

Late Presentation of Coarctation of the Aorta in an 11-Year-Old Male Child: A Case Study

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DOI: <https://doi.org/10.58624/SVOAPD.2024.03.066>

Received: May 05, 2023 Published: May 28, 2024

Abstract

Introduction: Coarctation of the aorta is a condition characterized by a narrowed segment of the aorta due to thickening of the artery wall. This case study highlights the late diagnosis of coarctation of the aorta in an 11-year-old male child who presented with symptoms initially suggestive of a respiratory infection.

Case study: An 11-year-old male presented to the outpatient department with chief complaints of fever, cough, and poor appetite. He developed two episodes of epistaxis and hypertension with soft systolic murmur. Echocardiography showed severe coarctation of the aorta.

Discussion: Coarctation of the aorta is a relatively common congenital heart defect that can remain asymptomatic until later in childhood or adulthood. It is the seventh most common type of CHD. The delay in the diagnosis of coarctation of the aorta underscores the challenges of recognizing cardiac anomalies in pediatric patients presenting with nonspecific complaints.

Conclusion: Healthcare providers must remain vigilant and thorough in their assessment to prevent late diagnoses and associated complications in pediatric patients.

Keywords: Coarctation, Aorta, Blood pressure, Congenital, Heart, Cardiac

Introduction

Coarctation of the aorta is a condition characterized by a narrowed segment of the aorta due to thickening of the artery wall. (1) The specific process by which aortic coarctation occurs is not fully grasped. The main theories put forward include hemodynamic and ectopic ductal tissue hypotheses. According to the hemodynamic theory, irregular preductal flow or an abnormal angle between the ductus and aorta can lead to increased right-to-left ductal flow and decreased isthmus flow, which can contribute to the development of coarctation. Following birth, the natural closure of the ductus arteriosus finalizes the formation of aortic obstruction. (2,3) This case study highlights the late diagnosis of coarctation of the aorta in an 11-year-old male child who presented with symptoms initially suggestive of a respiratory infection. The delayed recognition of the underlying cardiac condition underscores the importance of thorough evaluation, especially in cases where symptoms may mimic common illnesses.

Case Presentation

An 11-year-old male presented to the outpatient department with chief complaints of fever, cough, and poor appetite over the past five days. Despite a history of self-limiting epistaxis, the patient was previously thriving well with no significant medical history, allergies, recent travel, or sick contacts. On examination, he displayed a high temperature (39.3°C), tachycardia (122/min), and elevated blood pressure (139/88 mmHg), initially attributed to stress. Physical findings included lethargy, dehydration, pallor, congested nasopharynx, normal ear examination, systolic murmur on cardiac auscultation, and respiratory crepitations. Notably, two consecutive episodes of severe epistaxis prompted further evaluation.

Diagnostic Workup

Initial investigations revealed normal CBC, renal function, and CRP levels. A positive respiratory panel for *Mycoplasma pneumoniae* led to the initiation of Clarithromycin. Following the second episode of epistaxis, a significantly elevated blood pressure of 170/90 mmHg prompted consultation with pediatric cardiology. Subsequent echocardiography revealed bicuspid aortic valve, mild aortic regurgitation and stenosis, mild mitral regurgitation with mild flow acceleration, and severe coarctation of the aorta with normal biventricular function. (Figures 1,2,3)



Figure 1. Supra-sternal views Showing : Ascending aorta, Descending aorta, Coarctation after the original part of left subclavian artery.

