CASE REPORT

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Incidentally Detected Aortic Coarctation During Evaluation of Newly Diagnosed Hypertension in A Young Adult

ABSTRACT

Coarctation of the aorta is a congenital condition that may remain clinically silent until adulthood. We report the case of a 20-year-old male who presented with headache and was found to have newly diagnosed hypertension on routine examination. Further evaluation for secondary causes of hypertension incidentally revealed a previously undiagnosed aortic coarctation. This case highlights the importance of systematic evaluation of young patients with hypertension and reinforces the need to consider congenital cardiovascular anomalies even in the absence of classical clinical signs.

Key words: Aortic coarctation; Secondary hypertension; Young adult; Congenital heart disease; Incidental diagnosis.

INTRODUCTION

Aortic coarctation accounts for approximately 5–8% of congenital heart disease and is a well-recognized cause of secondary hypertension in children and young adults.[1,2] While severe forms are often detected in infancy, milder forms may remain undiagnosed until adulthood, frequently presenting as hypertension or being detected incidentally during evaluation for unrelated symptoms.[3,4] We describe a case of late-presenting aortic coarctation diagnosed during work-up of newly detected hypertension in a young adult.

CASE PRESENTATION

A 20-year-old male with no known past medical history presented with complaints of intermittent headache for several weeks. There was no history of chest pain, dyspnea, claudication, syncope, palpitations, or prior cardiovascular disease. He had no known family history of premature cardiovascular disease or hypertension.

On routine clinical examination, Radio-femoral pulse delay was noted, and blood pressure was found to be elevated with upper limb systolic BP of 150 mmHg and lower limb Systolic BP of 110mmHg.Repeat measurements confirmed persistent hypertension. Head-to-toe examination was unremarkable with no features suggestive of endocrine causes of hypertension, no visible pulsations, or lower limb underdevelopment. On cardiovascular examination, a loud A2 component of the second heart sound and Ejection systolic murmur heard over the left upper sternal border with radiation to the interscapular region, and a Continuous murmur over the back. Chest X-Rays, ECG, and 2D-echo were advised.

Chest X-Ray PA showed B/L inferior rib notching of posterior 3-8 ribs and “figure of 3”contour along the left mediastinal border with normal sized cardiac silhouette and normal pulmonary vasculature.

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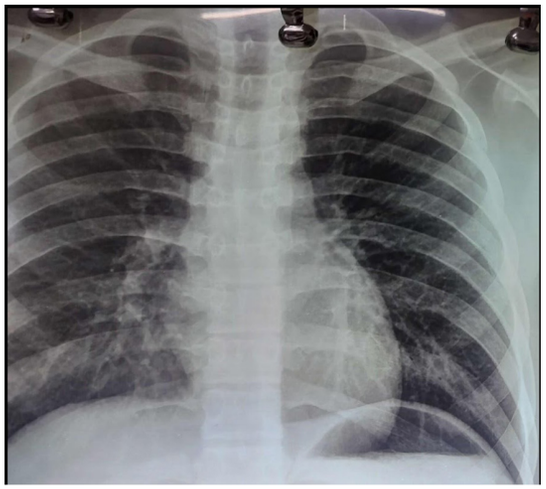
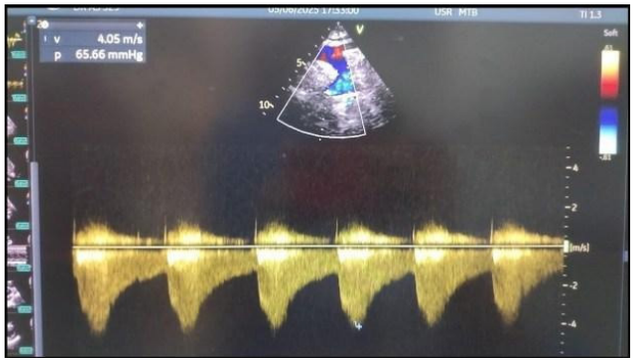


ECG : Sinus rhythm with Left Axis Deviation
Echocardiography showed LVEF of 55% with Bicuspid Aortic valve ECG:
Echocardiography: Suggested narrowing of the descending thoracic aorta with Doppler evidence of increased gradient across the segment of 65mmHg and double density with “diastolic tail “ hallmark of coarctation of aorta .



