

ACUTE LIMB ISCHAEMIA

Def: sudden interruption of arterial supply to limb causing potential threat to limb viability

Irreversible changes to muscles/nerves within few hours → functional impairment

Aetiology:

THROMBOTIC: atherosclerosis/aneurysm/graft occlusion/thrombotic conditions/iatrogenic

EMBOLIC: atherosclerosis(platelet, lipid, plaque)/aneurysm/AF (80%)/mural thrombus/non-haem emboli/iatrogenic

OTHER: dissection/trauma/external compression/popliteal entrapment/cystic adventitial diseases/iatrogenic

iatrogenic: thrombosis, embolism, dissection, pseudoaneurysm, rupture, spasm

Clinical features: (cardinal features = 6P's)

Symptoms: pain, paraesthesia, paralysis (ischaemic muscles and nerves)

Signs: pallor, pulseless, perishably cold

complete partial

Impending irreversible damage: paraesthesia/paralysis (ischaemic muscles/nerves) – salvage if treated promptly

Irreversible ischaemia: tenderness/tense compartment +complete paralysis/anaesthesia +absent CR/venous flow

Acute on chronic: less severe due to collaterals || Hyperacute: no collaterals so severe

Examination:

Inspection: pallor → 6hrs: mottling → 12hrs: fixed blue staining; cap refill prolonged; venous guttering

(stagnant de-O₂ blood) (arts distal to occ fill w/thrombus)

Palpation: perishably cold/pulses (determine level)/muscle tenderness → tense with time ?compartment syndrome

Auscultation: bruits/cause by CVS exam ?AF

NEURO EXAM

Diff Dx: SpC compression or infarct/venous embolism or thrombosis/compartment syndrome

SEVERITY (SVS/ISCVS)		Cap Refill	Paralysis	Sensory Loss	Arterial Doppler	Venous Doppler
I	Viable	Intact	No	No	Yes	Yes
IIa	Threatened (salvage if promptly treated)	Intact/slow	No	Partial	No	Yes
IIb	Threatened (salvage if immediately treated)	Slow/absent	Partial	Partial/complete	No	Yes
III	Irreversible	Absent	Complete	Complete	No	No

Management:

Category I/IIa: Thombolysis/thomboembolectomy/arterial bypass (if IC but no rest pain, heparinise: may resolve)

Category IIb: Surgery (white leg with sensorimotor deficit; embolism>thrombosis)

Category III: Amputation (moribund with paralysed, numb limb with fixed blue staining and compartment syndrome)

THROMBOLYSIS

Principle: convert fibrin-bound plasminogen → plasmin → fibrinolysis

Selectivity: systemic treatment less successful with more complications → catheter in thrombus

Access: by disease distribution (CTA/MRA/pulse deficits); guidewire traversal test: soft thrombus predicts success

Drugs: streptokinase/urokinase/tPA (latter 2 superior); STILE: tPA/urokinase equivalent

Regimes: (i) slow infusion (ii) Pulsed spray (iii) high-dose bolus (latter 2 cause mechanical clot disruption)

Heparin: give before + after (48hrs) to counter pro-thrombotic tendency)

Further anticoagulation: DAPT if warfarin contraindicated

Underlying lesion: diagnostic angiogram in 6-12 weeks → surgery or angio +/- stent

Complications:

MI/CVA/major haemorrhage/minor haemorrhage/distal embolization/reperfusion damage/pericath thrombosis

2.3%

9%

40%, groin site

4%

2%

1%

Outcomes: limb salvage 70%, mort 22% (VSGBI); higher mort embolics (CVS statu); higher amputation in thrombotics

THROMBOLYSIS vs SURGERY

Both thrombolysis and surgery effective; individual bases + skills/experience available

3 major randomised studies:-

1. NY study: thrombolysis improves ALI <14d

2. STILE study: no difference between groups; recommend thrombolysis <14days/grafts

3. TOPAS trial: amputation-free survival similar at 6+12mths in both; thrombolysis reduces need for surgery

SURGICAL MANAGEMENT

Balloon catheter embolectomy

(a) Poor inflow: iliac embolectomy and if fails, fem-fem or axillo-fem

(b) Good inflow (or after (a)): femoral embolectomy + distal embolectomy

If still occluded distally: thrombolysis then (a) angio if stenosed

(b) explore below know pop art → pop embolectomy/bypass if persists

**Four-compartment fasciotomy essential as revascularisation → swelling

FURTHER:

Reperfusion injury: (a) venous blood (K⁺, H⁺, anaerobic metabolites) → SIRS (b) myoglobin → ARF, need diuresis

Anticoag: heparin then warfarin; esp in AF, little guidance otherwise

Search for embolic source (ECHO etc)