Peripheral Arterial Disease (PAD)

Primary Care Algorithm

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A. Does this patient have leg pain caused by PAD?

Note: High risk groups are as follows:

Age < 50 years with diabetes and one other atherosclerotic risk factor
Age 50 – 69 years with a history of smoking or diabetes
Age > 70 years
Known to have atherothrombosis in any vascular bed

B. Assess symptoms and signs

No leg pain either at rest or with exertion Normal lower extremity pulses	No leg pain/atypical leg pain[1] Reduced or absent pulses	Leg pain during exertion but relieved by rest Reduced or absent pulses	Leg pain at rest and/or ulcers/gangrene	Acute Limb Ischaemia[2] characterised by '6Ps' - Pain - Pallor - Paraesthesia - Pulselessness - Perishing cold - Paralysis of abrupt onset
Not PAD Consider all other causes of leg pain	Likely claudication[3]		Severe Limb Ischaemia[4] Urgent referral to vascular specialist	Needs to be admitted immediately to hospital

C. Measure Ankle-Brachial Pressure Index (ABPI)[5]
(See overleaf)

ABPI ≤ 0.5	ABPI > 0.5 to < 0.9	ABPI ≥ 0.9 to 1.3	ABPI > 1.3
Confirmation of PAD diagnosis		If patient has classic PAD symptoms, consider referral to a hospital specialist for exercise ABPI test	Stiff arteries Refer to vascular specialist for further investigation
Treat cardiovascular risk factors. If symptoms are lifestyle-limiting or if evidence of trophic lesions, refer to a vascular specialist		If PAD	

D. Treatment of PAD[6]

Cardiovascular risk prevention (PAD equivalent to CHD)	&	PAD symptom control to improve walking distance
Manage PAD risk factors as you would for CHD e.g. antiplatelets, antihypertensives, lipid-lowering and glycaemic control		Exercise and pharmacotherapy
		If claudication remains lifestyle-limiting, refer to a vascular specialist

TARGET PAD
Reducing the risks from leg arterial disease

[1,2,3,4,5,6] - Refer to relevant sections overleaf

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1. Diagnosis of atypical leg pain [i]

Atypical leg pain is defined by lower extremity discomfort that is exertional, but does not consistently resolve with rest, or consistently limits exercise at a reproducible distance.

2. Acute Limb Ischaemia (ALI) [i]

ALI arises when a sudden decrease in blood flow threatens tissue viability and may be caused by an *insitu* thrombosis in a patient with underlying arterial disease or as a result of an embolus in a previously asymptomatic patient with normal leg arteries. Clinical symptoms and signs include the 6 'Ps' (listed over), the presence of which necessitates the need for immediate referral to hospital for surgical intervention. A patient who has an embolus may have (a) a known embolic source; (b) no prior history of claudication; and (c) the presence of normal arterial pulses in the contralateral limb. This is a surgical emergency that requires an emergency admission to the hospital.

3. Diagnosis of (Intermittent) Claudication [i]

Location	Buttock, thigh or calf muscles. Rarely the foot
Characteristic	Cramping, aching, fatigue, weakness, or frank pain
Onset relative to exercise	After some degree of exercise
Effect of rest	Relieved
Effect of body position	None
Other characteristics	Reproducible

4. Severe Limb Ischaemia (SLI) [i]

Severe or critical limb ischaemia, manifested by rest pain, ulceration or gangrene, represents a risk of limb loss and requires urgent assessment by a vascular specialist.

5. Ankle-Brachial Pressure Index (ABPI) [ii]

- The ABPI is a quick (10mins), non-invasive, simple, inexpensive measurement to assess the patency of the lower extremity arterial system.
- Measurements for both the ankle and brachial blood pressure readings are taken with the patient in the supine position using a 5- to 7-Mhz handheld Doppler device (additional probes for vascular use can be obtained for many obstetric Doppler machines).
- The ABPI value is calculated by dividing the ankle systolic pressure of the leg tested (ASys) by the higher of the 2 systolic brachial pressures (max. BSys):

$$\text{ABPI} = \frac{\text{ASys}}{\underset{\text{max.}}{\text{BSys}}}$$

Although the ABPI is an effective diagnostic tool, it should only be used within the context of clinical judgement and the presence of other PAD indicators. For example, patients with diabetes may record abnormally high values.

6. Treatment of PAD [ii]

Published UK treatment guidelines for PAD recommend the aggressive management of all associated risk factors. Cardiovascular Event Risk Reduction: Preventing the cardiovascular and cerebrovascular events associated with PAD is crucial to patient well-being and survival. The treatment is identical to that used for patients with CHD. It should be noted that ß-blockers may be used in patients with intermittent claudication.

Symptom Control: Although inherently part of an exercise programme, improved walking distance can have a marked effect on patient quality of life. Pharmacotherapy may improve quality of life and walking distances. Invasive therapeutic interventions such as angioplasty or surgery may be indicated for patients with severe, disabling, intermittent claudication.

Sources

i Hirsch, AT, et al. ACC/AHA 2005 Guidelines for the Management of Patients With Peripheral Arterial Disease (Lower Extremity, Renal, Mesenteric, and Abdominal Aortic): A Collaborative Report from the American Association for Vascular Surgery/Society for Vascular Surgery, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine and Biology, Society of Interventional Radiology, and the ACC/AHA Task Force on Practice Guidelines (Writing Committee to Develop Guidelines for the Management of Patients With Peripheral Arterial Disease). *J Am Coll Cardiol.* 2006; Mar 21;47(6):e1–e192.

ii Belch, JF et al. Critical Issues in Peripheral Arterial Disease Detection and Management: A Call to Action. *Arch Intern Med* 2003; Vol 163: 884–892.

This algorithm has been produced by the Target PAD group, a group of professionals dedicated to improving outcomes and quality of life for patients with peripheral arterial disease.

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