Splanchnic Artery Aneurysm: Mycotic Aneurysm of the Superior Mesenteric Artery

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Case Presentation

- 47 yo female with h/o abdominal pain since 3/2011 found to be c/w recurrent umbilical hernia on CT, presents to surgery clinic in May to schedule elective repair.
Case Presentation

- **PMH**: HIV, HTN
- **PSH**: Umbilical hernia repair (4/2011)
- **Meds**: Reyataz, Isentress, Percocet, Lopressor
- **ALL**: Sulfa
- **SH**: Cocaine, Heroin use, ex-smoker, denied ETOH use
Case Presentation

- Referred to ED for fever
  - workup → + BCx Strep bovis → ECHO → MV Endocarditis
  - started on Vancomycin

- Repeat CT showed development of 3.2 x 3.1 cm saccular aneurysm of the proximal SMA

- CT neck/chest: 2x1 cm Left Subclavian artery aneurysm
Case Presentation

**Angiogram**

- Large aneurysm of the ileocolic branch of the SMA (~ 3 x 4 cm)

- Branch occluded distal to the aneurysm.

- Collateral vessels from the middle colic reconstitute the right colic and the ileocecal region.

- Celiac and IMA branches nml
Case Presentation

- PICC line placed for IV abx
- Discharged home HD#15

Patient returns to the ED 7/3/11 with recurrent abdominal pain

- CT A/P
  - Increase in size SMA aneurysm from 3.2 x 3.1 cm → 4.0 x 3.5 cm
  - hernia stable
Case Presentation

- **Preop**
  Admitted 7/13/11 for surgery on 7/18:
  - Cont abx
  - Cardiac cath nml
  - Vein mapping

- 7/18: + Utox for cocaine

- 7/21: OR

- **Procedure**
  - Midline laparotomy
  
  - Ventral hernia in mid epigastrum dissected out and abdomen entered
  
  - Evisceration of the transverse and mesocolon superiorly
  
  - SB reflected → mesentery incised → SMA Aneurysm
Intraoperatively...

Dissection

- Dilated lymphatics and veins wrapped about inflamed adventitia divided
- Branches of the aneurysm encircled with vessel loops
- Anterior and posterior portions of the aneurysm dissected
Intraoperatively...

Ensuring blood supply

- Distal vessels clamped and perfusion assessed via doppler of the mesentery
- Bowel observed for add’l hr. Good peristalsis, no ischemia.
- Aneurysm excised
- SMA defect closed primarily
Intraoperatively..

- Aneurysm incised
  - Mural thrombus and fresh clot
  - Cultures done
- Mesenteric repair, hernia repair, and closure.
Postoperative Course

- POD #0: Remained intubated
  PACU → MICU

- POD #2: Extubated

- POD #3: NGT d/c’d, adv to clears, foley removed

- POD #4: Transferred to stepdown

- POD #5: Tolerating regular diet

- POD #7: Discharged home, continues on IV abx

**Pathology:** Saccular aneurysm with fresh clot and mural thrombus

**Intraop cx:** negative
DISCUSSION
Splanchnic Artery Aneurysms (SAA)

- Intra-abdominal aneurysms that are not part of the aortoiliac system

- Rare
  - 5% of all intraabdominal aneurysms
  - Prevalence: 0.1-0.2%
Aneurysm incidence

Coexist with other non-splanchnic aneurysms (in decreasing frequency)

- thoracic aorta,
- abdominal aorta
- renal arteries
- iliac arteries
- lower extremity arteries
- intracranial arteries
Splanchnic Artery Aneurysms (SAA)

- Life threatening
  ~22% present emergently
  8.5% mortality

- Etiology
  - degeneration
  - atherosclerosis
  - inflammation
  - collagen vascular dz
  - iatrogenic injury
  - trauma
  - infection
SMA Aneurysms (SMAA)

- 3rd most common SAA
  - equal M:F ratio
- Main trunk
  - 1° affects proximal 5cm of SMA
- Harbors more infectious aneurysms than any other muscular artery

- Etiology
  - Mycotic (60%)
    - Age <50
    - Left sided SBE
    - nonhemolytic strep (1°)
  - Non-cardiac
    - Staph spp.
    - Syphilis (past)
    - Arteriosclerosis/CTD
    - Trauma (rare)

- High risk of rupture (~50%)
- 30-90% mortality

Most likely SAA to dissect

Intestinal ischemia
Free rupture
Exsanguination
Clinical Findings

Aneurysmal expansion

| Dissection | Thrombus Propagation |

Compromise of flow to SMA

| Isolation of SMA from collateral blood supply (celiac/IMA) |

Intestinal angina

- Abdominal pain intermittent → persistent
- Nausea
- Vomiting
- GI Bleed
- Peritonitis (free rupture)
Clinical Findings

• **History and Physical exam**
  - PMH, h/o SBE, trauma, surgery, recent procedure
  - Fever (20%), tender pulsatile mass (50%), evidence of GIB

• **Labs**
  - anemia, leukocytosis, + BCx

• **Tests**
  - U/S
  - CT, MRI
  - Arteriography
Treatment

**False aneurysms**
- Often w/ contained rupture at diagnosis (esp. mycotic)
- Surgery
  - removal of infected tissue
  - obliteration of the aneurysm
- Antibiotic therapy for 6–8 weeks

**True aneurysms**
- Infected → Surgery
- Noninfected
  - Symptomatic → Surgery
  - ASx → variable

**Individualized**
- Etiology, size, location, pt comorbidities, procedural risk
Mycotic SMAA

Preoperative goals

• Targeted abx therapy (broad spectrum if organism unk.)
• Tetanus prophylaxis if pt + IVDA

Operative goals

• Control of hemorrhage
• Confirmation of the diagnosis (tissue and culture)
• Control of sepsis, including removal of infected tissue and aneurysm resection
• Bowel viability
• Wound care
• Continuation of antibiotics for a prolonged period after operation
Techniques

**Simple Ligation w/ excision**
- preformed collateral flow to intestines
- check bowel viability 1st

**Arterial reconstruction**
- Anterior Aorta or intact proximal SMA to nml vessel
- Use GSV

**Endovascular**
- Covered stent-graft
  - excludes aneurysm
  - preserves enteric circulation
  - feasible if anatomy favorable
  - High risk pt’s
- Surgical intervention for all types of SMAA <15% mortality
Conclusions

- Rare diagnosis
- Often mistaken for common conditions
- Life threatening → high index of suspicion
- Should be suspected in any pt with h/o abdominal pain and recent SBE
  - fever in a pt with visceral aneurysm= Mycotic
- Requires prompt intervention to avoid complications
- Surgery is the standard
- Maintenance of appropriate antibiotic therapy
References

- Lorelli DR, Cambria RA, Seabrook GR, Towne JB. Diagnosis and management of aneurysms involving the superior mesenteric artery and its branches – a report of four cases. Vasc Endovascular Surg 2003;37:59–66