

Anterior Mediastinal Teratoma Presenting as Persistent Cough in a Child

Neehar Haryadi ¹, Natraj Ballal ^{2*}, Philip B. Jeffrey ³, Don E. Eslin ³

¹ Central Michigan University School of Medicine

^{2*} MD, Bay Pediatric Cardiology, 2727 W Dr Martin Luther King Jr Blvd Ste 620, Tampa, Florida 33607 United States

³ St. Joseph's Children's Hospital Tampa, University of Pittsburgh Medical Center

ARTICLE INFO

ABSTRACT

2024 Volume 1

<https://www.doi.org/ccrcr.2024.tgc.0316>

Article History:

Received: Jul 30, 2024

Accepted: Aug 12, 2024

Published: Sep 16, 2024

Citation: Neehar H., Natraj B., Philip B.J., Don E.E. (2024). Anterior Mediastinal Teratoma Presenting as Persistent Cough in a Child. *Chronicles of Clinical Reviews and Case Reports*, The Geek Chronicles, 1, 1-5.

Copyright: © 2024 Natraj Ballal, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Keywords: Cardiology, Cardiac Surgery, Teratoma, Tumor, Case Report

An anterior mediastinal teratoma in a child has never previously been reported presenting as a persistent dry cough. In this case, 5-year-old female with an initial history of respiratory syncytial viral infection, presented with a persistent cough for over 2 months. Asthma seemed the likely diagnosis initially. However, chest x-ray showed significant cardiomegaly. Echocardiogram was normal. CT scan of chest showed a large anterior mediastinal mass, likely teratoma. The mass was surgically resected, and diagnosis was confirmed by histopathology. In the future, it is critical physicians perform radiographical imaging to further investigate a persistent cough in pediatric patients.

Article Summary

5-years-old female presented with a persistent cough and no other respiratory complaints. CT scan of chest showed a large anterior mediastinal mass, likely teratoma.

Abbreviations: CT- computed tomography MRI- magnetic resonance imaging

Introduction

Mediastinal teratomas are rare tumors and occur in 7 to 11% of the population [4]. They generally occur in the age range of 20-40 years [5]. In the neonatal age group, most teratomas are benign and occur mainly in the sacrococcygeal area followed by the anterior mediastinum [1]. They are of germ cell origin that grow in the area between the two lungs. These masses generally arise from ectopic pluripotent stem cells that failed to migrate from the yolk endoderm to the gonad. They contain elements from all embryological layers (endoderm, mesoderm, and ectoderm.) They may contain several different types of tissue such as hair, muscle, and bone [1]. As the teratoma gets larger, patients generally present with chest tightness, dyspnea, neck mass, and/or cough. Patients generally present with at least two of these respiratory symptoms. However, they are difficult to diagnose in patients with other respiratory infections who also present with similar symptoms without

radiography. They are diagnosed by using a CT scan or MRI of the chest [1].

History

This case involves a 5-year-old female who presented with a persistent cough without any other associated pulmonary complaints. She tested positive for a respiratory syncytial virus infection in January 2023. Patient was experiencing cough and had been taking albuterol as needed. The cough persisted despite albuterol therapy. The mother denied any cardiac complaints and the patient was a very active child who did not tire easily. Family history was positive for asthma and kidney problems. Patient had a history of joint hyper flexibility. There were no other past medical complaints.

Tests and Measurements

Two months after the respiratory syncytial viral infection, due to persistent cough, a chest x-ray was performed, in March 2023. Chest x-ray showed a significant enlargement of the cardiac silhouette (Figure 1).

Figure 1. Pre and post chest x-ray images of the patient before and after surgical resection of the mass



A previous chest x-ray performed in 2019 was normal. Subsequently, an echocardiogram

performed was normal with no masses. A follow-up CT scan of the chest showed a large

well-circumscribed anterior mediastinal mass measuring 6.5 x 6.0 x 8.6 cm. The mass was heterogeneous in attenuation containing macroscopic fat, coarse calcifications, and solid components, which likely represented a mature teratoma. There was a mass effect on the heart, specifically the right atrium. Results of beta human chorionic gonadotropin, alpha fetoprotein, and Cancer Antigen-125 tumor tests were negative.

Diagnosis/Treatment

Based on the above findings, we surmised that it was a benign mature teratoma. In June 2023, the mediastinal teratoma was successfully resected in its entirety. The patient's post-operative care was uneventful.

Histopathology

The mediastinal teratoma was a well-circumscribed mass measuring 7 x 6 centimeters and arising adjacent to normal thymus (Figure 2).

