

# Bronchogenic cyst being misdiagnosed and mistreated as tubercular lung abscess: a case report

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## Abstract

We report successful surgical resection of a bronchogenic cyst in a 57-year-old male who presented with recurrent haemoptysis and being misdiagnosed and mistreated as a case of tubercular lung abscess.

## INTRODUCTION

Bronchogenic cysts represent a spectrum of bronchopulmonary malformations that result from an abnormal budding of the tracheobronchial tree.<sup>1</sup> The tracheal bud develops from the primitive foregut as a ventral diverticulum around the fourth week of gestation and then undergoes further branching and differentiation. The bronchogenic cyst develops as part of the tracheobronchial tree separate from the primary airway as a result of aberrational development.<sup>2</sup>

## CASE DESCRIPTION

A 57 year old non-smoker non-diabetic male patient was admitted to our department with complaints of recurrent haemoptysis and right sided chest pain for around 20 years. He never had any complaints of fever; cough with or without expectoration, decreased appetite or weight loss. However whenever he consulted any doctor for haemoptysis, he was prescribed anti-tubercular treatment (ATT). He had taken at least three full courses of ATT during last 20 years. Our patient was even prescribed 180 injections of Streptomycin for management of haemoptysis. However, his sputum was never positive for acid fast bacilli (AFB). He was referred to our department for the management of patient with provisional diagnosis of multi-drug resistant tuberculosis.

General physical examination and systemic examination were normal. The Chest radiograph revealed a right midzone cavity (Figure1).

{image:1}

Computerised tomographic scan (CT-scan) of the chest revealed a large subpleural air filled cystic lesion in right

middle lung (Figure2).

{image:2}

His blood routine investigations were normal. His sputum for AFB was negative in smear and culture on several occasions. Patient's tuberculin test was also non reactive. Transthoracic fine needle aspiration and cytology (FNAC) specimens had bronchial epithelial cells indicating poor specificity. Patient was advised surgical removal by the department of cardiovascular and thoracic surgery. He underwent resection of the cyst. The histopathology of the excised specimen revealed a bronchogenic cyst.

## DISCUSSION

Bronchogenic cysts are one of the most common bronchopulmonary malformations.<sup>3</sup> Though more commonly mediastinal in location,<sup>2</sup> cysts arising at a later stage of development may be intraparenchymal<sup>2</sup> and in rare cases have occurred in presternal tissues,<sup>4</sup> diaphragm,<sup>5</sup> spine,<sup>2</sup> skin and subcutaneous tissue,<sup>6</sup> pericardium,<sup>7</sup> neck,<sup>8</sup> abdomen,<sup>9</sup> or have extended from the mediastinum through the diaphragm into the abdomen-"dumbbell" cysts.<sup>10</sup> The cyst wall is lined by ciliated pseudostratified columnar epithelium and often contains bronchial mucus glands, smooth muscle, and cartilage.<sup>11</sup> Management of the asymptomatic cyst in the adult remains controversial, with some authors suggesting continued observation.<sup>12</sup>

The most common symptoms are from compression of mediastinal structures, infection, or haemorrhage within the cyst.<sup>13</sup> Other serious reported complications in adults include extrinsic pulmonary artery stenosis,<sup>14</sup> superior vena caval obstruction,<sup>15</sup> pericardial tamponade,<sup>16</sup> arrhythmias,<sup>17</sup>

obstructive emphysema<sup>18</sup>, bronchial atresia<sup>19</sup>, hypoplastic pulmonary artery<sup>20</sup>, pneumothorax<sup>21</sup>, unilateral ventilation perfusion defect,<sup>21</sup> and carcinomatous<sup>22,23</sup> or sarcomatous change.<sup>24</sup>

The differential diagnosis with parenchymal cysts includes neoplasms, granulomas, hematomas, vascular malformation, lung sequestration, lung abscesses, infected bullae, and hydatid cyst.<sup>25</sup>

Classically, the chest radiograph reveals a rounded, well-demarcated, noncalcified mass with a homogenous "water density."<sup>26</sup> Unusual radiologic features caused by air trapping, infection, or rupture of the cyst with development of an air fluid level, a lobulated contour, or variations in the density of the cyst caused by calcification, surrounding atelectasis or pneumonia may contribute to diagnostic uncertainty.<sup>27</sup> Classically bronchogenic cysts are of water density (0-20 Hounsfield units); however, in the presence of infection or in those with a variable protein and calcium content, the density may be higher, of the range of solid tissue and thereby increasing the diagnostic uncertainty. Calcium is a major factor contributing to high attenuation on CT scan. Air fluid level can be seen if secondary infection is present<sup>28</sup>

Nowadays transbronchial FNA is a safe technique that can be used not only for diagnosis but also for managing bronchogenic cyst. The diagnostic value of the presence of bronchial epithelial cells on FNA, however, remains unclear since no studies have reported the sensitivity or specificity of such a finding. Transbronchial FNA in patients with mediastinal disease from other causes, however, reveals that bronchial epithelial cells are found routinely regardless of the underlying diagnosis. Similarly, bronchial epithelial cells were also identified in percutaneous thoracic FNA.

Definitive treatment remains complete surgical excision. Surgical excision usually is via a posterolateral thoracotomy or median-sternotomy<sup>29</sup>, with intrapulmonary cysts requiring segmental or lobar resection. Most cysts can be excised surgically with minimal morbidity,<sup>2</sup> but at times, because of dense pericyclic adhesions to adjacent structures or large cyst size, surgical excision may be difficult and lead to only partial excision or complications<sup>30</sup>.

