ACUTE ARTERIAL INSUFFICIENCY
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1. Definition
Sudden, total occlusion of the main arterial supply with inadequate collateral circulation.

2. Aetiology
- Thrombosis
- Embolism
- Trauma (see chapter on vascular trauma)

Result:
- Acute ischaemia ➔ necrosis, gangrene

2.1. Thrombosis
- Acute on chronic occlusion

Atherosclerotic plaque ➔ Stenosis ➔ Flow ➔ Ulcer ➔ Platelet deposition ➔ Thrombosis

- Underlying arterial disease:
  o Atherosclerotic plaque
  o Aneurysm
  o Trauma
- Usually generalized atherosclerosis
- Other causes: hypercoagulation

2.2. Embolism
- Acute occlusion of a relatively normal artery
- Distant source of emboli:
  o Heart (80-90%):
    ▪ Atrial fibrillation
    ▪ Mural thrombus
    ▪ Valvular vegetations
  o Atherosclerotic plaque in a proximal vessel
  o Proximal aneurysms eg.:
    ▪ Abdominal aorta aneurysm
    ▪ Popliteal artery aneurysm

3. Clinical presentation of acute arterial insufficiency
Symptoms:
- Sudden onset of severe pain
- Cold, pale limb
- Paraesthesia, numb sensation
- Muscle fatigue, paralysis
Signs:
• Absent pulses
• Pale \(\rightarrow\) marble appearance
• \(\downarrow\) Temperature
• \(\downarrow\) Sensation
• \(\downarrow\) Motor function
• \(\downarrow\) Capillary filling
• Tender muscle compartments

End stage Signs:
• Skin demarcation
• Skin discoloration
• Blisters
• Gangrene

4. **Diagnosis of acute arterial insufficiency**
   - **History:**
     - Previous claudication
     - IHD, RHD
     - Risk factors for atherosclerosis
   - **On examination:**
     - Atrial fibrillation
     - Signs of chronic arterial insufficiency
     - Signs of acute ischaemia
   - **Thrombosis vs. embolism**
   - **Special Investigations:**
     - Duplex Doppler
     - Arteriography

5. **Emergency treatment of acute arterial insufficiency**
   1. Anti-coagulation therapy - Unfractionated Heparin 100 IU/kg IVI stat
   2. Anti-platelet therapy - Aspirin 300mg stat
   3. Analgesia
   4. Maintain optimal circulation and oxygenation:
      - IV Infusion
      - \(O_2\)
   5. Protect limbs
      - Protect pressure points
      - Keep at normal body temperature
      - Raise head of bed, foot in dependant position
   6. Urgent referral to a Specialist Vascular Unit

6 P’s
• Pulse deficit
• Pain
• Pallor
• Poikilothermia (cold)
• Paraesthesia
• Paralysis
6. **Final treatment of acute arterial insufficiency**
   1. Confirm the diagnosis
   2. Embolus ➔ Surgical embolectomy
   3. Thrombosis ➔ Thrombolytic treatment
      Successful thrombolysis followed by:
      - PTA ± stent
      - or
      - Bypass surgery
      - or
      - Continued anti-coagulation and anti-platelet therapy

   **NB:** Know the dangers of and contra-indications to thrombolytic therapy.
   4. Fasciotomy if revascularization delayed with > 6 hours
   5. Continued anti-coagulation therapy – Atrial fibrillation, inoperable situation
   6. Primary amputation for non-viable limbs