

STANDARD TREATMENT WORKFLOW (STW)

CHRONIC LOWER LIMB ISCHEMIA

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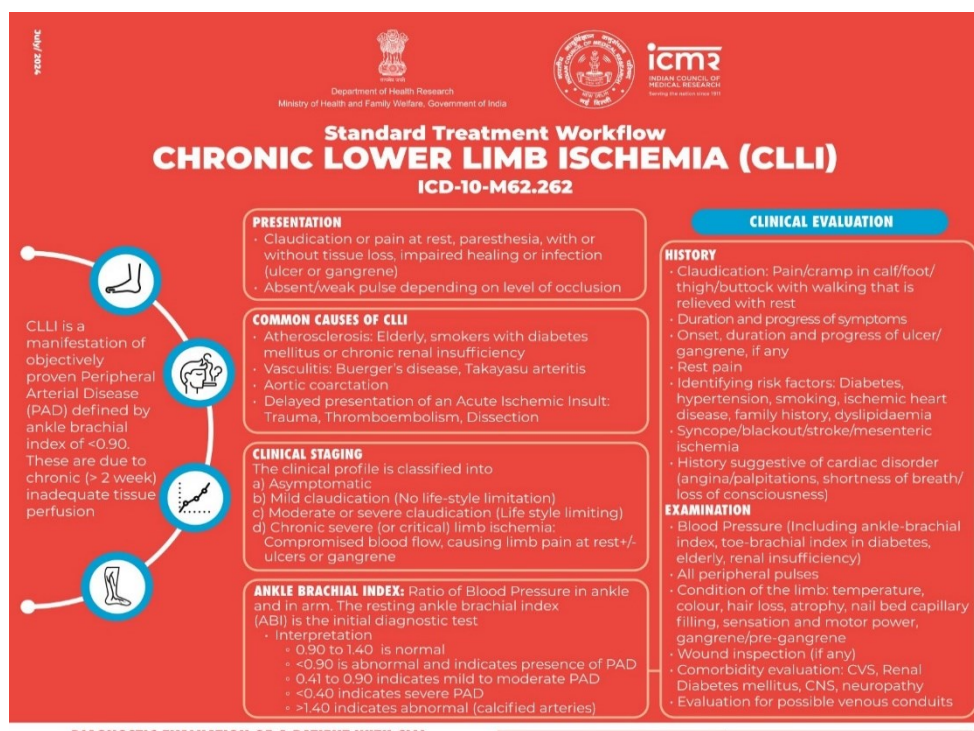
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Standard Treatment Workflow
CHRONIC LOWER LIMB ISCHEMIA (CLLI)
ICD-10-M62.262

PRESENTATION

- Claudication or pain at rest, paresthesia, with or without tissue loss, impaired healing or infection (ulcer or gangrene)
- Absent/weak pulse depending on level of occlusion

COMMON CAUSES OF CLLI

- Atherosclerosis: Elderly, smokers with diabetes mellitus or chronic renal insufficiency
- Vasculitis: Buerger's disease, Takayasu arteritis
- Aortic coarctation
- Delayed presentation of an Acute Ischemic Insult: Trauma, Thromboembolism, Dissection

CLINICAL STAGING

The clinical profile is classified into

- Asymptomatic
- Mild claudication (No life-style limitation)
- Moderate or severe claudication (Life style limiting)
- Chronic severe (or critical) limb ischemia: Compromised blood flow, causing limb pain at rest +/- ulcers or gangrene

ANKLE BRACHIAL INDEX: Ratio of Blood Pressure in ankle and in arm. The resting ankle brachial index (ABI) is the initial diagnostic test

- Interpretation
- 0.90 to 1.40 is normal
- <0.90 is abnormal and indicates presence of PAD
- 0.41 to 0.90 indicates mild to moderate PAD
- <0.40 indicates severe PAD
- >1.40 indicates abnormal (calcified arteries)

CLINICAL EVALUATION

HISTORY

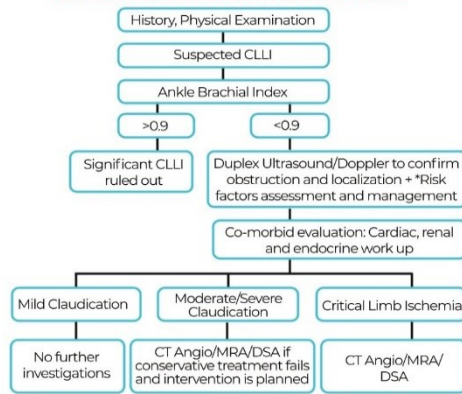
- Claudication: Pain/cramp in calf/foot/thigh/buttock with walking that is relieved with rest
- Duration and progress of symptoms
- Onset, duration and progress of ulcer/gangrene, if any
- Rest pain
- Identifying risk factors: Diabetes, hypertension, smoking, ischemic heart disease, family history, dyslipidaemia
- Syncope/blackout/stroke/mesenteric ischemia
- History suggestive of cardiac disorder (angina/palpitations, shortness of breath/loss of consciousness)

