

Pseudocoarctation of the aorta

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Twenty-six year old male with a history bicuspid aortic valve. The patient presented had a ventricular septal defect which spontaneously closed by age eleven. Prior angiography to evaluate the ventricular septal defect demonstrated a high cervical aortic arch and tortuosity of the aorta. Blood pressure in both arms was 130/80 mm Hg, and systolic blood pressure in the right leg was 120 mm Hg.

Magnetic resonance imaging was obtained to evaluate the aortic arch. There was prominent

kinking of the descending thoracic aorta distal to the origin of the left subclavian artery (cover, Fig. 2A). Flow sensitive cine images were obtained using phase contrast technique (Fig. 2B). The velocity encoding gradient was set to detect flow at a peak of 150 cm/s. Flow exceeding this level would have detected at least a 10 mm velocity gradient through the area of aortic tortuosity. The measured peak velocities were less than 150 cm/s, indicating no significant gradient induced by the aortic tortuosity.

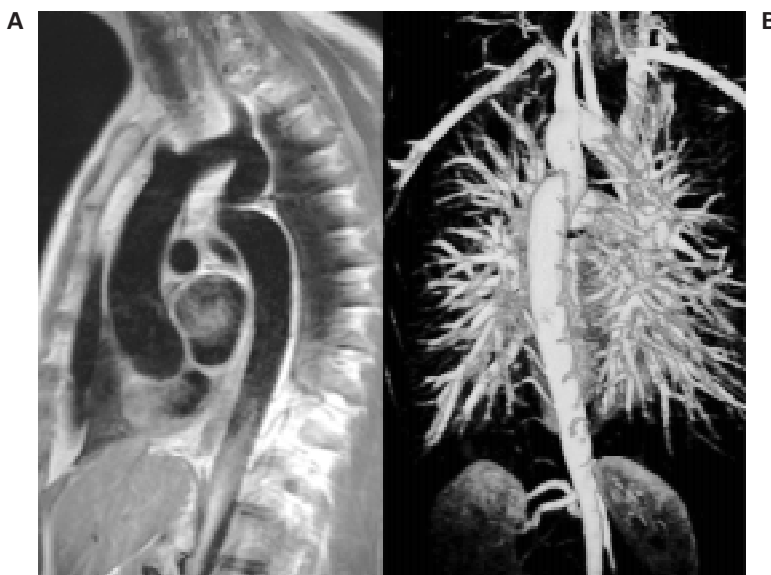


Figure 1. A. Sagittal oblique black blood magnetic resonance imaging of the thoracic aorta. The ascending aorta is normal, but there is severe tortuosity of the upper descending aorta. **B.** Three dimensional volume rendering of the thoracic aorta based on the magnetic resonance angiogram viewed from a posterior projection. Marked tortuosity and kinking of the upper descending aorta is present.

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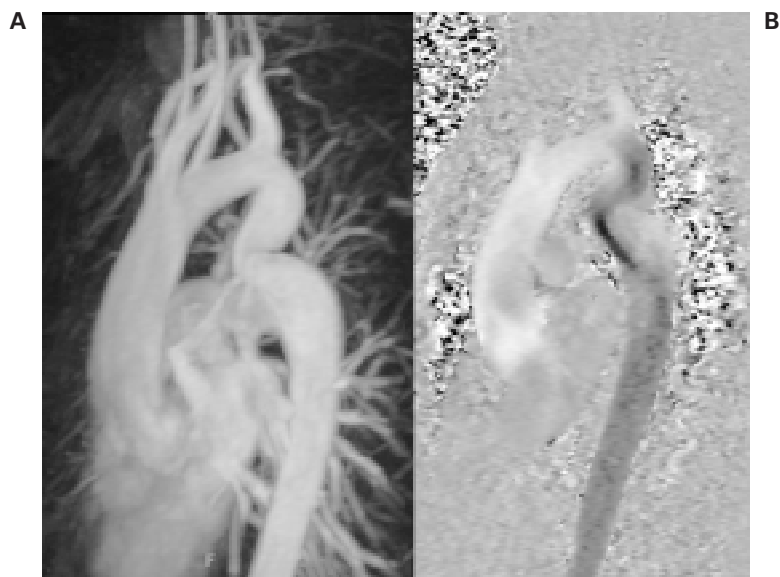


Figure 2. A. Maximum intensity projection of the thoracic aorta based on the magnetic resonance angiogram data. The tortuosity of the upper descending aorta is again seen. The great vessels arising from the aortic arch are normal and no collateral circulation is seen. **B.** Sagittal phase contrast cine magnetic resonance imaging of the thoracic aorta (velocity encoding gradient 150 cm/s). Flow in the superior direction (towards the head) is shown in white, while flow towards the feet is black. The flow in the area of the pseudocoarctation is disordered, with both black and white flow immediately below the area of tortuosity. However, no high velocity jets are identified. This confirms that no pressure gradient is present.

The final diagnosis was pseudocoarctation of the aorta.

Pseudocoarctation of the aorta is rare congenital anomaly consisting of redundancy of the aortic arch. Unlike coarctation of the aorta, there is no obstruction of blood flow and no measureable pressure gradient across the area of redundancy/narrowing.

Coarctation of the aorta is usually associated with collateral flow, but this is absent with pseudocoarctation. Anomalies associated with pseudocoarctation include bicuspid aortic valve, patent ductus arteriosus, ventricular septal defect and corrected transposition. Anomalies of the left subclavian artery may also be present.