Case Report

Pericardial Cyst in an Adult Treated with Video-Assisted Thoracoscopic Surgery

Mohammad G Al-Ajmi, Mohammad Ismail Burud, Mohammad Azfar
Department of Surgery, Armed Forces Hospital, Kuwait

Kuwait Medical Journal 2001, 33 (4): 345-347

INTRODUCTION

Pericardial cysts are generally asymptomatic benign malformations of the pericardium and are discovered incidentally on routine chest roentgenogram as slowly enlarging, right-sided cardiophrenic angle masses[1]. The treatment options for pericardial cysts include simple observation, percutaneous aspiration (in selected cases) and excision by thoracotomy. Recently, surgical management of a pericardial cyst has been easily accomplished via thoracoscopic techniques when its excision is indicated. This case report describes a 30-year-old male patient who was treated successfully for a pericardial cyst by video-assisted thoracoscopic surgery.

CASE REPORT

A 30-year-old male patient was referred to our hospital for further evaluation of a mass lesion adjoining the hilum of left lung, abutting the left cardiac border, which was incidentally detected during a routine military medical examination. He was completely asymptomatic except breathlessness on prolonged exertion. His physical and laboratory findings were also entirely normal. His chest X-ray showed a large tumor shadow in the left lung (Fig. 1). Computed tomography (CT) showed a well circumscribed air-filled loculous, measuring 4x3x2cm, at the left side of the middle mediastinum in close proximity and smoothly abutting the left main pulmonary artery and the pericardiaum (Fig. 2). It was closely related to the origin of left upper lobe bronchus with no demonstrable communication with either the bronchus, the enlarged hilar or mediastinal lymph nodes. Echocardiography showed a cyst beside the left atrium without involving the left pulmonary artery.

The cyst was excised using video-assisted thoracoscopic surgery (VATS) under general one lung ventilation anesthesia. A double lumen endotracheal tube with bronchial blocker was used. The camera was inserted through a 10 mm port in the mid-axillary line of the 5th intercostals space. Two additional ports were placed through the 4th intercostal space in the anterior and posterior axillary line for the insertion of dissecting instruments. The cyst appeared hemispherical, pale and smooth. The cyst was completely excised. A chest tube drain (24 F) was positioned via one of the operating ports in 4th intercostal space. A 3rd intercoastal space nerve block with local anesthetics was done at the end of surgery to minimize the postoperative pain. The postoperative period was uneventful. The chest drain was removed on the first postoperative day. The postoperative analgesia required was very minimal compared to the usual analgesic requirements following a thoracotomy. His total hospital stay was four days. Histopathological examination was compatible with the diagnosis of a pericardial cyst. On his recent follow-up, 18 months after surgery, he was found to be completely asymptomatic and there was no evidence of any recurrence (Fig. 3).

DISCUSSION

Pericardial cysts are, in general, an asymptomatic malformation of the pericardium, discovered incidentally on routine chest rontgenogram. Their typical location is the right cardiophrenic angle, but they can be located at other sites with an estimated incidence of 6-7% of all mediastinal masses[2-5]. They are typically located in the anterior mediastinum, in the right cardiophrenic angle (51-70%), in the left cardiophrenic angle (22-38%), and in the sites not adjacent to the diaphragm (8-11%)[6]. Pericardial cysts rarely occur in the mid-line position in the posterior mediastinum.

Pericardial cysts are usually thought to be congenital lesions resulting from either an abnormal fusion or lack of fusion of one of the mesenchymal lacunae that coalesce to form the pericardium or to a persistance of the ventral partial recess coelom. Some cysts communicate with pericardial cavity. They can be caused by

Address correspondence to:
Dr. Mohammad G. Al-Ajmi, P.O. Box: 48861, Sabahiya-54001, Kuwait. Email: mohalajmi@hotmail.com

