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Commentary

Management and Complications for the Aortic Dissection

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COMMENTARY

The wall of an artery consists of the tunica intima (inmost layer), tunica media (middle layer), and tunica adventitia (outermost layer). An aortic analysis is a gash in the intimal layer of the aortic wall, causing blood to inflow between and breaking up apart the tunica intima and media. It can be defined as acute (when diagnosed ≤ 14 days) or chronic (when diagnosed>14 days). They're more common in men and in cases with connective tissue diseases, and have a peak onset between 50-70 yr's. Aortic analyses from the original intimal tear can progress distally, proximally, or in both directions from the point of origin. Anterograde analyses propagate towards the iliac arteries and retrograde analyses propagate towards the aortic valve (at the root of the aorta). Retrograde dissections can affect in prolapse of the aortic valve, bleeding into the pericardium, and cardiac tamponed.

Classification

Aortic analyses are classified anatomically by two systems, de Bakey and Stanford.

Stanford classification: The Stanford classification divides aortic analysis into two groups, A and B.

Group A: Includes de Bakey types I and II and involves the arising aorta and can propagate to the aortic arch and descending aorta; the gash can appear anywhere along this path.

Group B: Dissections don't involve the uprising aorta and include de Bakey Type III

DeBakey classification: The de Bakey classification groups aortic dissections anatomically.

Type I: Originates in the ascending aorta and propagates at least to the aortic arch.

They're generally seen in cases less than 65 yr's and carry the upmost mortality, quoted at 1 per hour in the acute setting.

Type II: Confined to the thrusting aorta.

Classically in senior cases with atherosclerotic complaint and hypertension.

Type III: Originates distal to the subclavian artery in the descending aorta.

Additional subdivided into IIIa which extends distally to the diaphragm and IIIb which extends beyond the diaphragm into the abdominal aorta.

Threat factors

- Hypertension
- Atherosclerotic disorder
- Manly gender
- Connective tissue diseases (generally Marfan's syndrome or Ehler's-Danlos syndrome)
- Biscuspid aortic valve

Clinical features

The characteristic present of an aortic dissection is of a tearing chest pain, classically radiating through to the reverse, yet the opinion is frequently demanding and numerous be a more subtle donation. The most common clinical signs include tachycardia, hypotension*, new aortic regurgitation murmur, or signs of end- organ hypo perfusion (similar as reduced urine affair, paraplegia, lower branch ischemia, abdominal pain secondary to ischemia, or deteriorating conscious position). Secondary to hypovolemic from blood loss into the analysis or cardiogenic from severe aortic regurgitation or pericardial tamponed.

Differential diagnosis

A thoracic aortic analysis will frequently present as chest pain, a presenting problem that has multiple discrimination judgments.

Myocardial infarction: Classically crushing and central chest pain, with signs of cardiac ischemia on ECG and/or raised serum troponin situations. Pulmonary embolisdyspnoea will be a prominent point and an ABG will demonstrate hypoxia, confirm with CTPA or V/Q scan.

Pericarditis: Classically pleurisy chest pain, with the ECG showing circumlocutory ST elevation, as well as possible pericardial irritant on auscultation. Musculoskeletal back pain: the case won't present with systemic signs of shock and will be tender to palpation of the chest wall or para spinal muscles.

Investigation: Threshold blood tests (FBC, U and E s, LFTs, troponin, coagulation) with a cross match of at least 4 units, in

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addition to an arterial blood gas to support original assessment. An ECG should also be performed to close out any cardiac pathology.

This will also allow classification, establish the dissection of the analysis, and help surgical planning. A transoesophogeal ECHO can also give useful information but is operator dependent.

Management

Critical original assessment is needed, as for any other critically ill surgical case. Start high inflow oxygen and gain IV access (x^2 large drag cannulas); fluid regeneration should be done cautiously. In the setting of a rupture, also the target pressure should be sufficient for cerebral perfusion only. In the setting of an uncomplicated analysis also the target systolic pressure should be kept below 110 mmHg systolic. Stanford Type A dissections should be managed surgically in the first case and carry a worse prognostic than Type B dissections. Any uncomplicated Type B dissections can generally be managed medically. Following original operation, all cases need lifelong antihypertensive therapy and surveillance imaging, due to the high threat of developing another analysis or other complications. Imaging would generally be at 1, 3, and 12 months post-discharges, with farther reviews at 6-12 month intervals later depending on the size of the aorta.

Type A Dissections: Carry a high mortality if left undressed and these cases should be agitated urgently with a cardiac or vascular surgeon. They will most probably need transfer to a cardiothoracic center. The surgery involves discarding of the thrusting aorta (with or without the arch) and relief with synthetic graft. However, this will also need form, if the analysis has damaged the suspensory stuff of the aortic valve. Any another branches of the aortic bow that are involved will need reimplanation into the graft (i.e. brachiocephalic artery, left common carotid roadway, left subclavian artery), with long Type A dissections involving the descending and conceivably abdominal aorta may need carried procedures.

Type B Dissections: Uncomplicated Type B dissections are best managed medically, with good survival rates. First line treatment is operation of hypertension with intravenous beta blockers (labetalol) (or calcium channel blockers as alternate line cure). The aim of this therapy is to speedily lower the systolic pressure, throb pressure, and beat rate to minimize stress of the analysis and limited further propagation. In the acute setting, endovascular form isn't recommended due to the threat of retrograde analysis, thus medical operation remains gold standard. Surgical intervention in Type B dissections is only warranted in the presence of certain complications, similar as rupture, renal, visceral or limb ischemia, refectory pain, or willful hypertension. Type B deconstructions can go on to be chronic, with continued leakage into the analysis, indeed if a stent has been placed. The most common complication of chronic disorder is the conformation of an aneurysm. These present other surgical problems, with endovascular form offering a better survival chance.

Complications: Any complications that arise depend on the point and spread of the analysis into the aortic branches, injurious end organs. Accordingly, complications that can do include.

- Aortic rupture
- Aortic regurgitation
- Myocardial ischemia
- Secondary to coronary artery analysis
- Cardiac tamponed
- Stroke or paraplegia
- Secondary to cerebral artery or spinal artery involvement
- Mortality remains high, with over 20 of cases dying before reaching medical center, still early opinion, intervention, and blood pressure control significantly improves prognostic.