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Coarctation of the Aorta: A Rare Cause of Uncontrolled Hypertension

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Abstract: Aortic coarctation is a disease of the aorta, which is characteristically detected at the insertion of the ductus arteriosus just distal to the left subclavian artery and narrows the remainder part of the aorta. The majority of aortic coarctation cases are congenital. In formerly unrecognized patients, the most known presenting sign is hypertension. The detecting of reduced systolic blood pressure in the lower extremities compared with upper extremities make think a diagnosis of coarctation of the aorta, which can be often verified by echocardiography or alternate imaging modalities. Medical care depends upon the severity of the coarctation, clinical presentation. and patient age. Options for correction of coarctation of the aorta comprise percutaneous interventions like balloon angioplasty and stent placement or surgical intervention.
Keywords: Coarctation of the Aorta, secondary hypertension, congenital anomaly.

INTRODUCTION

One of the rare cause of secondary hypertension is the coarctation of the aorta (CoA). CoA is characteristically a distinct narrowing of the proximal thoracic aorta [1]. The majority of patients with CoA are diagnosed during childhood [2]. The most common complications of aortic coarctation are hypertension and secondary hypertrophy of left ventricular with accompanied heart failure [2].

Young people may be asymptomatic with incidental systemic hypertension and decreased lower extremity pulses. CoA should always be aforethought in adolescents and young adults with unexplained upper extremity hypertension. We report a rare cause of secondary hypertension which is an unexpected rabbit in the hat.

CASE REPORT

A 21–year–old man,not diagnosed with arterial hypertension previously, was admitted to the internal medicine clinic because of evaluation of the secondary hypertension causes. He had no history of cardiac problems or family history of hypertension. The clinical examination showed a normal body development, a blood pressure of 160/100 mmHg in the right arm and 85/70 mmHg in the right leg, normal heart sounds, 76 bpm. The radial pulses were palpable but no pulse was detected at the palpation of the other peripheral pulses included femoral arteries or distal to that level. Electrocardiography revealed coronary sinus rhythm and no other abnormalities. Cross-sectional echocardiography was suggestive for the diagnosis of CoA because the imaging was consistent with interruption after the left subclavian artery. For directly defining the location of the coarctation, the patient underwent angiography examination that confirmed the presence of the coarctation. Before angiography, he was transferred to the cardiology department for further evaluation.

DISCUSSION

Aortic coarctation is usually observed just distal to the left subclavian artery at the area of the aortic ductal attachment or its residual ligamentum arteriosum. The most common coexisting anomaly is bicuspid aortic valve [3]. Systemic hypertension and secondary left ventricular hypertrophy with heart failure are the most common complications of aortic coarctation. Reduced vascular compliance in the proximal aorta and activation of the renin-angiotensin system in response to renal artery hypoperfusion below the obstruction cause systemic hypertension. chronic pressure overload can cause left ventricular hypertrophy [4]. Congestive heart failure occurs most commonly in infants and then after 40 years of age [4]. Young adults may be asymptomatic with incidental systemic hypertension and reduced lower extremity pulses. Coarctation should always be kept in mind young adults with unexplained upper extremity hypertension. Epistaxis, headaches, leg fatigue, or claudication are other clinical manifestatin of CoA. Older patients may present with angina, symptoms of heart failure, and vascular complications [4].

On physical examination, blood pressure measurements should be obtained in each arm and one leg. In adult CoA, left ventricular hypertrophy is the most expected finding on the ECG. Chest radiographic findings can be diagnostic. Location of the coarctation segment between the dilated left subclavian artery

above and the leftward convexity of the descending aorta below results in the "3 sign" [5] . Transthoracic echocardiography can show the gradient in the descending aorta and describes the presence of left ventricular hypertrophy. Magnetic resonance imaging is accepted best choice for visualizing the anatomy of the descending aorta [6]. Cardiac catheterization should measure pressures and defines collaterals when surgery is considered. Intervention is adviced in patients who have gradients of 20 mm Hg or more on cardiac catheterization or who have signs of significant collateral flow on imaging studies [6]. The choice between catheter intervention and surgical intervention, which should be made in conjunction with a specialist, depends on the associated anomalies and the anatomy of the coarctation segment [5].

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