Session 7
Principles and paradoxes in medical treatment and pathogenesis of acute AD

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Disclosure
- Medical Advisory Board, Boston Scientific

48 yr old man with history of hypertension
- Presented to ED after two days of abdominal pain
  - 21:00 BP 194/87
  - 23:17 Chest CT: acute type B dissection
  - 23:20 BP 188/107. Started Esmolol drip

48 yr old man with history of hypertension
- Day 3
  - 02:40 UM ED. Conversant, no abdominal pain on arrival
  - Left leg cool & pulseless; right normal.
  - ALK 235, AST 1540, Cr 1.9
  - BP 72/60, cyanosis →intubated.
  - Arrested and died in ED. Necropsy: no rupture

Dynamic Obstruction
during true lumen collapse, the dissection flap covers branch origins
Common scenario

- CT at presentation during hypertensive state shows collapsed true lumen
- IVUS or repeat CT after BP reduction shows relieved true lumen

Treatment protocol

Stable Type A,
malperfusion w/ end-organ damage
IR then OR
malperfusion w/o end-organ damage
OR then possibly IR
Type B: w or w/o end-organ damage
IR first

Treatment protocol for acute AD with malperfusion by dynamic obstruction:
lower BP until pulse returns
(if obstruction is caused by false lumen thrombosis, lowering BP may not be effective)
Overall Survival  
Acute Type B AD with malperfusion treated with fenestration and stenting

![Graph showing overall survival rate over time with age and acute paraplegia as significant risk factors.](image)

Significant Risk Factors for All-time Mortality:
- Age: HR=1.05 (1.02, 1.06), p<0.0001
- Acute Paraplegia: HR=3.5 (1.8, 6.8), p=0.0003

Pathogenesis of Acute AD
- Chicken and egg argument over initiating event:
  - intramural hemorrhage vs intimal tear
- Are there anatomical findings which favor IMH or a systemic condition as initiating event in everyday AD’s?

Two findings hard to explain by “tear first”
- Occasional findings (~5% of specimens) of partial thickness tear in the dissection flap, where the media is torn but the overlying intima is intact.
- Instances of synchronous non-contiguous dissections

![Image showing pathogenesis details.](image)
Ascending aorta specimen from acute TAAD

Arrows mark partial thickness tear on FL side of dissection flap

Small tear does not breach the intima

Anomalous features of tear

- Direction of the tear from media toward lumen suggests an expansile force inside the media, such as IMH
- Does not mimic an intraoperative traction tear

Synchronous non-contiguous dissections

- 64 year old woman previously healthy complained of abdominal pain, and over the course of several hours became unresponsive.
- Hypercalcemia. Normal liver enzymes.
NECROPSY

- Subacute type A dissection sparing the celiac trunk and SMA
- Subacute dissection of proper hepatic artery
- Bilateral renal and common iliac artery FMD

Etiology of AD

- More complicated than: #1 tear, #2 propagate
- Partial thickness tears sparing the intima suggests IMH may initiate more AD’s than suspected
- Synchronous non-contiguous tears in non-syndromic patients suggest systemic cause in some patients