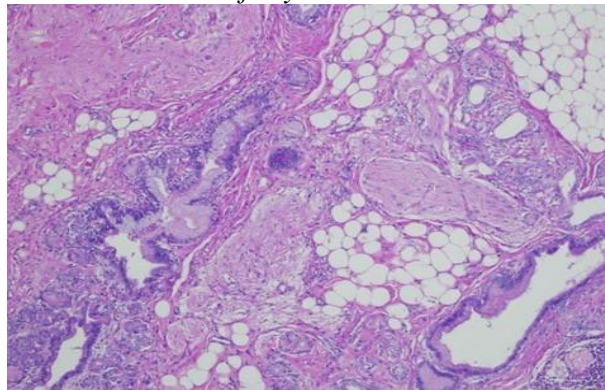
Figure 2. Anterior mediastinal mass measurement



On section, the teratoma demonstrated both solid and cystic components as well as bone and a solitary tooth. Microscopic examination of representative sections of the tumor demonstrated several features typical of mature

teratomas including fat, respiratory tract, cartilage, bone, skin, and glial tissue. Immature or malignant elements were not identified (Figure 3).

Figure 3. Low power microscopic view of mature teratoma demonstrating respiratory, glial, and fatty tissue



Follow Up

Following the surgery, the family reported that the cough had improved. Post-operative chest x-ray showed a normal cardiac silhouette. The patient will receive prospective follow-up care.

Discussion

An anterior mediastinal teratoma with persistent dry cough, in a pediatric patient, has not been reported to date. Hence, we would like to present our case. Mediastinal tumors are rare in general, especially in children. The majority of teratomas of the mediastinum are benign [3]. They can be asymptomatic, but at times show respiratory signs like cough and distress. They can present with hemoptysis, skin fistula, pericardial effusion, tracheal compression, facial swelling, and plethora [2]. Other tumors in the anterior mediastinum include thymoma, thyroid goiter, soft tissue sarcomas and lymphoma. Mature teratomas occur in other areas such as the sacrococcygeal, cervical, central nervous system, and retroperitoneal regions [1]. It is a solid tumor that contains normal tissues like teeth, bone, and hair and very rarely whole organs. However, the prognosis of these patients is usually excellent following a surgical resection of the mass [3]. It is difficult to diagnose mediastinal masses without radiography. Radiography is a simple tool to thoroughly investigate children with persistent cough, stridor, noisy breathing, etc. Timely intervention with radiography played a critical role in the successful management of our patient. This case report examines a different presentation for an anterior mediastinal teratoma, but more research needs to be conducted regarding the prevalence of anterior mediastinal teratomas presenting with a persistent dry cough in pediatric patients.

Conflict of Interest Disclosures (includes financial disclosures):

We have no known conflict of interest to disclose.

Funding/Support: No funding was secured for this study.

Contributors Statement Page

Neehar Haryadi conceptualized and designed the study, drafted the initial manuscript, and critically reviewed and revised the manuscript.

Dr. Natraj Ballal conceptualized and designed the study and critically reviewed and revised the manuscript.

Dr. Philip B. Jeffrey collected and analyzed the mediastinal mass and critically reviewed and revised the manuscript.

Dr. Don E. Eslin collected and analyzed the blood samples and critically reviewed and revised the manuscript.

All authors approved the final manuscript as submitted and agreed to be accountable for all aspects of the work. All authors have no financial disclosures or conflicts of interests.

Learning Objectives

The presentation of an anterior mediastinal teratoma is moderately understood in the adult population. However, mediastinal teratomas are very rare and are even more rare in the pediatric population. The clinical presentation of these teratomas is less understood in the pediatric population. This case report is especially unique because of the abnormally large size of the teratoma with minimal symptoms in the child.

Patient Permission/ Consent Statement

The patient's consent has been taken and documented.

References

1. Lakhoo K. (2010). Neonatal teratomas. *Early human development*, 86(10), 643–647.
2. Liu, J., Tian, B., Zeng, Q. *et al.* Mediastinal teratoma presenting with hemoptysis and pleuritis misdiagnosed as tuberculosis (empyema). *BMC Pediatr* 18, 382 (2018).
3. No, T.-H., Seol, S.-H., Seo, G.-W., Kim, D.-I., Yang, S. Y., Jeong, C. H., Hwang, Y.-H., & Kim, J. Y. (2015). Benign mature teratoma in anterior mediastinum. *Journal of Clinical Medicine Research*, 7(9), 726–728.
4. Takrouri, Mohamad & Alqahtani, Aayed & Ali, Ali & Alshakweer, Wafaa & Kalou, Mohammed & Radwan, Sabry. (2009). Management of neonatal massive anterior mediastinal teratoma. *Middle East journal of anesthesiology*. 20. 461-4.
5. Tian, Z., Liu, H., Li, S. *et al.* Surgical treatment of benign mediastinal teratoma: summary of experience of 108 cases. *J Cardiothorac Surg* 15, 36 (2020).