CASE REPORT

A rupture of a huge thymic cyst into the pleural cavity: A case report

E. Lachanas, P. Konofaos, G. Birba, P. Tomos

2nd Department of Propedeutic Surgery, 'LAIKO' Hospital, Athens, Greece
5th Department of Respiratory Medicine, "SOTIRIA" Hospital for Diseases of the Chest, Athens, Greece

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Summary Thymic cysts (TCs) represent 1–2% of all mediastinal masses. To the best of our knowledge transudative effusion due to rupture of a TC into the pleural cavity, as it happened with our patient, has never been described before. The patient was admitted in 5th Department of Respiratory Medicine of "SOTIRIA" Hospital complaining of pleuritic chest pain in the right hemithorax and dyspnea on exertion. Clinical and laboratory examinations indicated a right pleural effusion. Then, the patient was transferred to the 2nd Department of Propedeutic Surgery of 'LAIKO' Hospital where he underwent surgery. Video-assisted thoracic surgery (VATS) revealed an enormous 25-cm cyst ruptured into the right pleural cavity. The cyst was removed by open thoracotomy due to adhesion to contiguous tissues. Pathological examination indicated thymic origins.

Introduction

Thymic cysts (TCs) are benign lesions located in the anterior, prevascular compartment of the mediastinum, accounting for 13% of all mediastinal masses. Only a limited number of thymic masses arising outside the anterior mediastinum have been described in literature. Their sizes vary up to 30 cm. We will describe an unusual presentation of a huge TC, arising in the anterior mediastinum, which had ruptured into the pleural cavity.

Case report

A 61-year-old Greek woman was admitted in the 5th Department of Respiratory Medicine of "SOTIRIA" Hospital, complaining of pleuritic chest pain in the right hemithorax and dyspnea on exertion. She showed no other symptoms and her medical history was unremarkable except for a benign thyroid lesion which was being treated. Physical examination revealed a reduction of respiratory murmur at
the right hemithorax. Chest X-rays suggested pleural effusion and the fluid extracted by needle aspiration was transparent. Tests for parasites were negative and the results of routine laboratory analyses were compatible to a transudative pleural effusion (Table 1). Chest computed tomography (CT) scan (Fig. 1A) revealed both right pleural effusion with compressive atelectasis of the right lower lobe and a smooth tissue-like mass in the mediastinum. The patient was then transferred to the 2nd Department of Propedeutic Surgery of 'LAIKO' Hospital, where she underwent video-assisted thoracic surgery (VATS) for her mass in the mediastinum. VATS revealed a huge ruptured cyst, half-full of liquid, originating in the anterior mediastinum. The cyst extended in cranial-caudal direction from the level of confluence of the right and left innominate veins with the superior vena cava to the right periocardiophrenic angle. Its medial surface was attached to the mediastinum,

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Figure 1 (A) CT scan shows: right pleural effusion with compressive atelectasis of the right lower lobe and a smooth tissue-like mass in the mediastinum. (B) Intraoperative mobilization of the cyst.

Figure 2 (A) Excised thymic cyst. (B) The wall of the thymic cyst with (a), a covering monolayer cuboidal or columnar epithelium and (b), residual thymic tissue composed of small lymphocytes and a focus of epithelial cells (Hassall’s corpuscle). X16 H/E.
lying between the interior mammary vessels and the right phrenic nerve while its lateral surface was pressing against the lung.

Strong adhesion of the cyst to contiguous tissues rendered it impossible to be removed by VATS resulting in conversion to open lateral thoracotomy. Cleavage plane was performed starting from the diaphragm continuing in retrograde direction. The mass was approximately 25 cm in diameter (Fig. 2A). After total mobilization, the pedicle of the cyst was resected and sutured with non-absorbable stitches (Fig. 1B). Pathological examination (Fig. 2B), revealed a huge TC.

Two and half years after surgery, the patient is in good health, without showing any signs of recurrence on a CT scan.

Discussion

TCs are acquired or congenital lesions of the thymic tissues. They are found along the lines of thymic descent due to anomalous development of the thymopharyngeal duct.\(^2\) The thymopharyngeal duct is normally obliterated by the seventh week of gestation. If it remains patent, accumulation of fluid results in the formation of a TC.\(^3\) TCs, whether primary or arising secondary after surgery or chemotherapy are rare, representing only \(1–2\%\)\(^4\) of all expansile masses in the anterior compartment.

Mediastinal TCs occur predominantly from the second to fifth decades of life and the majority of them are asymptomatic. When symptoms do occur the most common are dyspnea, cough, chest pain and dysphagia.\(^3\) Rare complications include hemorrhagic TC, rupture of the TC causing hemothorax and mediastinal hemorrhage,\(^6\) and extension of the TC into the pericardium. To our knowledge, transudative pleural effusion in association with a TC has not previously been described.

CT scan or magnetic resonance imaging (MRI) are of value to clarify the diagnosis since it provides information on the morphology of the mass and its relationship with adjacent structures before thoracotomy. They (CT, MRI) also provide data on the density and vascularization of the TC.

TCs can be removed by open procedures (thoracotomy) or by VATS which has recently become more popular. VATS provides an excellent trans-pleural approach to the mediastinum, permitting careful removal of the mass.\(^7\) Martinod et al.\(^8\) suggested the conversion of VATS to open thoracotomy in cases of mediastinal cysts with dense pleural adhesions. In our case, the half-full cyst was huge and so adherent to contiguous tissues that it was hard to manipulate. This prevented continuation with VATS and conversion to open thoracotomy was considered necessary.

Treatment of TCs remains controversial. Some prefer strict medical supervision; others advocate immediate excision to establish diagnosis. When complications occur however, as in our case, surgical management is mandatory.

In conclusion, the case presented is of particular interest because it is the first reported case of TC with pleural effusion. To the best of our knowledge, a ruptured TC into the pleural cavity may be presented as hemothorax. Surgical treatment of these cysts is difficult due to adhesions to mediastinal masses. Consequently, in cases of non-diagnosable transudative pleural effusion, we recommend that the possibility of this rare cause be considered.

References