Mature Cystic Teratoma In A Patient with Wolf Parkinson White Syndrome

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Abstract

In this study, we presented a 14-year-old patient who referred to a pediatric cardiology clinic with chest pain and tachycardia, whose electrocardiography examinations determined Wolf-Parkinson-White Syndrome, and in the anteroposterior chest radiography, a left-sided para-cardiac mass was detected. A lesion originating from the middle mediastinum and measuring 55×56 mm at its widest point was observed in the Computed Tomography scan. During surgery, the thorax was entered via a left muscle-sparing mini-thoracotomy, and the mass was excised completely. The histopathological examination result was evaluated as mature cystic teratoma. We presented this case because there has been no co-incidence between mature cystic teratoma and WPW syndrome in the literature before.

Keywords

- Wolf Parkinson White
- Teratoma
- Mediastinum

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Introduction

Wolf-Parkinson-White (WPW) syndrome is an uncommon clinical condition among the preexcitation syndromes that results from an anomaly in the atrioventricular (AV) conduction pathways. While this illness is typically associated with tachycardia in young adults, children can also present with identical symptoms. Heart abnormalities related with WPW syndrome can cause a number of cardiovascular and neurological issues. Mature cystic teratomas are a form of germ cell tumor that is typically found in the ovaries, sacrum, and testicles. They can, however, appear in the mediastinum on rare occasions. Mature cystic teratomas have a clinically varied history due to the variety of tissues they contain, which may include histopathologically differentiated tissues.

This research describes the coexistence of WPW syndrome with mature cystic teratoma in a patient who presented to the pediatric cardiology department with complains of chest pain and tachycardia. Previous studies in the literature on the co-occurrence of these two illnesses are scarce, and this case stands out as an unusual coincidence. This study focuses on the clinical characteristics of our patients, as well as diagnostic tools and treatment tactics. Furthermore, it aims to provide a better understanding of the relationship between WPW syndrome and mature cystic teratoma, based on the current literature.

Case Presentation

A 14-year-old patient was admitted with complaints of chest pain and tachycardia, and the electrocardiography (ECG) taken in our pediatric cardiology clinic determined a short PR interval, delta wave and widening of the QRS distance **(Figure 1).**

A left para-cardiac lesion was observed in the anteroposterior Chest X-Ray of the patient, whose ECG findings were compatible with Wolf-Parkinson-White Syndrome (WPW) **(Figure 2).** No supra-ventricular tachycardia (SVT) attack was determined in the 24-hour rhythm Holter ECG. In the echocardiography, it was determined that the lesion had fibrous adhesions to the pericardium without any invasion to it. In the left anterior, para-cardiac area, a lesion originating from the middle mediastinum, 55×56 mm in size at its widest point, containing cystic and solid components, was observed in the

Computed Tomography scan **(Figure 3).** In consultation with the thoracic surgery clinic, it was thought that there might be teratoma in the anterior mediastinum.

Respiratory and heart sounds of the patient were normal in the physical examination, while Alpha-Feto Protein (AFP) (0.66 ug/L) and beta-Human Chorionic Gonadotropin (β-HCG) (<0.5 IU/L) levels were also found to be normal in the biochemical examinations. Interventional radiology opinion was requested for diagnostic trans-thoracic fine-needle aspiration biopsy (TTFNAB) from the mass. However, it was not necessary to perform TTFNAB since the mass contained cystic and solid components; teratoma was considered to be present in the anterior, and total excision was planned as a result of the clinical-radiological evaluation. Left muscle-sparing mini-thoracotomy was performed on the patient. The mass was observed to be adjacent to the pericardium and lung in the left para-cardiac area. The cohesiveness of the mass to the lung was completely removed with combination of blunt and sharp dissections. While the cohesiveness of the mass with the pericardium was removed, an opening occurred in the mass. Light yellow-colored, viscous material was aspirated from the mass and the mass was excised totally **(Figure 4).**

Due to the risk of SVT pathogeny, the beta-blocker treatment that the patient was receiving in the preoperative period was continued. The pathology result was compatible with mature cystic teratoma.

