

Chronic narrowing of arteries distal to aortic arch, most often due to atherosclerosis.

### Epidemiology

- >95% chronic limb ischaemia caused by peripheral artery atherosclerosis.
- Prevalence increases with age
- M>F
- Consider Buerger's disease (thromboangiitis obliterans) in young male smokers especially if all limbs affected

### Risk factors

- Smoking
- Hypertension
- Physical inactivity
- Diabetes mellitus
- Hyperlipidaemia
- Obesity

### Assessment

*History:* Intermittent claudication (cramping calf/buttock pain/weakness on walking which resolves on rest), ischaemic rest pain (classically, leg hung out of bed at night to ↑blood flow & relieve foot/toe pain), Hx of IHD or TIA/CVA, Leriche syndrome (aorto-iliac disease → bilateral claudication & impotence).

*Exam:* Usually leg has weak or absent pulses, paler, cooler, hair loss, ± ulceration/gangrene. Feel for all pulses & listen for bruits. Buerger's postural test (raising affected leg allows blood to drain from the limb, which becomes pale. When lowered it turns dark blue & engorged.)

### Differential diagnosis

Sciatica, DVT, entrapment syndromes and muscle/tendon injury.

### Investigations

*Bloods:* FBC, ESR, thrombophilia screen, lipids, BSL,

*ECG:* Heart disease, arrhythmias

*Imaging:* Doppler USS, MRA, Digital Subtraction Angiography (preop)

*Special:* ABPI (ankle-brachial pressure index) - N=1, claudication 0.9-0.6, rest pain 0.3-0.6, impending gangrene ≤0.3.

### Management

*Supportive/lifestyle:*

- Smoking cessation most important. Regular exercise, weight reduction
- Optimal Mx of DM, HT (note lowering it in short term may worsen pain), cholesterol

*Medical*

- **Aspirin, clopidogrel**, or **aspirin plus dipyridamole**
- ACEI may be more beneficial than just as anti-hypertensives
- Peripheral vasodilators may alleviate symptoms but long-term benefit unknown.

*Surgical*

- Percutaneous angioplasty, bypass surgery (if disabling claudication, critical limb ischaemia, or weak or absent femoral pulses) or amputation.

### Complications

- Acute limb ischaemia (thrombosis/embolism) [15%], infection, gangrene, amputation [2%].

### Prognosis

- 50% will improve, 25% will stabilise and 25% will worsen.

# Acute Limb Ischaemia

- True vascular emergency
- Usually acute thrombotic or embolic occlusion of a previously partially occluded artery.
- Without surgical revascularisation <6h complete acute ischaemia → irrev tissue necrosis.

## Causes

- *Embolism*: 90% cardiac (LA in AF, mural thrombus post-MI, valves), aneurysm (aorta, femoral, or popliteal), proximal atheromatous stenosis, malignant tumour, or FB.
- *Thrombosis*: Occurs at sites of pre-existing atherosclerotic narrowing.
  - If chronic PVD may have time to develop a limb-saving collateral supply.
- *Trauma*
- *Compartment syndrome*: Orthopaedic (tibial or forearm fractures), vascular (haemorrhage, phlegmasia caerulea dolens - massive venous thrombosis causing gross swelling), soft-tissue injury (prolonged limb compression, crush injury, burns)
- *Raynaud's syndrome, vasospasm, vasculitis*
- *Thoracic outlet syndrome*
- *Vascular dissection*
- *Congenital causes* of early-onset leg ischaemia, e.g. aortic hypoplasia

## Presentation

*History*: Trauma may be apparent. Embolic usually sudden with more clearly demarcated ischaemia, thrombotic may have pre-existing chronic symptoms. Cardiac disease, AF.

*Exam*: ABI. 6 P's (pale, pulseless, painful, paralysed, paraesthetic and 'perishingly cold'). Fixed skin mottling = irreversible changes. Limb may look red when dependent. Check for AF, murmur.

## Investigations

*Bloods*: FBC, UEC, ESR, BSL, G&H, Trop+CK, ± thrombophilia screen

*ECG*: ?AF

*Imaging*: Hand held Doppler ?pulse. Formal Doppler USS, angiography, CXR, Echo.

## Management

*Supportive*: ABCs, O<sub>2</sub>, position extremity in dependent position

*UF heparin* ± *Aspirin*

*Analgesia*

*Definitive Mx*:

- If evidence of compartment syndrome → fasciotomy.
- If embolic → surgical embolectomy or local intra-arterial thrombolysis.
- If thrombotic → intra-arterial thrombolysis, angioplasty or bypass surgery.
- If limb is irreversibly ischaemic, amputation will be required.

*Other management*

- Treat AF or other underlying conditions
- If PVD then treat as in Peripheral Vascular Disease article.

## Complications

- Reperfusion injury may cause more damage than the initial ischaemia:
- Chronic pain syndromes: acute complete ischaemia can lead to peripheral nerve injury.

## Prognosis

- Surgical treatment of acute limb ischaemia has a 30-day mortality rate of 15-25%.