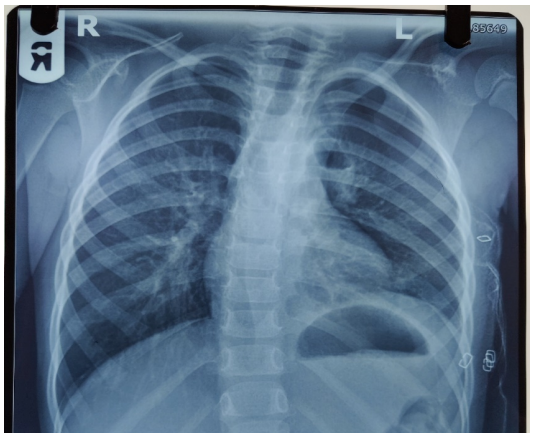


Fig. 4.



Discussion

Bronchogenic cysts are embryological remnants isolated from the normal development of the foregut. Rarely, they can be formed from tracheal diverticula. Excluding exceptions they are almost always extra-pulmonary and medial in location. They may be asymptomatic. Asymptomatic Cysts are found incidentally on radiological examination and those with symptoms are secondary to compression, or infection. Air-fluid level may be present if there is communication with the airways. Histologically, Bronchogenic cysts are lined with ciliated columnar epithelium and can contain cartilage and bronchial glands. Accepted treatment is excision because of concern about continuous growth and subsequent compression of surrounding structures, risk of infection and very rare possibility of malignant degeneration.[2] Bronchogenic cysts comprise approximately 6% of all mediastinal masses in children, while foregut cysts as a group account for 15%.[3] On radiological imaging, the cysts usually appear to be a well-defined, round to globular mass. Calcification of the cyst wall is uncommon. Computed tomographic scan demonstrates a sharply demarcated, homogeneous structure. These cysts usually have water density (lower attenuation), but those with mucoid contents can be misinterpreted as solid masses (high attenuation). Magnetic resonance imaging (MRI) may demonstrate a high intensity in T1-Weighted image indicating protein-rich contents which is compared with signal intensity between that of subcutaneous fat and muscle, or the magnetic resonance signal may be indicative of water. [4]

History of the first successful bronchogenic cysts resection via open thoracotomy was reported in 1948 by Maier.[5] A case series of seven thoracoscopic bronchogenic cysts removal with favorable results was reported by Hazelrigg in 1993.[6] VATS is now the approach of choice for intervention. In another series of 20 cases of bronchogenic cysts in adults as

reported by Martinod et al, successful removal of 13 cases were done thoracoscopically. Other 7 had to be converted to open thoracotomy. Their reasons for conversion were bleeding in 2 cases and dense adhesions to surrounding vital structures in 5 cases. In 5 cases, a portion of the cyst wall was left behind and the mucosal lining was obliterated. However, recurrences were not reported.[7]

In our patient, radiographic definition of the cyst was possible. All chest x-ray films were remarkable, and the diagnosis was made on the basis of high index of suspicion. The computed tomographic scan provided definitive diagnosis of a bronchogenic cyst and subsequent therapeutic strategy. MRI was not done. Creating a working space with low pressure and low flow CO2 pneumothorax helped us to manipulate and excise the cyst completely. There was no post-operative complication.

Conclusion

VATS excision of the mediastinal congenital lesions like bronchogenic cyst should be the standard approach even in pediatrics patients.

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