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Teratomas Mediastinal Recurrent with Massive Pericardial Effusion

Lilik Lestari[1], Muhammad Harris Sis Sulthansyah[2]

[1)] Department of Radiology, Pulmonary Hospital dr. Ario Wirawan, Salatiga, Indonesia
[2)] Public Health Center Tambakaji, Semarang, Indonesia

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Correspondence:
liliklestarirspaw@gmail.com

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Abstract

Background: Mediastinal teratoma is a rare medical disease that refers to a regrowing teratoma tumor in the mediastinum at the dr. Ario Wirawan pulmonary hospital Salatiga, only one case was found where the patient had previously been operated on at another hospital.

Objective: The purpose of this paper was to contribute to the radiology literature by presenting a case of recurrent teratoma.

Case Presentation: A 19-year-old male patient complained of persistent shortness of breath. The patient previously underwent teratoma surgery. The patient underwent chest X-rays, CT scans, abdominal and cardiac ultrasounds (USG), and biopsies. The CT scan found a teratoma-type mediastinal tumor accompanied by a large amount of pericardial effusion—a hyperechoic lesion with well-defined borders, round-oval, lobulated, and enormous. An urgent Location in the mediastinum involves the left ventricle, right ventricle, left atrium, and right atrium. There is also an aortic compression lesion accompanied by calcification (+). The ultrasonography examination of the heart found many pericardial but not found pressing. Heart valve function in patients did not show any abnormalities.

Conclusion: Recurrent teratomas with large-volume pericardial effusions are rare. In this case study, a teratoma is located in the mediastinum. In this case, axial, coronal, and sagittal slices of a contrast thoracic CT scan can be used to establish the diagnosis. The results of heart USG found a pericardial effusion. The heart chambers do not collapse in this case of recurrent teratomas, indicating a mature teratoma type.

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INTRODUCTION

Mediastinal teratomas are rare disease [1], and it is extragonadal germ cell tumors derived from pluripotent cells with the potential for multidirectional differentiation into various cell types[2]. Mediastinal tumors are tumors that are found in the mediastinum[3], namely the structure between the right and left lungs, containing prevascular (anterior), visceral (middle), and paravertebral (posterior)[4].

Teratomas with massive pericardial effusion lesions are divided into four stages. Stage I is for lesions confined to the mediastinum without the involvement of adjacent structures. Stage II for lesions limited to the mediastinum with evidence of macroscopic or microscopic infiltration into surrounding structures, e.g., pleura, pericardium, and great vessels. Stage III for tumors with evidence of intrathoracic or extrathoracic metastases. Finally, stage IV for lesions with extrathoracic metastases[5].

Computed Tomography (CT) remains the modality of choice for evaluating initial cross-sectional imaging of mediastinal lesions[6]. CT scan of the chest is considered the imaging study of choice, with surgery being the best option, and the patient probably has an excellent prognosis[7].

Teratomas are the rarest type to appear in the mediastinum[7, 8]. The annual incidence in the United States for non-seminomatous mediastinal germ cell tumors is estimated at approximately 500 cases[3]. In Indonesia, only a few researchers report cases of mediastina teratomas[9,10]. Likewise, the incidence of mature mediastinal teratoma with pericardial effusion is a rare tumor case[2]. CT scan results in several cases found cystic lesions attached to pericardial cysts suggestive of pericardial[11] and pericardial masses suspected of heterogeneous myxoma[12]. Therefore, it is essential to present a case study regarding the findings of recurrent mediastinal teratomas accompanied by pericardial effusion.

The treatment for non-malignant mediastinal teratoma cases is surgery and total tumor excision[12], and it is combined with chemotherapy to increase survival rates in malignant teratomas[7, 13]. However, this case study found recurrent mediastinal teratoma accompanied by pericardial effusion. Based on the previous description, this case study aims to describe the findings of recurrent mediastinal teratomas accompanied by pericardial effusion.

CASE PRESENTATION

A 19-year-old male patient complained of persistent shortness of breath. The patient had previously undergone teratoma surgery. Patients undergo chest X-rays, CT scans, abdominal ultrasounds, and cardiac ultrasounds at the dr Ario Wirawan lung hospital's radiology installation. The patient underwent a biopsy and found a teratoma with a large size of 14 cm. Furthermore, these mediastinal teratoma patients underwent radiation therapy, which gave an excellent response to radiation with a 40-80% curative rate.