## References

1. O'Rahilly R, Muller F. Respiratory and alimentary relations in staged human embryos: new embryological data and congenital anomalies. *Ann Otol Rhinol Laryngol* 1984; 93:421-29

2. Fraser RB, Pare JAP, Pare PD, Fraser RS, Stevens GP. Pulmonary abnormalities of developmental origin. Diagnosis of diseases of the chest. Philadelphia: W.B. Saunders, 1989;675-773
3. Rodgers BM, Harman PK, Johnson AM. Bronchopulmonary Foregut malformations: the spectrum of anomalies. *Ann Surg* 1986; 203:517-24
4. Magnussen JR, Thompson JN, Dickinson JT. Presternal bronchogenic cyst. *Arch Otolaryngol* 1977; 103:52-4
5. Buddington TW. Intradiaphragmatic cyst: Ninth reported case. *N Engl J Med* 1957; 257:613-14
6. Fraga S, Helwig EB, Rosen SH. Bronchogenic cysts in the skin and subcutaneous tissue. *Am J Clin Pathol* 1971; 56:230-2
7. Gomes MN, Hufnagel CA. Intrapericardial bronchogenic cysts. *Am J Cardiol* 1975; 36:817-22
8. Som PM, Sacher M, Lanzieri CF, Solodnik P, Cohen BA, Reede DL. Parenchymal cysts of the lower neck. *Radiology* 1985;157:399-406
9. Coselli MP, Ipolyi P, Bloss RS, Diaz RF, Fitzgerald JB. Bronchogenic cysts above and below the diaphragm: Report of eight cases. *Ann Thorac Surg* 1987;44:491-4
10. Amendola MA, Shirazi KK, Brooks J, Agha FP, Dutz W. Transdiaphragmatic bronchopulmonary foregut anomaly "dumbbell" bronchogenic cyst. *AJR* 1982; 138:1165-7
11. Reed JC, Sobonya RE. Morphologic analysis of foregut cysts in the thorax. *Am J Roentgenol* 1974; 120:851-60
12. Karlinsky JB, Lan J, Goldstein RN. Decision making in pulmonary medicine. *Bronchogenic Cyst*, Philadelphia: B.C.Decker, 1991; 156-7
13. Harris M, Woo MM, Miller CG. Acquired pulmonary stenosis due to compression by a bronchogenic cyst. *Thorax* 1973; 28:394-96
14. Rammohan G, Berger HN, Lajam FB. Superior vena cava syndrome caused by bronchogenic cyst. *Chest* 1975; 68:599-601
15. Reinhart SF, Miller R, Mayer W, McAnulty JH. Cardiac presentation of bronchogenic cyst. *West J Med* 1983; 139:534-36
16. Watson AJ, Chaudhary BA. Cardiac arrhythmias and abnormal chest roentgenogram. *Chest* 1987; 92:335-6
17. Geriam S, Richardson R, Harrington B, Pate JW. Obstructive emphysema due to mediastinal bronchogenic cysts in infancy. *J Thorac Cardiovasc Surg* 1969; 58(3):432-34
18. William AJ, Shuster SR. Bronchial atresia associated with bronchogenic cysts: evidence of early appearance of atretic segments *Chest* 1985; 87:396-98
19. Selke AC, Belin RP, Durain R. Bronchogenic cysts in association with hypoplasia of the left pulmonary artery. *J Pediatr Surg* 1975; 10:541-43
20. Matzinger MA, Matzinger FR, Sachs HJ. Intrapulmonary bronchogenic cyst: Spontaneous pneumothorax as a presenting symptom. *AJR* 1992; 158(5):987-88
21. Berkowitz KA, Fleischam JK, Smith RL. Bronchogenic cyst causing a unilateral ventilation perfusion defect on lung scan. *Chest* 1988; 93(6):1292-93
22. Miralles Lozano F, Gonzalez-Martinez B, Luna More S, Valencia Rodriguez A. Carcinoma arising in a calcified bronchogenic cyst. *Respiration* 1981;42(2):135-37
23. Bauer S. Carcinoma arising in a congenital lung cyst: report of a case. *Dis Chest* 1961; 40:552-55
24. Brehand A, Kravitz CH. Sarcoma arising in a bronchogenic cyst. *Surgery* 1951; 24:142-43
25. Quinlan JJ, Holden HM, Schaffner VD. Cystic disease of the lung. *Can Med Assoc J* 1958; 79:1012-155
26. Haddon MJ, Bowen A. Bronchopulmonary and

neurenteric forms of foregut anomalies. Imaging for diagnosis and management. Radiol Clin North Am 1991; 29(2):241-54

27. Cartmill JA, Hughes CF. Bronchogenic cysts: A persistent dilemma. Aust N Z J Surg 1989; 59:253-56

28. Mc Adams P.H, Kirejczk M.W, Rosado-da Christenson L.M. Bronchogenic cyst: Imaging features with clinical and

Histopathologic correlation, Radiology 2000; 217: 441-446.

29. Do Van S, Carpathios J, Bogedain W. Paraesophageal bronchogenic cysts: case reports. Am Surg 1966; 32:65-7St.

Georges R, Deslauriers J, Duranceau A, Vaillancourt R,

30. Beauchamp CT, Page A, et al. Clinical spectrum of bronchogenic cysts of the mediastinum and lung in the adult. Ann Thorac Surg 1991; 52:6-13

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