symptoms, whereas others display a series of clinical processes such as hemoptysis and respiratory distress until heart failure occurs [4].

Echocardiography is usually the initial imaging examination for the diagnosis of cardiac tumors, although computed tomography and magnetic resonance imaging actually have a higher accuracy rate in exposing this condition. Usually, these modalities have been used in preoperative diagnosis [5]. However, the nature of the tumors cannot be cleared by preoperative diagnosis in many cases. Preoperative diagnosis of PCHs is also difficult. All cases that have been reported were diagnosed by intraoperative or postoperative examination or at autopsy.

The histologic appearances of cardiac cavernous hemangiomas and PCHs are no different from the appearances of other parts. The diagnosis in our patient was not difficult based on the histologic appearance and immunohistochemical reactivity. However, other entities, such as mesothelioma, angiosarcoma, and myxoma, must sometimes be considered in the differential diagnosis. Microscopically, most epithelioid mesotheliomas show bland cells and little mitosis. Epithelioid tumor cell nests can be seen within a bland fibrous stroma [6]. Calretinin, WT-1, and D2-40 should be positive by immunohistochemical examination. Mitotic activity, cellular pleomorphism, necrosis, and cellularity can distinguish hemangiomas from angiosarcomas. Vascular endothelial markers such as FVIII, CD31, and CD34 all have a strong reaction in angiosarcomas [7]. Myxomas have a typical appearance, with spindle cells widely spaced by abundant myxoid matrix, which can differentiate them from cavernous hemangiomas.

Hemangiomas may have a good prognosis and a low recurrence rate. So far, no malignant change has been reported to our knowledge. Total resection should be the standard treatment for symptomatic cavernous hemangiomas whenever possible [8]. For most cardiac cavernous hemangiomas, complete excision is possible. However, some lesions that have extensive infiltration are appropriate only for incomplete resection or simple biopsy, and the prognosis is usually poor [2]. Similarly, solitary PCHs should be treated with surgical resection, usually wedge resection or enucleation [4]. However, no intervention was undertaken in the present reported case of multiple PCHs. In this case, cavernous hemangiomas were found in both the heart and the lungs, which was exceedingly rare and complicated. Embolizing the remaining cavernous hemangiomas was considered; however, the patient’s condition did not allow it. Close radiographic and clinical follow-up was needed. Unfortunately, as a result of pericardial effusion and pleural effusion, the patient experienced a series of processes such as heart failure, respiratory failure, causally insufficient blood supply, and ischemia and anoxia of the vital organs, and finally died of multiple organ dysfunction syndrome 2 months later.

References


Spontaneous Rupture of a Cystic Mediastinal Teratoma Complicated by Superior Vena Cava Syndrome

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Spontaneous rupture of cystic mediastinal teratomas is rare but may cause serious complications. Here we report an unusual case of a cystic teratoma, which ruptured into the mediastinal and pleural cavities resulting in superior vena cava syndrome, acute mediastinitis, and pleural effusion. Early diagnosis and prompt surgical treatment of ruptured mediastinal teratomas are essential to preventing life-threatening complications.

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Teratomas, which contain ectodermal, mesodermal, and endodermal tissue remnants [1] are the most common tumor type in the anterior mediastinum. Usually, teratomas are asymptomatic and are discovered incidentally by chest radiography or computed tomography (CT). On rare occasions, a cystic teratoma

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may rupture and cause serious complications by leaking out into adjacent structures.

A 23-year-old man presented to our hospital with a 3-day history of fever, dyspnea, and right-sided chest pain. Chest radiography revealed mediastinal widening, patchy opacity in the right upper lobe, and an obscured costophrenic angle (Fig 1A). Chest CT demonstrated a heterogeneous, fat-containing cystic mass (9.4 × 5.0 cm) with an indistinct tumor margin on the right (arrow) in the anterior mediastinum and right-sided pleural effusion (Fig 1B). Coronal views of T2-weighted chest magnetic resonance imaging scan revealed a loculated cystic fluid (arrow) secondary to ruptured tumor, causing compression of the superior vena cava (star). Microscopically, the tumor was typically composed of well-differentiated, adult-type tissues, including pancreatic tissue, smooth muscle, and respiratory epithelium without an immature component, indicative of a mature teratoma (hematoxylin-eosin stain, ×100).