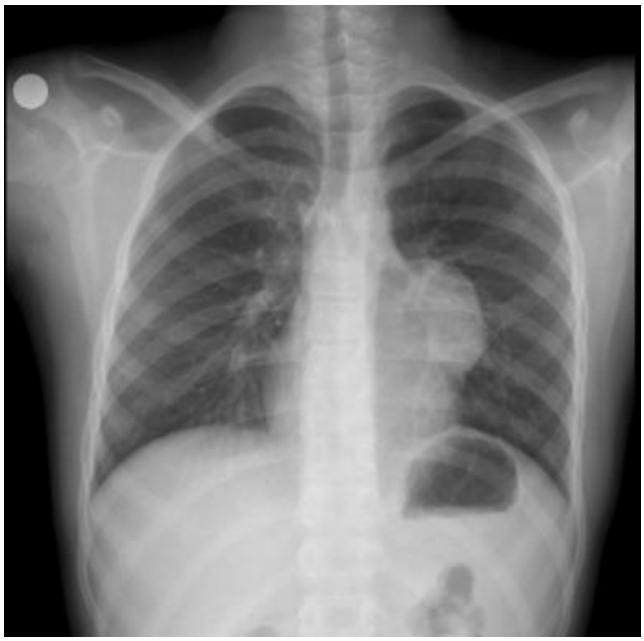

Figure 1: Anteroposterior chest radiograph of the left paracardiac lesion

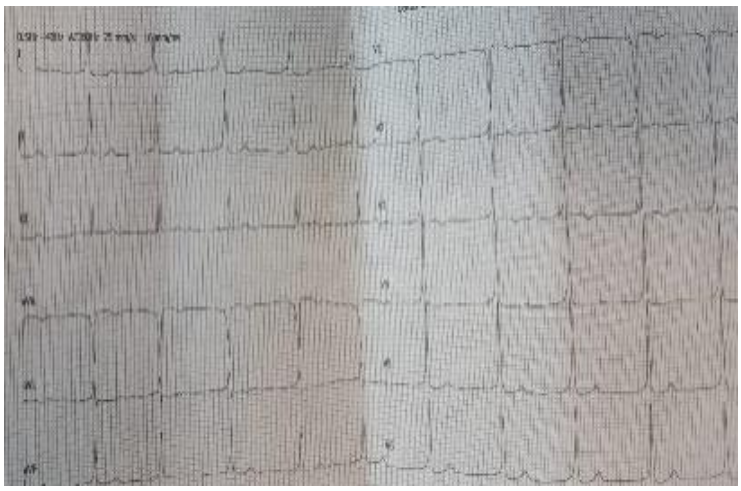

Figure 2: ECG sample with short PR distance, wide QRS interval and Delta waves (Wolf-Parkinson-white Syndrome).

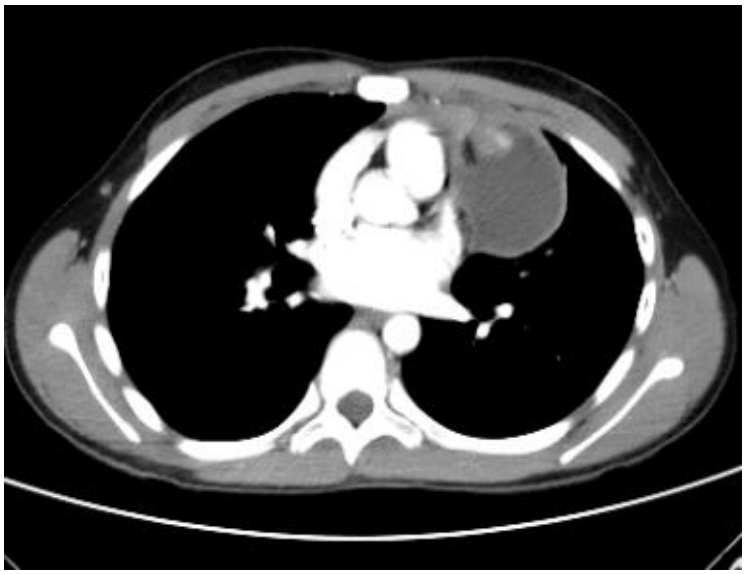

Figure 3: Lesion in the left anterior mediastinum with paracardiac fluid density and areas of fat density.

