

## **Diagnosis, Prognosis and Management of PAD in Diabetes**

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Diabetes is strongly associated with the presence of peripheral artery disease (PAD). Not only is PAD an independent risk factor for developing foot ulceration and amputation, it is also associated with a higher risk of cardiovascular disease and overall mortality. Therefore it is important to diagnose PAD promptly and accurately, and to take steps to minimize its deleterious effects.

The diagnosis of PAD is challenging in patients with diabetes. Medical history and physical examination findings for the detection of PAD are of limited use in diabetes. Peripheral neuropathy may mask symptom of PAD, co-exist arteriosclerosis, edema and infection, make clinical assessment for PAD difficult. But it is still recommended annually check up for the presence of PAD include, at a minimum, taking a history and palpating foot pulses. For patients with diabetes and foot ulcer, further non-invasive tests should be arranged for determine the presence of PAD.

There is not sufficient evidence to support a single bedside non-invasive diagnostic modality for the detection of PAD across a spectrum of patients with diabetes. Non-invasive tests for the detection of PAD among individuals with diabetes are important to estimate the risk of amputation, ulceration, wound healing and presence of cardiovascular disease. Ankle brachial index (ABI) is the most widely used for screening of PAD, with exclusion of PAD at value 0.9 - 1.3. Alternative toe brachial index (TBI)  $<0.75$  and Doppler wave form analysis could be other screening tests for PAD.

In patients with a foot ulcer in diabetes and PAD, no specific symptoms or signs of PAD reliably predict healing of the ulcer. Diabetic microangiopathy should not be assumed to be the cause of poor wound healing in patients with a foot ulcer. Consider urgent vascular imaging and revascularization in a patient with toe pressure  $<30$  mmHg, ankle pressure  $<50$  mmHg, ABI  $<0.5$  and ulcer does not improve within 6 weeks despite optimal management.

Vascular image include color duplex ultrasound, computed tomography angiography, magnetic resonance angiography or intraarterial digital subtraction angiography to obtain anatomical information when revascularization is being considered. Revascularization can be performed either by endovascular techniques or surgical bypass. There is inadequate evidence to establish which revascularisation technique is superior, and decisions should be made individualized. The aim of revascularisation is to restore direct flow to at least one of the foot arteries, preferably the artery that supplies the anatomical region (angiosome) of the wound. After revascularization procedure, patient should be treated by multi-disciplinary and comprehensive program. Patients with signs of PAD and a foot infection (critical limb ischemia, CLI) are at particularly high risk for major limb amputation and require urgent treatment. All patients with diabetes and an ischaemic foot ulcer should receive aggressive cardiovascular risk management, including risk factors control, antiplatelet and statin.