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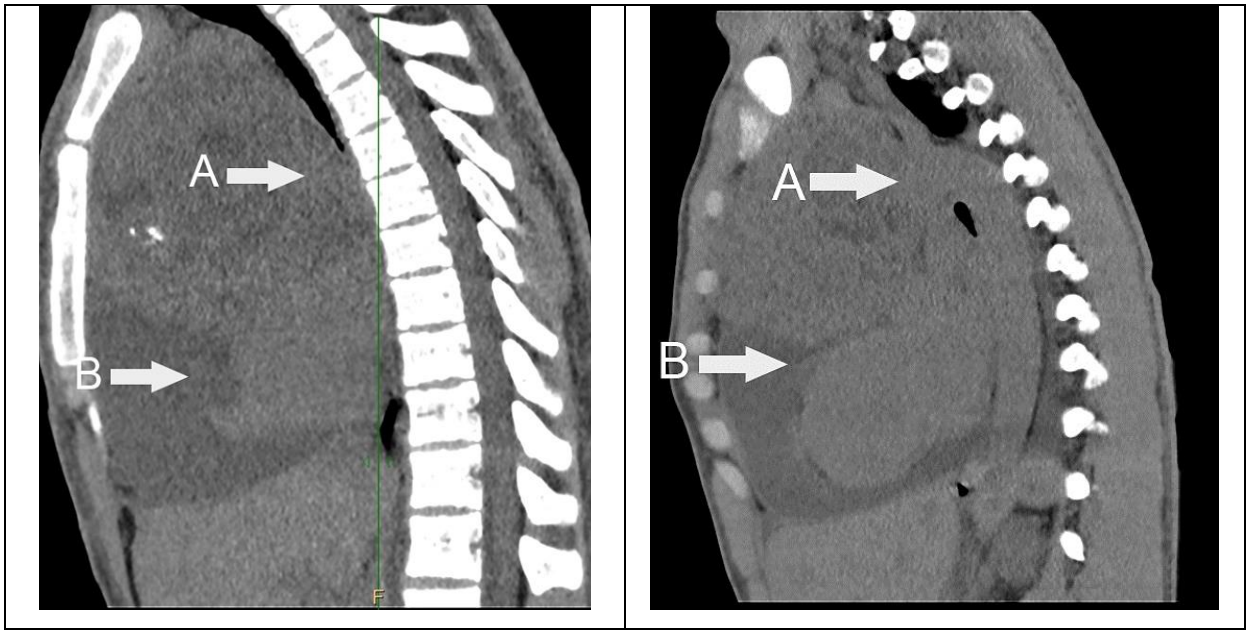

Figure 1. CT-scan imaging found a teratoma tumor 14 cm large, pericardial effusion (A), and mass in the mediastinum (B). (RSPAW Radiology Department, 2023)

DISCUSSION

Recurrent teratoma in the mediastinum with pericardial effusion is a medical condition that refers to a teratoma tumor that has grown back in the mediastinum (central part of the chest) after having been previously surgically removed. Teratoma is a tumor consisting of tissue derived from various abnormal cells and body tissues. At the same time, pericardial effusion is a condition in which fluid buildup around the heart (pericardium) can interfere with heart function.

This case is an emergency because of the formation of pericardial effusion fluid, which will press on the dimensions of the heart chambers so that it requires immediate treatment and fast and appropriate treatment. The procedure is usually surgery to remove the tumor and treat the pericardial effusion. Additional therapy, such as chemotherapy or radiotherapy, may be given depending on the tumor's size, type, and level of malignancy. Consult with a thoracic surgeon or oncologist to get the proper treatment.

In this case, a CT scan was performed a non-contrast non-contrast CT scan of the chest. CT scan examination was carried out using a 128-slice CT scan. The CT scan found a teratoma-type mediastinal tumor accompanied by much pericardial effusion—a hyperechoic lesion with clear boundaries, round-oval in shape, lobulated with enormous size. Urgent mediastinum locations involve the left ventricle, right ventricle, left atrium, and right atrium. There is also an aortic pressing lesion accompanied by calcification (+). However, there was no narrowing of the heart valves, and the dimensions of the heart chambers did not appear dilated. In addition, global wall motion appeared normal, left ventricular function (EF=65.3%), and no right-left pleural effusion appeared.

