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Case Report

CASE REPORT

Cardiac tamponade due to ruptured cystic teratoma: report of two cases

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Abstract

We report the rare two cases of cardiac tamponade due to ruptured cystic teratoma. In both cases, a chest computed tomography scan showed large cystic mass with large amount of pericardial effusion. Transthoracic echocardiogram revealed cardiac tamponade physiology. En bloc resection of the mass was performed and pathologic examination showed mature cystic teratoma. The postoperative course of patients was uneventful. A cystic mediastinal teratoma should be considered in the differential diagnosis of pericardial effusion.

INTRODUCTION

Mediastinal teratoma is one of the most common mediastinal tumors with an incidence of 8–13% of all mediastinal tumors [1]. Most cases of mediastinal teratoma are incidentally detected by routine imaging study. But they can also cause symptoms such as chest discomfort, dyspnea or palpitations. Mediastinal teratoma could also compress on the adjacent structures and rarely cause a life-threatening complication such as cardiac tamponade due to rupture of cystic teratoma into the pericardial sac. We present two cases of patients with ruptured teratoma leading to cardiac tamponade, which was treated by surgical intervention.

CASE REPORT

Case 1

A 34-year-old male was transferred to our emergency department with dyspnea, chest pain and cough of 1-week duration. He presented 1-day previously and was found to have a cystic mass in the anterior mediastinum that measured 11 × 8 cm with pericardial effusion on chest computed tomography (CT) scan but he was hemodynamically stable with no evidence of cardiac tamponade at that time. His symptoms were aggravated until he was transferred to our hospital. His heart rate was 114 beats per minute (bpm) with blood pressure of 130/70 mmHg. His respiratory rate was 23 breaths per minute and he complained of aggravated dyspnea. The jugular vein was not engorged and lung sound was decreased. Laboratory studies were all within normal limits. Chest X-ray showed large amount of pericardial effusion with bilateral pleural effusion. Chest CT revealed a markedly increased pericardial effusion (Fig. 1). This finding could suggest cardiac tamponade due to rupture of cystic mass in the anterior mediastinum. Transthoracic echocardiogram revealed cardiac tamponade with large pericardial effusion and dilated inferior vena cava. The emergent pericardiocentesis was done and ~800 cc of dark brown colored pericardial effusion was drained. Analysis of the fluid revealed a pH of 7.50, a WBC count of 1360/mm^3 (predominantly neutrophils), a protein level of 3.8 g/dl, an LDH level of 983 U/L and a glucose level of 87 mg/dl. The fluid was negative for bacterial culture, acid-fast bacilli smear, culture and tuberculosis polymerase chain reaction. The cytology of the fluid was negative for malignancy. The patient

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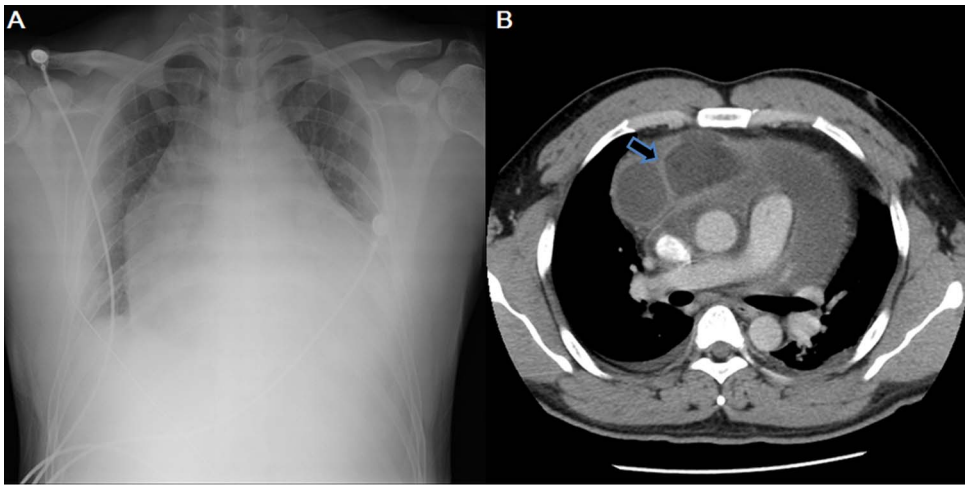

Figure 1: Chest X-ray (**A**) showed enlarged mediastinal shadow and chest CT scan (**B**) revealed large cystic mass (black arrow) with large amount of pericardial effusion.

subsequently underwent anterior mediastinal mass excision via median sternotomy. Intraoperatively, the cystic mass has a severe adhesion with the pericardium and mediastinal pleura. The pericardium was remarkably thickened and the mass was filled with large amount of yellowish materials and hair components. A small hole was found on the pericardium adjacent to the tumor, indicating a rupture of the mass into the pericardial space. En bloc resection of the mass including the adjacent pericardium and mediastinal pleura was done. The resected mass was sent for pathologic examination, which was diagnosed as mature cystic teratoma. The specimen showed multiloculated cyst containing sebum-like materials and matted hairs. The patient had an uneventful clinical course and was discharged without further complication.

