Peripheral arteriopathies & embolism

- Peripheral arterial disease generally refers to the various manifestations of atherosclerosis in the major vessels of the lower limb including thromboembolic complications associated with acute limb ischaemia.

- Peripheral arterial disease is common & shows a steep increase in incidence with age.
- Risk factors for atherosclerosis are associated with more severe & progressive disease (particularly in the lower limbs); diabetes tends to be associated with diffuse disease.

Clinical classification

Aetiology of acute limb ischaemia

- Causes of acute limb ischaemia with pre-existing atherosclerotic disease:
  (i) Thrombosis of a native atherosclerotic artery
  (ii) Thrombosis of arterial bypass graft
  (iii) Embolism from heart, aneurysm or atherosclerotic plaque
  (iv) Thrombosed aneurysm (especially popliteal)

- Causes of acute limb ischaemia without pre-existing atherosclerosis:
  (i) Arterial trauma (including iatrogenic)
  (ii) Arterial dissection
  (iii) Arteritis with thrombosis (eg giant cell arteritis)
  (iv) Spontaneous thrombosis in a hypercoagulable state
  (v) Popliteal cyst with thrombosis
  (vi) Vasospasm with thrombosis

Clinical features

General:
- The presence of acute lower limb ischaemia is strongly influenced by two factors:
  (i) The presence of absence of a pre-existing collateral circulation
  (ii) The aetiology of the occlusion

History:
- Presence of absence of prior symptoms is important because it may allow differentiation between primary thrombotic occlusion with pre-existing disease & embolic occlusion without.
- Patients without pre-existing disease will not have collaterals and will therefore have more severe symptoms.

Physical examination:
- May reveal a classic acutely ischaemic limb which is pale, painful, cold, pulseless, paralysed and insensate.
- The presence of paralysis or paraesthesia indicates a poor prognosis because it is associated with infarction of nerve and muscle tissue.

Investigation

- Patients with a suspected embolic occlusion need radiological investigation to confirm the level of the occlusion. Options include:
  (i) Angiography
  (ii) Duplex ultrasound

- Endovascular treatments include suction embolectomy & local administration of thrombolytics.
- In the case of an acute, severely ischaemic limb, surgery is indicated to perform embolectomy or amputation.

Treatment

- Outcome of peripheral artery embolism is often poor with mortality at 30 days of 15% and amputation in 15-30% of patients.

Prognosis

I. Viable
   - Not immediately threatened
   - No sensory loss or weakness
   - Audible arterial doppler signals

II. Marginally threatened
   - Salvageable if promptly treated
   - Minimal sensory loss (toes or none), no weakness
   - Often inaudible arterial doppler

III. Immediately threatened
   - Salvageable with immediate revascularisation
   - Sensory loss affecting more than the toes with rest pain
   - Mild to moderate weakness
   - Usually inaudible arterial doppler

IV. Irreversible
   - Major tissue loss and permanent nerve damage inevitable
   - Profound sensory loss (anaesthetic)
   - Paralysis
   - Inaudible arterial doppler