Comment
Mediastinal teratomas are the most common germ cell tumors (GCTs) and constitute approximately 60% to 70% of all mediastinal GCTs [2]. Approximately 41% to 70% of patients with mediastinal teratomas are symptomatic [1]. Symptoms include chest or back pain, dyspnea, and cough. Only approximately a third of patients are asymptomatic [3].

Cystic teratomas may rupture into adjacent cavities or organs. Rupture reportedly occurs in up to 36% to 41% of cases, especially in those with mature teratomas [1, 4]. The majority of ruptured teratomas occur spontaneously. The most frequent sites of rupture are the lungs and the tracheobronchial tree, followed by the pleural, pericardial, and mediastinal cavities and major blood vessels [3]. Teratoma ruptures are likely caused by infections, ischemic changes, secretions of the sudoriferous or sebaceous glands, and autodigestion by salivary and pancreatic enzymes [5]. Ruptures are often associated with chest pain, dyspnea, hemoptysis, and trichoptysis, or even life-threatening complications including pneumothorax, hemothorax, acute mediastinitis, cardiac tamponade, and perforations of major blood vessels [3].

In the present case, chest pain and CT findings of a tumor containing fat tissue with a heterogeneous composition, indistinct tumor margins, and right pleural effusion, was diagnosed. The patient's postoperative course was uneventful, with no recurrence.
mediated by digestive enzymes produced by teratoma-derived pancreatic secretions, which damaged the tumor wall. This postulation correlates with finding of high levels of amylase in the patient’s pleural and cystic fluids. Superior vena cava syndrome was caused by external compression of a loculated cystic fluid secondary to teratoma rupture into the mediastinum.

To our knowledge, teratoma with rupture into the mediastinum complicated by superior vena cava syndrome has not been reported previously. Surgical excision is the favorable treatment for ruptured mediastinal teratomas. Moreover, the decision to perform surgery promptly may avert potentially life-threatening complications, including superior vena cava syndrome and acute mediastinitis, as described in this case. In conclusion, early diagnosis and prompt surgical intervention of ruptured teratomas are crucial for preventing its devastating outcomes.

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References


Left Posterolateral Thoracotomy: An Alternative Approach for Pulmonary Valve Replacement

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Pulmonary valve replacement in adults who have a repaired tetralogy of Fallot is realized through a redo median sternotomy. A dilated ascending aorta is often present and adherent to the sternum and can be injured during sternum reentry, with dramatic consequences. We report on an adult patient with a corrected tetralogy of Fallot who underwent pulmonary valve replacement, thick transannular patch excision, and left pulmonary artery enlargement. Surgery was performed through a left posterolateral thoracotomy. This surgical approach was safe and efficient and, compared with the left anterior thoracotomy approach, offered many more possibilities.


Redo sternotomy can cause excessive risks to adult patients with a repaired tetralogy of Fallot (TOF) and a dilated ascending aorta. In contrast, the left chest is often protected from previous surgery and is easy to access. Our opinion is that a posterolateral thoracotomy approach in these patients has been underused, although it offers excellent results and is a safer procedure.

We report on a case of an adult with a repaired TOF to support our opinion. The patient underwent pulmonary valve replacement (PVR) and enlargement of the left pulmonary artery (LPA) ostium through a posterolateral thoracotomy. This surgical approach avoided injuring the aorta, which firmly adhered to the sternum.

Our patient was a 20-year-old woman who had undergone three previous interventions: two modified Blalock shunts through a right and then left anterior thoracotomy, at 3 months and 1 year of age, and a complete repair with a transannular patch through a median sternotomy at 3 years of age.

The patient was referred for severe pulmonary valve regurgitation and classified as New York Heart Association (NYHA) status II. A transesophageal echocardiograph showed no residual shunt. Preoperative magnetic resonance imaging confirmed severe regurgitation, with a right ventricular end-diastolic volume index of 155 mL/m². A computed tomographic (CT) scan showed the ascending aorta closely adherent to the sternum and ostial stenosis of the LPA (Fig 1). The pulmonary-artery trunk diameter was 23 mm.

The patient was positioned in a right lateral decubitus position, with the hips rotated posteriorly to a 50-degree angle. The chest was opened via a left posterolateral thoracotomy through the fifth intercostal space. A normothermic cardiopulmonary bypass was attached to the left femoral artery and vein; a long venous cannula was positioned into the mid-right atrium under transesophageal echocardiographic guidance. Decreased ventilation eased left-lung dissection, and pericardial adhesions were freed. Surgery was performed on the beating heart. A bloodless operative field was obtained...