Acute Aortic Occlusions - AAO

This pathology is rare but is a catastrophic emergency which is easily overlooked by non vascular experts. When overlooked it has poor prognosis. Early recognition and intervention are essential.

AAO : When open & when Endo?

The question posed as the title of this presentation is tricky and raises a real dilemma when treating this occasional neglected catastrophe.

The smaller procedures do not necessarily carry better results, and the more extensive procedures are not always worse.

Etiologies

Embolism
Thrombosis
Dissections

Contributing factors
Heart disease
Pre-existing atherosclerosis
Low flow with poor cardiac output
Hypercoagulable states
Poor outflow & runoff
Chemotherapy
Aortitis
Rarities

Remember: The higher the occlusion level, the more dramatic is the clinical presentation
Common involved disciplines are Neurology/Neurosurgery/Orthopedics

Neurologic deficits are seen in 55% of cases

The diagnosis of abdominal aortic occlusion in acute paraplegia is missed in up to 50% of cases

!!!!!!!!!!!!!!

Missed Diagnosis – In up to 50%
Because it can mimic:
- Stroke
- Acute abdomen
- Acute back pain
- Sudden onset hypertension
- Spinal cord compression syndrome (Acute compressive myelopathy)
- Demyelinating polyneuropathy
- Qauda Equina Syndrome
- Paraparesis
- Paraplegia
- Drop-foot

Diagnostic Options

I  Clinical suspicion
II  Clinical suspicion
III  Clinical suspicion

Physical examination
- Duplex
- CTA/MRA

Should also check visceral artery involvement

THE CATASTROPHIC OUTCOME IS DIRECTLY RELATED TO DELAYED DIAGNOSIS

Optional Treatment Strategies

Acute Aortic Occlusions

- Bypass
- Spinal
- Thrombectomy
- EV

Additional Measures include
- Fasciotomies
- Amputations

The catastrophic outcome is directly related to delayed diagnosis

A few recent cases from 2018

Occlusion near aortic bifurcation
Acute atherosclerotic occlusion

Juxta renal AAO. 3D image from posterior view
24 hour diagnostic delay
High occlusion treated successfully by Aorto-bi-femoral bypass

PURE ENDO Tx.

2X Viabhan 9 mm X 10 cm up to RRA
2X Atrium 8mm at Bifurcation

Literature Quotations

* Endovascular therapy is increasingly utilized in the modern management of AAO but has not improved outcomes.
  JVS 2013

* Contemporary management of AAO has evolved but outcomes have not significantly improved.
  Ann Vasc Surg 2016

Recent AAO of an AUI STENTGRAFT
Successfully treated with lysis only

Thrombolysis Only
TPA >> Urokinase

Mortality per procedure

29 cases (28 treated)

Thrombectomies
Trans-femoral embolectomy (6) – 50%
Trans aortic thrombectomy (2) – 100%

Bypasses
Ax-bi-Femoral bypass (10) – 30%
Ao-bi-femoral bypass (6) – 0%

E.V.
Endovascular (4) – 25%

Outcome
Mortality rates 31% (in emboli 38% Vs 29% in thrombosis - Robinson)
52% by Babu JVS 1995
85% in poor LV
23% in good LV
42% in hypercoagulable pts.
29% without hypercoagulability
Our recent mortality in Endo
Resulting from Aortic rupture during thrombectomy

Therapeutic Options

Avoid delay in treatment

Endovascular
- Thrombolysis
- Thrombectomy
- Ax-Bifem-Bypass
- Recanalization
- & Stenting

Operation
- Thrombectomy
- Ao-Bifem-Bypass
- Fasciotomy
- Amputation

Factors to be considered for choosing Tx options

- Aetiology: Embolus Vs. Thrombosis
- Level of aortic occlusion (Juxta-renal Vs. low)
- Previous aortic - iliac atherosclerosis
- Degree of pelvic and limb ischemia
- Age
- Diagnostic & therapeutic delay
- General condition & co-morbidities
- Cardiac function
- Malignancy and chemotherapy
- Hostile abdomen
- Known HITT

In general, Juxta renal occlusions are preferably treated by bypass.

Lessons to be learnt
AAO has occasionally a non-typical presentation with misleading neurologic symptoms. This vascular pathology mandates the obvious of:
- High level of suspicion
- Detailed patient history (Cardiac, Malignancy)
- Complete physical examination including pulse palpation and ABI
- Prompt diagnostic imaging
- Urgent treatment

Early diagnosis and treatment are the key to successful revascularization with minimal neurologic sequels.

Cont.

Consider AAO when acute paraplegia occurs in the presence of severe pain at onset.

Consider CTA even in the presence of distal pulsations.

The biggest procedures do not have the highest mortalities, so do not always jump to the easy solutions.

Make an intelligent decision.
Typical possible mis-investigation
67yo, male, smoker, diabetic, HTN, CIHD, lymphoma

MRI of lumbar and thoracic spine
Nerve conduction study X 2
results suggesting demyelination and axonal damage
Lumbar puncture
Tumor markers for malignancy
Non-contrast CT of chest, pelvis and lumbosacral spine

Chest pain → Coronary angiography via Radial A.
PTCA performed
CTA performed two days later due to toe discoloration
Bilateral amputation
Death

From "case reports in neurological medicine" Kilany et.al. 2015