Type B Acute Aortic Dissections: When to Treat?

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CLASSIFICATION

ASCENDING DISSECTIONS
65-75% of dissections
Entry tear within a few centimeters of aortic valve
50% extend to iliac bifurcation

DESCENDING DISSECTIONS
25-35% of dissections
False channel begins distal to (L) subclavian
Variable extension
CLASSIFICATION

DEBAKEY

Type I
Ascending aorta extending beyond arch

Type II
Ascending aorta only

Type III
Descending aorta

Type IIIb
Descending aorta extending below diaphragm

STANFORD

- A – Ascending aorta
- B – Descending aorta
Definition

- Disruption of medial layer of aorta with bleeding within, resulting in separation of the layers of the wall
- Intimal tear is present in 90%
- The incidence of TBAD is approximately 3 per 100,000 persons per year.
Pathogenesis

- Pathogenesis: decreased vascular wall strength and increased hemodynamic forces on the aortic wall.
- Large clinical studies:
  - 80% systemic hypertension
  - congenital bicuspid
Pathogenesis

- Unicommissural aortic valves
- History of cocaine abuse
- Pregnancy
- Strenuous activities
- Connective tissue disorders
Aortic dissection type B

- Phases
  - Acute within 14 days
  - Subacute from 14 days to 2 months
  - Chronic after 2 months

  behave like aneurysm
  rupture is the risk
  malperfusion is rare
Acute dissection type B

- **Acute**
  - Diagnosed within 14 days of symptom onset

- **Complicated: Hard**
  - Rupture or impending rupture
  - Malperfusion
  - Visceral, renal, lower extremity, etc.
Acute dissection type B

- Complicated: Soft
  - Refractory pain
  - Refractory Hypertension
  - Architectural distortion at origin of renal, visceral vessels
Acute dissection type B

- **Refractory hypertension**
  - Presence of refractory hypertension (Resistant to > 3 agents) that was not present before the onset of the dissection

- **Viscerals: Mesenteric and celiac**
  - Increase in LFTS, amylase, Bilirubin, nausea or vomiting with appropriate BP control
Acute dissection type B

- Renal: Imaging findings
  - Absence of nephrogenic effect on the delayed phase of the CT

- Imminent Rupture
  - Increase in the amount of peri-aortic hematoma and/or hemorrhagic pleural effusion in 2 successive CT scans
Complicated Type B Dissection

- 30% TBD’s complicated
- >2/3: malperfusion
  - 56% lower extremity
  - 36% Renal
  - 20% visceral
  - 3% spinal cord
  - 8% Other malperfusion
Complicated Type B Dissection

- **1/3: rupture**
  - Different priority
  - Algorithm directed at stopping bleeding
  - Then you look for the malperfusion
Complicated Type B Dissection

- IRAD

- Open repair associated with significant morbidity and mortality
TEVAR Complicated TBAD

- VIRTUE Registry  
  Mortality: 8%
- STABLE Trial  
  Mortality: 10%
- TEVAR proved to be superior to OMT alone.
- 30 Mortality for Open VS TEVAR 29.3% VS 2.8.
Optimal medical treatment (OMT)

- Acute medical treatment: Large trials have revealed that β-blockers and calcium-channel blockers are associated with improved long-term survival.

- Calcium-channel blockers are associated with reduced aortic expansion and improved survival over the long-term.
Optimal medical treatment (OMT)

- Pain should be relieved with intravenous opiates since emotional stress may increase blood pressure considerably, potentially further propagating the dissection.
Chronic medical treatment

- Heart rate and blood pressure control
- Blood pressure <140/90 mmHg or systolic <120 mmHg
- β-Blockers, calcium-channel blockers, angiotensin receptor blockers.
TEVAR Uncomplicated TBAD

- **INSTEAD** trial
  - TEVAR Vs. OMT no survival benefits after 2 year.
  - TEVAR showed favorable results between 2 to 5 years of follow up.
    - Lower progression of dissection
    - Remodeling after 5 years (27% OMT Vs. 46.1%)
    - 90.6% false lumen thrombosis TEVAR Vs. 22% OMT
  - TEVAR higher mortality
TEVAR Uncomplicated TBAD

- ADSORB trial
  - Only randomized trial which compared OMT plus TEVAR with OMT alone for acute uncomplicated TBAD.
  - This trial was underpowered for survival, and had a cut-off at 1-year follow-up. (61 pts )
  - TEVAR plus OMT in terms of aortic remodeling was found in 1 year.
Conclusion

- TEVAR is now considered the gold standard for complicated acute TBAD
- TEVAR for complicated patients or those suspected of complications (including aortic dilatation) during follow-up.

\[\beta\text{-blockers and calcium-channel blockers are associated with improved long-term survival.}\]
References


References


• 110. Virtue Registry Investigators. The VIRTUE Registry of type B thoracic dissections—Study design and early results. Eur J Vasc Endovasc Surg 2011; 41: 159–166.


References


