P51

Screening for peripheral arterial disease in diabetes

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Background and aims: Ankle-brachial index (ABI) and toe-brachial index (TBI) are the most common screening methods for detecting peripheral arterial disease (PAD) in patients with diabetes. However, concerns persist regarding their accuracy. This study examined the performance of various screening tools for the diagnosis of PAD in patients with type 2 diabetes (T2DM). **Materials and methods:** A total of 100 patients (200 feet) with T2DM were studied. Ankle pressures were measured with a hand-held Doppler device and toe pressures by photoplethysmography at the great toe of both feet. Transcutaneous oxygen tension ($TcPO_2$) was measured at the dorsum of the feet. Haemoglobin oxygen saturation (SpO_2) was measured by pulse oximetry at the index finger and at the great toe of both feet in supine position and at 30cm elevation. ABI values <0.9, TBI ≤0.54, $TcPO_2$ <40mmHg and SpO_2 of the great toe in supine position <95% and >2% lower from the finger or SpO_2 of the great toe on elevation >2% lower from the supine position were considered abnormal. Diagnosis of PAD was based on the absence of triphasic waveform at the posterior tibial artery. **Results:** 41 patients had PAD. ABI was superior to all screening methods examined for the diagnosis of PAD. TBI had slightly lower sensitivity and specificity than ABI, while $TcPO_2$ and SpO_2 could not be used as screening tools for assessing PAD (Table).

	ABI	TBI	$TcPO_2$	SpO_2		
				1st criterion	2nd criterion	both criteria
sensitivity	72	67	32	41	8	46
specificity	100	93	91	55	90	48

Regarding SpO_2, the 1st criterion is the SpO_2 at the great toe to be <95% and the difference in SpO_2 from the finger to be >2%; and the second criterion is the difference in SpO_2 at the great toe to be >2% between the supine position and at 30cm elevation.
Conclusions: ABI is the best screening method for detecting PAD in patients with diabetes.