A Case of Coarctation of the Aorta in a Young Adult

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INTRODUCTION

➢Coarctation of the Aorta describes the congenital narrowing of any region from the distal aortic arch to the abdominal aortic bifurcation.

➢It is a common malformation accounting for 6 to 8 perecent of congenital heart defects. The usual location of the coarctation is just distal to the left subclavian artery.

➢The major clinical manifestation in both children and adults is a difference in systolic blood pressure between the upper and lower extremities. The classic findings are hypertension in the upper extremities, and diminished or delayed femoral pulses.

➢A classic case of coarctation of the aorta in a young adult is presented below with diagnostic imaging and a discussion highlighting the importance of early diagnosis.

CASE SUMMARY

➢19 year old female with a history hypertension diagnosed two months prior to admission presented with two-weeks of fatigue and light-headedness associated with intermittent palpitations.

➢She denied chest pain, shortness of breath, nausea, vomiting, or headache .

➢She reported compliance with her hydrochlorothiazide and clonidine.

➢Brachial blood pressure 220/110 mm Hg (bilaterally) , Pulse 89 bpm

➢No carotid bruits, normal JVP

➢Lung fields clear to auscultation bilaterally,

➢Heart: Regular rate and rhythm, 2/6 systolic ejection murmur over left sternal border,

➢Normal abdominal exam with no bruits.

➢Extremities: non-palpable distal pulses; skin cool to touch in her lower extremities bilaterally. Normal tactile temperature of upper extremities.

➢Ankle blood pressures were equal but 100 mg Hg lower than the systolic brachial blood pressures.

➢Baseline laboratory values including electrolytes and measures of renal function were normal.

➢Labs to evaluate secondary causes of hypertension were unremarkable.

➢Chest x-ray was without evidence of rib notching.

➢CT angiogram was obtained and demonstrated coarctation of the aorta arising distal to the left subclavian artery with the narrowest point measuring only 7.5 mm. Several enlarged bronchial and intercostal arteries were noted.

➢Transthoracic echocardiogram measured a peak transcoarctation velocity of 4.7 m/s and a peak gradient of 89mmHg.

➢Renal ultrasound demonstrated tardus- parvus waveforms in blood flow to both kidneys and a renal vasotec scan showed normal perfusion and cortical uptake bilaterally.

➢Blood pressure was eventually controlled with three oral medications and patient was discharged with follow-up with Cardiothoracic Surgery.

IMAGES

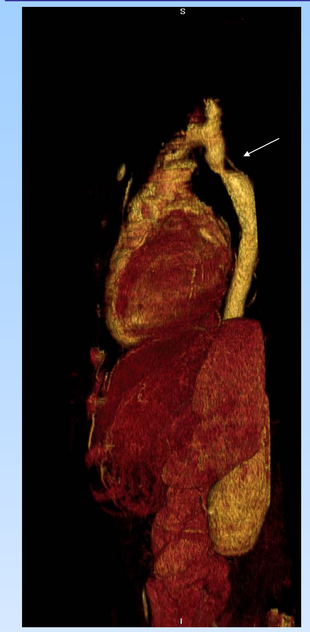

Image 1: Lateral view of 3-D reconstruction of CTA showing coarctation of aorta distal to left subclavian

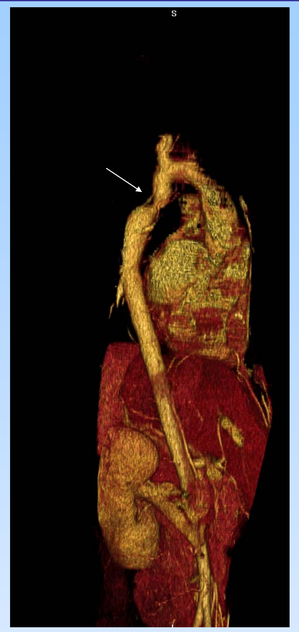

Image 2: Posterior view of 3-D reconstruction of CTA demonstrating coarcation of aorta

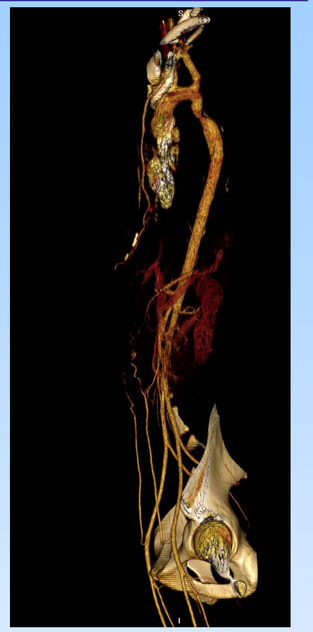

Image 3: Reconstructed 3-D image from CTA demonstrating full view of ascending aorta, arch, and descending aorta

Image 4: Sagittal cut of CTA showing coarctation originating distal to left subclavian

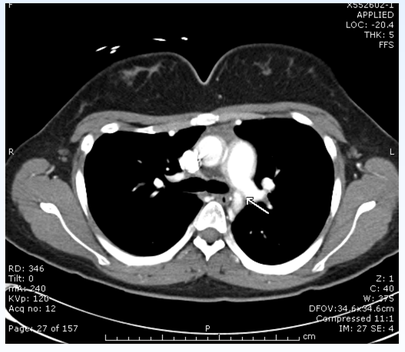

Image 5: Axial view of CTA

DISCUSSION

➢Coarctation of the Aorta is mostly a congenital disease that may be detected as early as 16-18 weeks gestation.

➢In severe cases the neonate may present with heart failure and/or shock with physical exam revealing dyspnea, pallor, irritability, diaphoresis and absent femoral pulses.

➢ Previous studies have shown survival benefits for patients undergoing corrective surgery between the ages of 1 through 5.

➢With each passing year, an undiagnosed coarctation of the aorta represents a risk for future cardiovascular complications.

➢Fewer than 20% of untreated patients survive to age 50 years.

➢If coarctation of aorta is repaired before the age of 14 years, the 20 year survival rate is 91%. If coarctation is repaired after the age of 14 years, the 20 year survival is 79%.

➢The most common long term cardiovascular complications of coarctation of the aorta are coronary artery disease, systemic hypertension, recoarctation, aortic aneurysm, dilated cardiomyopathy and aortic root dilatation.

➢In pregnancy, if maternal coarctation is not repaired, the risk to the fetus and mother is increased; maternal mortality rate is 3-8%.

➢It is imperative that once coarctation of the aorta is diagnosed, surgical and medical management be initiated.

➢Surgical options include balloon angioplasty with or without stent placement, or resection with end-to-end anastomosis.

➢The patient also needs life long follow-up to monitor for recoarctation and other long term complications.

➢The presence of hypertension requiring medical therapy in young adult s may suggest the presence of a number of conditions including coarctation of the aorta, fibromuscular dysplasia, or an endocrine disorder such as pheochromocytoma, primary hyperaldosteronism, or Cushings Disease.

➢This case demonstrates a classic presentation of this disease. With a better awareness of this disease, clinicians can make an early diagnosis which impacts mortality and quality of life.

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