Case 2

A 49-year-old male presented to our emergency department with acute dyspnea and chest pain that occurred 1-h ago. On physical examination, his heart rate was 108 bpm, with respiratory rate of 22 breaths per minute. Blood pressure was 100/60 mmHg. The jugular vein was not distended and lung sound was decreased on the left side. Chest X-ray showed mediastinal widening with left pleural effusion. Chest CT revealed a cystic mass that measured 8 × 5 cm with pericardial effusion in the anterior mediastinum (Fig. 2). Laboratory studies were all within normal limits except the white blood count, which was 11 000 per microliter of blood. Chest X-ray showed large amount of pericardial effusion with bilateral pleural effusion. This finding could lead to cardiac tamponade due to rupture of cystic mass in the anterior mediastinum. Transthoracic echocardiogram revealed cardiac tamponade physiology with multiloculated pericardial effusion. The patient underwent the three-port video-assisted thoracoscopic surgery from the left side. Intraoperatively, the mass has a severe adhesion with the thickened pericardium and mediastinal pleura. The left phrenic nerve was encapsulated with the mass, which was filled with large amount of yellowish materials and calcification. The communication between pericardium and mass could not be found. En bloc resection of the mass including the adjacent pericardium, mediastinal pleura and left phrenic nerve was done. The resected mass was diagnosed as mature cystic teratoma. He was discharged on postoperative Day 7 without complication.

DISCUSSION

Teratomas comprise ∼8–13% of all mediastinal tumors and mature cystic teratomas are composed of well-differentiated derivations from at least 2 of the 3 germ cell layers (ectoderm, mesoderm and endoderm). Benign cystic teratomas of the anterior mediastinum are rarely complicated by rupture into an adjacent body cavity [2]. A cystic mediastinal teratoma rupture into the pericardial space occurs in association with <1% of all benign teratomas [3]. The mechanism of rupture remains controversial. Sommerlad *et al.* suggested that the secretion of digestive enzymes such as amylase from the tumor might cause fistula formation into the adjacent structures [4]. Although most cases of mediastinal teratoma are incidentally found on chest X-ray, chest CT scan is considered as the diagnostic modality of choice for confirming the nature of tumor and its relationship to the adjacent structures [5]. Cardiac tamponade is the accumulation of pericardial fluid within the pericardial space that creates an increase in intrapericardial pressure, restricting cardiac filling and decreasing cardiac output. The diagnosis is based on clinical suspicion and clinical signs include tachycardia, hypotension, distant heart sounds, elevated jugular venous pressure and a pulsus paradoxus > 10 mmHg. With regard to management, surgical resection of the benign mediastinal teratoma is recommended by many authors since the cystic mediastinal teratoma could be the cause of potential life-threatening cardiac tamponade [6]. The prognosis and 5-year survival rates are excellent [7]. In our two cases, the tumor was radically resected with no complication and the patients were discharged in a good condition.

CONCLUSION

Although there are a limited number of cases of cardiac tamponade secondary to the rupture of cystic mediastinal teratoma, cystic teratoma rupture should always be considered in the differential diagnosis of pericardial effusion, which could lead to the life-threatening cardiac tamponade.

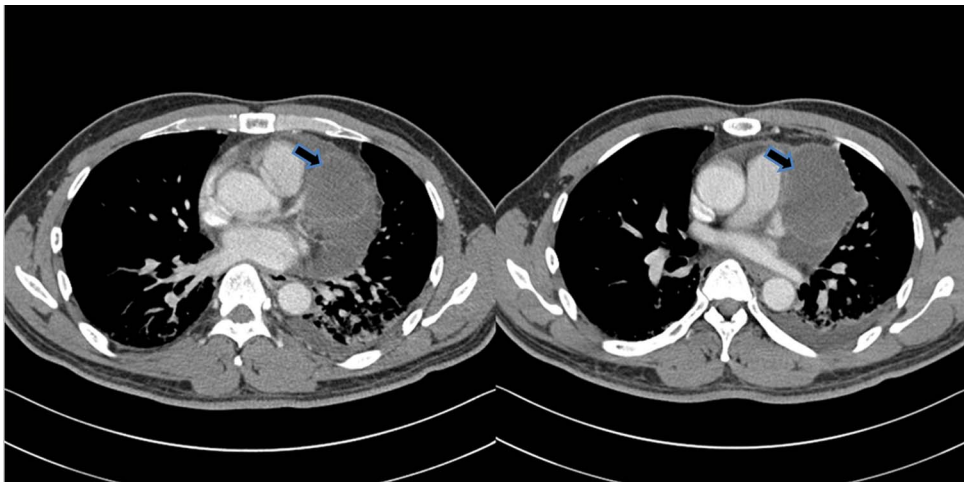

Figure 2: Heterogenous multichambered cytic mas with periperal enhancement (black arrow).

CONFLICT OF INTEREST STATEMENT

No conflicts of interest.

FUNDING

None declared.

ETHICAL APPROVAL

Not required.

CONSENT

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

GUARANTOR

The corresponding author will be the guarantor for this paper.

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