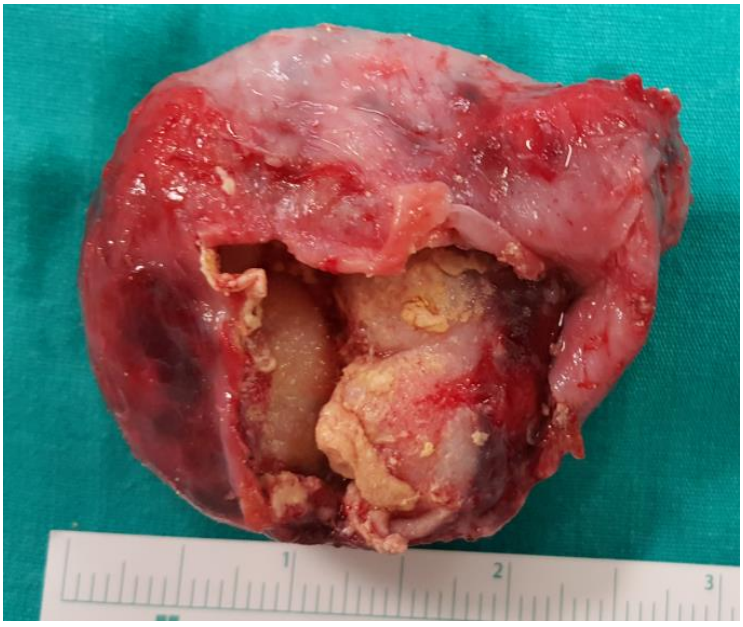

Figure 4: Macroscopic view of the total excised lesion.

Discussion

Teratoma was first defined by Willis in 1953 as an abnormal tissue accumulation originating from three germinal layers. Mature cystic teratoma, which can also be found in the mediastinum, is usually detected in adolescence and young adults, as in our case with a 14-year-old patient.[1] Some cases may be asymptomatic, while others may present with chest pain due to mass compression. It is mostly cystic in structure and is in benign character with 80% probability.[2] They mostly contain sebaceous gland, pilar, hair and ectodermal components. However, sometimes endodermal and mesodermal elements can also be found additionally. Although mature cystic teratomas are often located in the anterior mediastinum, they can also be found in the middle mediastinum or even in the posterior mediastinum, as in our case.[3] The lesion was located in the anterior mediastinum in our case. They usually do not show a tendency towards malignant degeneration. Computed tomography is helpful in identifying the different tissues within the teratoma and showing the pressure on the surrounding tissues. Most of the lesions in the pediatric group are symptomatic while some cases can be asymptomatic. As in our case, chest pain due to pressure is the most common symptom. Cough, dyspnea, empyema, hemoptysis, cardiac tamponade, atelectasis, and pneumothorax may develop. In asymptomatic cases, teratomas are detected incidentally in chest X-ray or other screening methods. AFP and β-HCG may provide clues for the diagnosis. In mature teratomas, these parameters are negative; positivity is in favor of malignancy. In our case, the test results were negative. Öncel et al. reported dermoid cyst and sinus tachycardia association on the ECG examination in a 45-year-old female patient.[4]

The treatment of mature teratomas located in the mediastinum is total excision of the mass. Adjuvant chemotherapy or radiotherapy has no place in the treatment.[5] Invasive diagnostic methods, such as trans-thoracic fine-needle aspiration biopsy, mediastinoscopy, or mediastinotomy are also applied for cytological and histological diagnosis. Video-assisted thoracoscopic resections (VATS) are also preferred for small and encapsulated tumors. In recent years, robotic surgery has substituted for VATS in surgical resection with its rapid development.[6] In suspicious cases, if the lesion is located laterally or posteriorly, diagnostic-therapeutic

thoracotomy may be the proper option. In our case, there were findings suggesting teratoma in the preliminary diagnosis in the radiological examination, so no other diagnostic method was needed and exploratory thoracotomy was decided.

We did not find any case reports on the association of WPW syndrome and mature cystic teratoma in the literature search we conducted.

Conclusion

In this study we describe the link between Wolf-Parkinson-White (WPW) syndrome and mature cystic teratoma in a pediatric cardiology clinic patient. There are few cases of these two illnesses coexisting in the literature, thus this unusual relationship is very interesting. This study advances our understanding of this rare association by focusing on the patient's clinical characteristics, diagnostic procedures, and therapeutic choices.

The connection of WPW syndrome with mature cystic teratoma is a rare but significant coincidence in our clinical practice, and this study helps to improve the detection and management of this uncommon entity. A broader study of such situations is needed to create better diagnostic and treatment solutions for comparable cases.

Ethical Consideration

This study was reviewed and approved by the İnonu University Scientific Research and publishing Ethics Board(ethics approval refence number 2024/5785(

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Conflict of interests

There is no conflict of interest

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