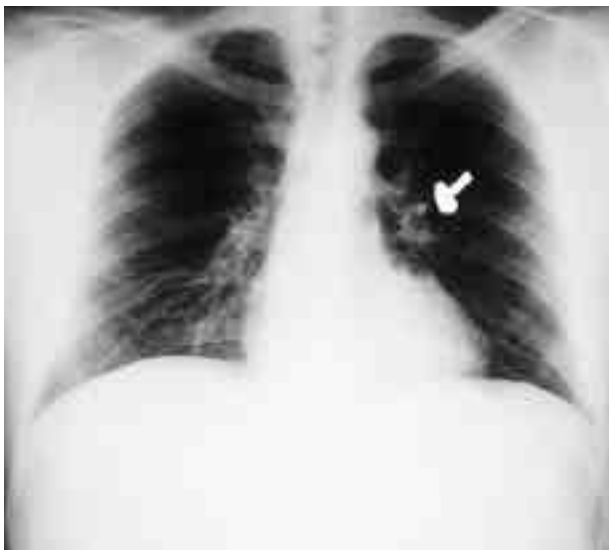

Fig. 1: Showing a mass lesion (arrow) in the middle of the left lung

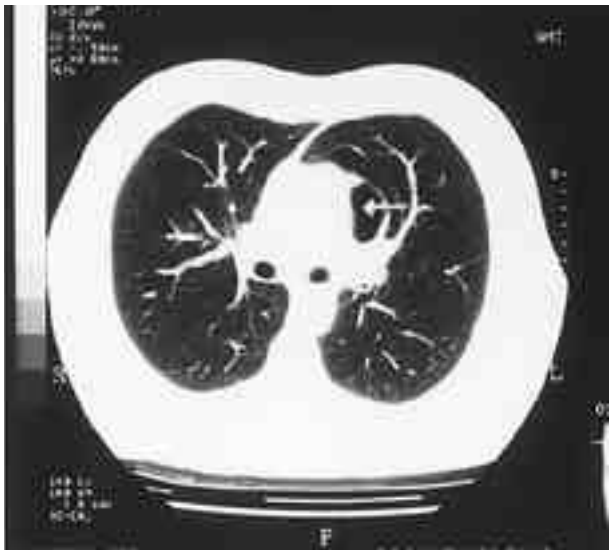

Fig. 2: CT scan showing a circumscribed air filled loculous (arrow) in the middle mediastinum in close proximity to pericardium and left main pulmonary artery

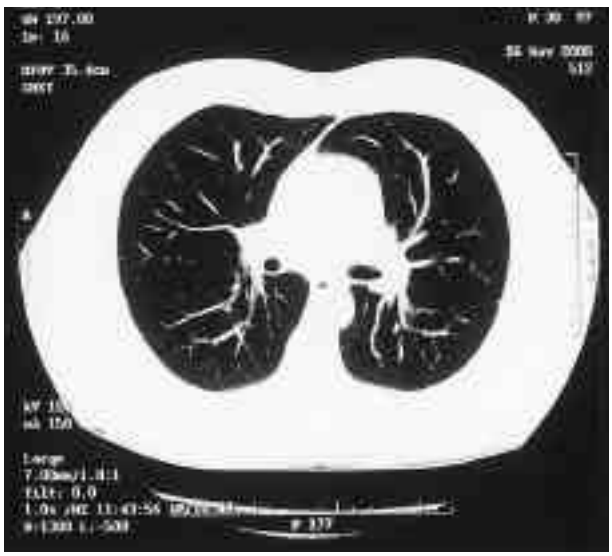

Fig. 3: CT scan 18 months after surgery showing no evidence of recurrence

either neoplastic infiltration involving the pericardium, trauma or infection[7].

Although pericardial cysts are mainly thought to be congenital in origin, they are most commonly found in adults older than 30 years of age and rarely in children. As a majority of patients with pericardial cysts are asymptomatic, these lesions are usually incidentally detected on chest radiographs performed for other reasons[2,8,9]. In symptomatic patients, the most common symptoms are chest pain, coughing, expectoration, dyspnoea and fever.

As pericardial cysts can be found anywhere contiguous with the pericardium, they must be distinguished from other mediastinal masses including cystic hygroma, teratomas, lymphomas, thymomas, haemangiomas, bronchogenic cyst, ventricular aneurysm, pericardial fat pad, congenital diaphragmatic hernias and extra lobar pulmonary sequestration etc[10,11].

For cysts located in the usual site, preoperative diagnosis is not difficult, as standard chest X-ray generally provides satisfactory diagnostic information. However, for cysts located at unusual sites, obtaining a differential diagnosis from other masses may require the use of more sophisticated procedures including CT scan, MRI, transparietal ultrasonography, fine needle aspiration cytology and VATS.