EXAMINATION

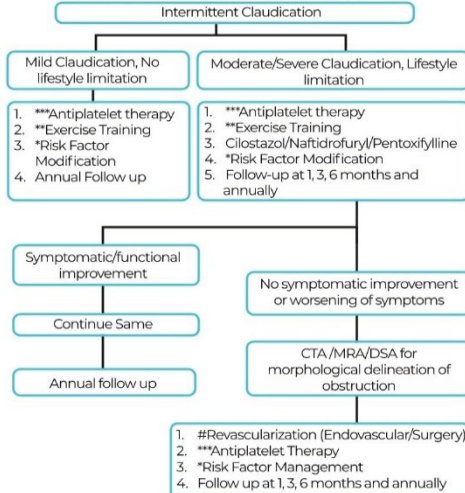
- Blood Pressure (Including ankle-brachial index, toe-brachial index in diabetes, elderly, renal insufficiency)
- All peripheral pulses
- Condition of the limb: temperature, colour, hair loss, atrophy, nail bed capillary filling, sensation and motor power, gangrene/pre-gangrene
- Wound inspection (if any)
- Comorbidity evaluation: CVS, Renal Diabetes mellitus, CNS, neuropathy
- Evaluation for possible venous conduits

CLLI is a manifestation of objectively proven Peripheral Arterial Disease (PAD) defined by ankle brachial index of <0.90. These are due to chronic (> 2 week) inadequate tissue perfusion

DIAGNOSTIC EVALUATION OF A PATIENT WITH CLLI



MANAGEMENT OF INTERMITTENT CLAUDICATION



DIFFERENTIAL DIAGNOSIS OF CLLI	DIFFERENTIATING TEST
Spinal stenosis, root compression	Ankle brachial index (ABI), Doppler
Arthritis	ABI, Doppler, X-Ray
Venous Claudication	ABI, Doppler
Compartment Syndrome	ABI, Doppler, compartment pressure

MANAGEMENT

***RISK FACTOR MANAGEMENT**

- Lifestyle modification (graded exercise)
- Control of HTN (BP < 140/90), Control of Diabetes Mellitus (HbA1c < 7.0)
- Low fat diet, exercise
- Atherosclerosis: Start statins, antiplatelets

****EXERCISE REHABILITATION FOR CLAUDICATION**

Graded and supervised walking three times a week, beginning with 30mins and increasing to 1 hour per session, at an intensity that will induce claudication within 3-5 mins

***REVASCUARISATION (PREREQUISITES)**

- Good distal vessels (run-off)
- Able to walk before critical limb ischemia
- Life expectancy > 1 year
- Satisfactory general condition

MEDICAL MANAGEMENT

- Antiplatelets** - Aspirin 75-100mg orally/ Clopidogrel 75mg orally OD
- Analgesic - Paracetamol + Opioid
- CIRCULATORY MODULATORS**
- Cilostazol 100mg orally. (C.I. in CHF, unstable Angina, Recent M.I., Tachyarrhythmias)
- Naftidrofuryl 200mg orally TDS
- Pentoxifylline 400mg orally TDS (C.I. in recent cerebral/retinal haemorrhage, intolerance of methyl xanthines)

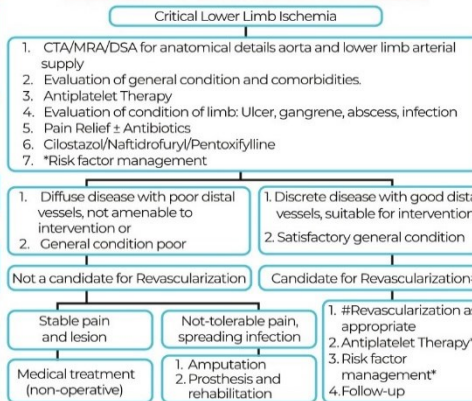
LOCAL WOUND MANAGEMENT

- Prevention and treatment of infection
- Leg dependency, off-loading, non-adherent dressing, abscess drainage, debridement, digital amputation[†]

AMPUTATION[†]

- Non-salvageable limbs, fixed contractures, severe infected/necrosis, failed revascularisation with persistent tissue loss

MANAGEMENT OF CRITICAL LOWER LIMB ISCHEMIA



ABBREVIATIONS

CT DSA: Computed Tomography Angiography Digital Subtraction Angiography	MRA: Magnetic Resonance Angiography
	PAD: Peripheral Arterial Disease

REFERENCE

1. Carle H, Bradbury AW, Nishi R, White J, Dick F, Frerking B, Mills S, Russo JB, Surprey K, Mund MH, Aboyans V, Akasy M, Alessandrino VA, Armstrong D, Azuma N, Becht J, Bengtsson M, Björck M, Chakraborti N, Cheng S, Dawson J, Dobos ES, Dworkin A, Dworkin S, Eckstein HK, Ferraresi R, Gambhir R, Carigallo M, Carrozzini P, Goode S, Gray B, Guo W, Gupta PK, Hinchliffe B, Jettly B, Komori K, Lavery L, Liang W, Lockstein R, Manard M, Mera S, Miyata T, Moneta G, Munoz Prado JA, Munoz A, Paoletti JE, Patel M, Pomposelli F, Powell B, Riddella R, Rogiers L, Schermer A, Schmittner P, Taylor S, De Lorenzo MV, Valler N, Vermeiren C, Wang J, Wang S, CVC Writing Group for the Joint Guidelines of the Society for Vascular Surgery (SVS), European Society for Vascular Surgery (ESVS), and World Federation of Vascular Societies (WFVS). Global Vascular Guidelines on the Management of Chronic Limb-Threatening Ischemia. Eur J Vasc Endovasc Surg. 2019 Jul;36(7):51-100.e13. doi: 10.1056/ejvs.2019.05.006. Epub 2019 Jul 8. Erratum in: Eur J Vasc Endovasc Surg. 2020 Mar;50(3):497-498. doi: 10.1056/ejvs.2020.03.025. Erratum in: Eur J Vasc Endovasc Surg. 2020 Jun;50(6):757-758. PMID: 31827354; PMCID: PMC6825045.

KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

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