Aortic Dissection

Aortic dissection is a potentially catastrophic condition initiated by a tear in the aortic intima. There are 2 systems used to classify aortic dissections: Stanford and DeBakey. Under the Stanford classification, type A dissections occur in the ascending aorta while type B dissections are all others. Risk factors include hypertension, aortic aneurysm, and connective tissue disorders like Marfan syndrome. Clinical features of this disease include sudden, severe chest pain that may radiate to the back, blood pressure difference between upper extremities, and mediastinal widening on chest X-ray. Treatment includes surgery for Type A as they carry a risk of dissecting proximally into the pericardium and heart valves. Type B dissections are managed with beta blockers to reduce blood pressure.

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Characteristics

Tear in Aortic Intima

Torn intimacy-inn sign

Aortic dissection is initiated by a tear in the aortic intimal layer, causing it to separate from the medial layer.

Stanford Classification

Stanford sweater

The most commonly used classification for aortic dissection is the Stanford Classification, which designates dissections of the ascending aorta as Type A and dissections of the descending aorta as Type B.

Type A: Tear of Ascending Aorta

A- apple in up-elevator

Under the Stanford classification, a type A dissection defines any dissection that involves the ascending aorta. Note that this means a dissection involving the ascending and descending aorta would be classified as Type A.

Type B: Tear of Descending Aorta

Bee in down elevator

A type B dissection is defined as a dissection involving the descending aorta.

Risk Factors

Hypertension

Hiker-BP

Hypertension is a risk a factor for aortic dissection, as it causes increased wall pressure on the aortic intima, predisposing it to tear.

Aortic Aneurysm

A-orca with Aneurysm

Aortic aneurysm is a risk factor for aortic dissection. The increased aortic diameter is associated with elevated wall stress on the aortic intima, which predisposes it to tear.

Marfan Syndrome

Marfan-the-martian

Marfan Syndrome, a genetic connective tissue disease, is a known risk factor for the development of aortic dissection. In fact, up to 50% of young children with Marfan Syndrome may already have aortic dilatation, which will progress over time to aortic aneurysm. Aortic root disease in general in the form of dissection as well as aortic regurgitation is the main cause of morbidity and mortality in patients with Marfan Syndrome.

Signs/Symptoms

Chest Pain

Chest Pain-bolt

One of the common symptoms associated with aortic dissection is chest pain.

Blood Pressure Difference Between Arms

Blood pressure cuffs on each arm

One of the signs of aortic dissection is variation in pulse (absence of a proximal extremity or carotid pulse) and/or blood pressure (>20 mmHg difference between the right and left arm).

Mediastinal Widening

Widened Mediastinum

Mediastinal widening on chest X ray is a potential sign of aortic dissection.

Treatment

Surgery for Type A

Surgeon skewering A apple on scalpel

Type A dissections involving the ascending aorta require emergent surgical repair, as they can dissect back into the pericardium and cardiac tissue, causing tamponade, MI, or regurgitation.

Beta Blockers for Type B

Bee-hive on beta fish blocks

Type B dissections are treated conservatively with beta blockers as they do not portend an immediate risk for a surgical emergency.