There are several treatment options for mediastinal pericardial cysts. When the diagnosis is certain, asymptomatic small cysts, located in usual sites may not require surgical treatment[12,13]. Most surgeons still recommend excision via thoractomies for a large symptomatic cyst, cysts located at unusual sites or when the diagnosis is uncertain. Percutaneous CT or echo-guided cyst aspiration has been performed as an alternative to excision via thoractomy. However, because of the high morbidity (hemorrhage) and a reported recurrence rate of 22-23%, the procedure should be recommended in selected patients with high operative risk[2,12,14].

Mediastinoscopic excision has been used in selected cases for small cysts in favorable locations (paratracheal space). Thoracoscopic cyst treatment is minimally invasive and undoubtedly offers advantages such as minimization of postoperative pain, more rapid recovery of respiratory function, chest convalescence and optimal cosmetic outcome[15]. The thoracoscopic approach seems to be the best method for pericardial cyst excision. However, VATS can not be performed in patients who have extensive intrapleural adhesions or who can not tolerate single-lung ventilation. Lesions in close proximity to hilar vessels should not be

resected by VATS because this technique does not easily allow control of hemorrhage from the hilum. Patients with coagulopathy should also be carefully selected as difficulty can be encountered in controlling bleeding through this minimally invasive approach. Some reports indicate that VATS is suitable for partial excision of most cysts and complete excision of selected cases. Our case was successfully excised using VATS and has remained completely asymptomatic without recurrence for 18 months.

ACKNOWLEDGEMENT

The authors are greatly indebted to Prof. A. Ris, Department of Cardiothoracic and Vascular Surgery, University of Bern, Switzerland for his assistance.

REFERENCES

1. Horita K, Sakao Y, Itoh T. Excision of a recurrent pericardial cyst using video assisted thoracic surgery. Chest 1998; 114:1203-1204.
2. Cangemi V, Volpino P, Gualdi G, Polettin E, Frati R, Cangemi B, Piat G. Pericardial cyst of the mediastinum. J Cardiovasc Surg 1999; 40:909-913.
3. Leggeri A, Tendella E, Ligouri G. Aspetti clinico-statici de tumori de mediastino. Arch Chir Thor Cardiovasc 1970; 27:285-287.
4. Wychulis AR, Payne WS, Clagett OT. Surgical treatment of mediastinal tumours: a 40 year experience. J Thorac Cardiovasc Surg 1971; 62:379-391.
5. Parish JM, Rosenow EC, Muhm JR. Mediastinal masses. Clues to interpretation of radiologic studies. Postgraduate Medicine J 1984; 76:173-186.
6. Feigin DS, Fenoglio JJ, McAllister HA, Madewell JE. Pericardial cyst: A radiolgic-pathologic and review. Diagn Radiol 1977; 125:15-20.
7. McAllister HA. Primary tumours and cysts of the heart and pericardiam. In:Harvey WP editor. Current problems in cardiology Year Book. Chicago: Medical Publishers;1979. p. 8-11.
8. Eto A, Arima T, Nagashima A. Pericardial cyst in a child treated with video- assisted thoracoscopic surgery. Eur J Pediatr 2000; 159:889-891.
9. Weder W, Klotz HP, Segesser VL, Largiader F. Thoracoscopic resection of a pericardial cyst: A case report. J Thorac Cardiovac Surg 1994; 107:313-314.
10. Brockington GM, Schwartz SL, Pandian NG. Echocardiography in pericardial diseases. In: Braunwald editor. Cardiac imaging. Philadelphia: Saunders; 1991. p. 476-477.
11. Lewis KM, Sherer DM, Goncalves LF, Fromberg RA, Eglinton GS. Mid-trimester prenatal sonographic diagnosis of a pericardiacs cyst. Prenat Diagn 1996; 16:549-553.
12. Mouroux J, Elkaim D, Maalouf J, Padovani B, Richelme H. Pleuropericardiques treatment par chirurgie video-assistee. J Chir (Paris) 1993: 130:522-524.
13. Stoller JK, Shaw C, Matthay RA. Enlarging atypically located pericardial cyst: Recent experience and literative review. Chest 1986; 89:402-406.
14. Fryday RO. Pericardial cysts diagnosis by ultrasound and puncture. JAMA1973; 222:82-84.
15. Kern JA, Daniel TM, Tribble CG, Silen ML, Rodgers BM. Thoracoscopic diagnosis and treatment of mediastinal masses. Ann Thorac Surg 1993: 56:92-96.