"Diastolic Tail"

In Aortic Coarctation, the diastolic gradient is mild due to collateral flow; however, they are not enough to prevent the marked systolic gradient drop. On spectral Doppler as opposed to early diastolic reversal in the healthy aorta, there is persistent antegrade flow in diastole from the collaterals in coarctation, called Diastolic Tailing. It signifies a hemodynamically significant aortic coarctation.

Investigations

Laboratory investigations: Within normal limits, excluding renal and endocrine causes of secondary hypertension.

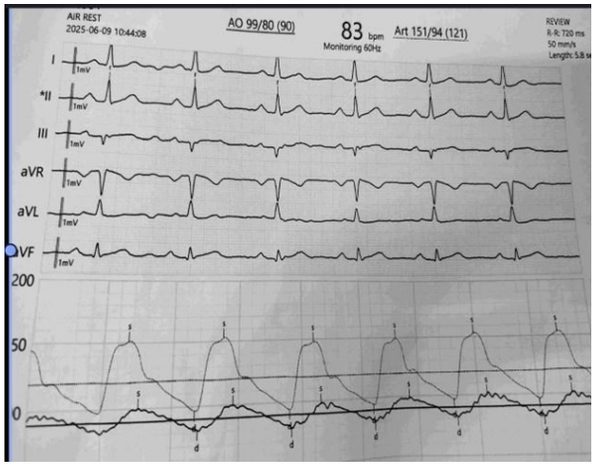
Diagnosis: aortic coarctation presenting as secondary hypertension in a young adult

Management

The patient was initiated on antihypertensive therapy for blood pressure control, and was advised Cath study.

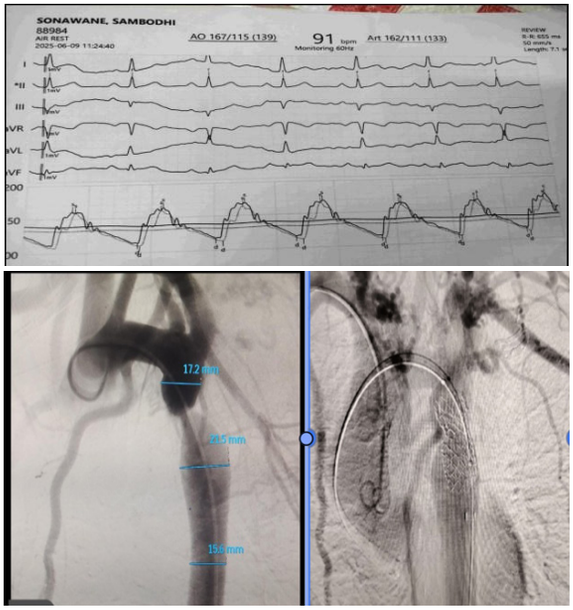
Left ventricle to Aorta pullback showed no significant gradient

Ascending to Descending Aorta showed a peak-peak gradient of 52mmHg. Diastolic gradient not marked, signifying well-developed collaterals. Aortogram showed pre-stenotic dilatation of the aorta and left subclavian, and post-stenotic dilatation correlating with X-ray findings and a diameter of 15.6 mm in the descending aorta, and planned for Percutaneous Stenting with a Bare metal stent.



Post Stenting

Equalization of Systolic Pressures



DISCUSSION

Aortic coarctation is an important and potentially reversible cause of secondary hypertension in young individuals. Adult presentation is often subtle, and classical signs such as radio-femoral delay or systolic murmurs may be absent, leading to delayed diagnosis. Headache may be the only presenting symptom, related to uncontrolled hypertension.

This case underscores the importance of considering structural cardiovascular causes during evaluation of young patients with hypertension. Cross-sectional imaging plays a crucial role in confirming the diagnosis and guiding management. Early recognition is essential to prevent long-term complications such as premature coronary artery disease, stroke, heart failure, and aortic rupture.

LEARNING POINTS

Aortic coarctation should be considered in all young patients with newly diagnosed hypertension.

Early diagnosis allows timely intervention and improves long-term cardiovascular outcomes.

Patient Consent

Written informed consent was obtained from the patient for publication of this case and accompanying images.

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