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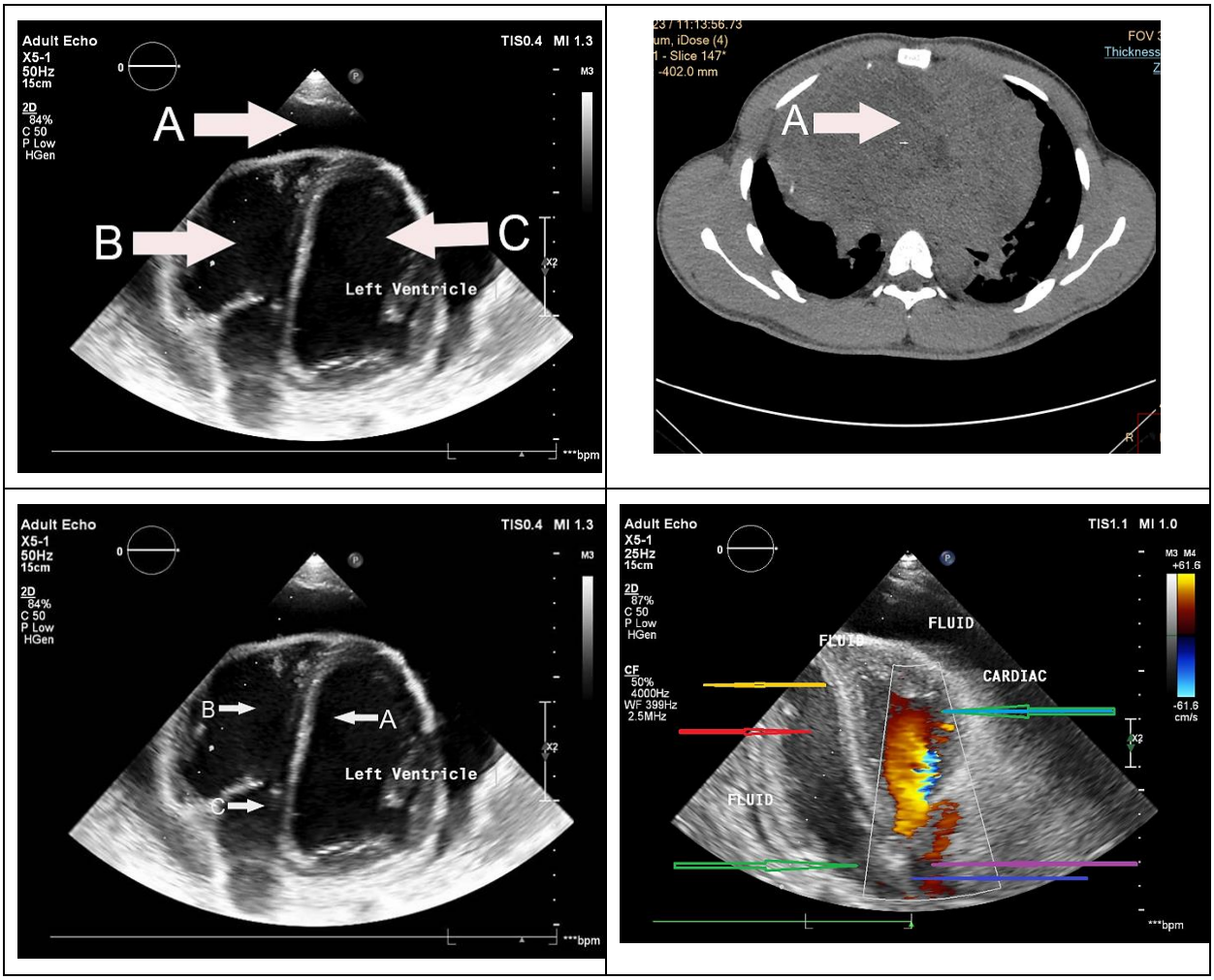

Figure 2. Cardiac Ultrasound found pericardial effusion (A), right ventricle (B);, and left ventricle (C). (RSPAW Radiology Department, 2023)

Figure 3. CT-scan picture showed massa mediastinum (A) (RSPAW Radiology Department, 2023)

Figure 4. **A** Cardiac Ultrasound image showed the septum interventricular (A), right ventricle (B), and right atrium (C). (RSPAW Radiology Department, 2023)

Figure 5. Color Doppler ultrasound sonography result, the yellow arrow is the septum interventricular, the red arrow is the right ventricle, the green-blue arrow is the left ventricle, the green arrow is the right atrium, the blue arrow is the septum interatrial, and the pink arrow is the left atrium. (RSPAW Radiology Department, 2023)

A thoracic CT scan is essential in cases of mediastinal teratomas because it can evaluate mediastinal tumors and their extensions—furthermore, the presence of tumor metastases to regional or distant lymph nodes. CT scan of the chest is essential in cases of mediastinal teratomas because it can evaluate mediastinal tumors and their extension. This result is consistent with the study's results that CT imaging allows the correct diagnosis of mediastinal tumors in most cases[14]. In addition, a CT scan can diagnose the presence of tumor metastases to regional or distant lymph nodes.

In this patient, ultrasonography (USG) examination was also performed using non-doppler and heart Doppler to follow up on pericardial effusion fluid. On ultrasound examination of

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the heart, a lot of pericardial was found, but no collapse (pressing) was found. The function of the heart valves in the patient did not show any abnormalities. This finding is consistent with previous reports that USG guides the diagnostic process of CT scans for the final diagnosis of mediastinal teratomas[15].

CONCLUSION

Recurrent teratomas with large-volume pericardial effusions are rare. In this case study, a teratoma ulcer occurred in a 19-year-old boy in the mediastinum. This case can be established using a contrast thoracic CT scan with axial, coronal, and sagittal slices. The results of other examinations with ultrasonography (USG) of the heart found a pericardial effusion. This case of recurrent teratomas indicates a type of mature teratomas, but the dimensions of the heart chambers do not collapse. The patient's treatment has been carried out in surgical operations and then continued with irradiation (radiotherapy).

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