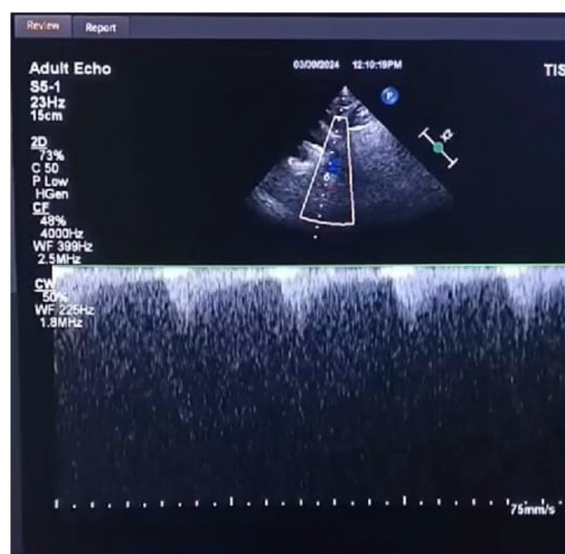


Figure 2. Continuous flow doppler over the coarctation showing Peak gradient 64 MMHG.



Figure 3. Suprasternal view over the aorta with colour flow across the coarctation showing significantly narrowing of the flow after the origin of left subclavian artery.

Management and Outcome

Upon confirmation of the coarctation of the aorta, the patient was started on low-dose Atenolol for blood pressure management. The late diagnosis of this critical congenital heart defect highlighted the importance of considering cardiac conditions in pediatric patients presenting with atypical symptoms. Early recognition and intervention are crucial in preventing complications and improving long-term outcomes in patients with coarctation of the aorta.

Discussion

Coarctation of the aorta is a relatively common congenital heart defect that can remain asymptomatic until later in childhood or adulthood. It is comprising 5-8% of all cases. It can manifest on its own or alongside other conditions, often in conjunction with bicuspid aortic valve and ventricular septal defect (VSD). Detecting CoA can be challenging, as it is frequently not diagnosed until symptoms like congestive heart failure (CHF) in infants or hypertension in older children arise. (3) It is the seventh most common type of CHD. (4) For newborns with a notable Coarctation of the Aorta (CoA) and no other heart issues, there might be minimal signs of a serious problem until the duct closes and lower limb blood flow is affected. It's crucial to recognize that even if a newborn shows a normal heart ultrasound right after the closure of the duct, CoA may manifest clinically at a later stage. (5) In this case, the atypical presentation of symptoms, such as fever, cough, and epistaxis, initially masked the underlying cardiac pathology. The presence of a systolic murmur raised suspicion and warranted further cardiac evaluation. The delay in the diagnosis of coarctation of the aorta underscores the challenges of recognizing cardiac anomalies in pediatric patients presenting with nonspecific complaints. Transthoracic echocardiography is the most convenient noninvasive method for assessing Coarctation of the Aorta (CoA) available to physicians. A thorough echocardiogram is advised for the initial assessment of a patient with a history of repaired CoA or suspected CoA. Apart from examining the coarctation, it is crucial to look for signs of left ventricular pressure or volume overload, left ventricular hypertrophy, size, and both systolic and diastolic function of the left ventricle. Special focus should be given to detecting any linked heart defects, particularly those affecting the left side. Examination of the aortic valve morphology and checking for sub valvular, valvular, and supra valvular aortic stenosis is crucial. Monitoring the size of the aortic root and ascending aorta over time can help in evaluating any related aortic issues. In our case, Coarctation of the Aorta (COA) was identified through an echocardiogram following an unusual presentation at the age of 11. This underscores the significance of maintaining a high level of suspicion in such scenarios.

Conclusion

This case emphasizes the importance of maintaining a high index of suspicion for underlying cardiac conditions in pediatric patients, especially when symptoms are atypical or do not align with the initial clinical presentation. Prompt recognition and appropriate diagnostic evaluation are crucial in ensuring timely management and optimal outcomes for children with congenital heart defects like coarctation of the aorta. Healthcare providers must remain vigilant and thorough in their assessment to prevent late diagnoses and associated complications in pediatric patients.

Acknowledgements

None.

Conflict of Interest

No potential conflicts of interest to disclose.

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Citation: Mohamed E, Ahmed E. Late Presentation of Coarctation of the Aorta in an 11-Year-Old Male Child: A Case Study. *SVOA Paediatrics* 2024, 3:3, 57-60.

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