

Role of ABPI as a screening tool for arterial disease in diabetic and non diabetic subjects in comparison to Duplex ultrasound scanning

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Introduction: Ankle Brachial Pressure Index (ABPI) is widely used as a screening tool for peripheral vascular disease (PVD). Diabetic patients often have significant medial arterial calcification, leading to a falsely high ABPI, limiting its use. Aims: The aim of this study was to compare usefulness of ABPI with duplex ultrasound (as a gold standard) in the assessment of diabetic and non diabetic patients with suspected PVD. Methods: 52 subjects who had both ABPI and Duplex ultrasound (2 months before or after ABPI) between January 2007 and July 2009 were included in this study. They were divided into the diabetic and the non diabetic group and each leg was studied independently. ABPI study results were interpreted as normal ( $>1.0-1.4$ ), mild or insignificant disease ( $0.81-1.0$ ), moderate disease ( $0.5-0.8$ ), severe disease ( $<0.5$ ) and severe calcification ( $>1.4$ ). Duplex scan results were interpreted as normal, mild or insignificant disease, severe disease (flow limiting, monophasic flow, tight stenosis) and absent flow (occluded vessel). We compared the posterior tibial ABPI with posterior tibial duplex, and the dorsalis pedis ABPI with anterior tibial duplex. We classified ABPI results as positive (moderate, severe disease and calcification) or negative (normal, mild or insignificant disease). Similarly duplex test results were classified as positive (severe disease and no flow) or negative (normal, mild or insignificant disease). Results: The median age of the 52 patients (22 diabetic subjects with 15 having coexisting neuropathy) studied was 81.50 years (range 39-96) (25<sup>th</sup>-75<sup>th</sup> percentile). In patients with diabetes, the sensitivity and specificity for ABPI was 71.4% and 100% respectively in the left leg and 73.3% and 40% respectively in the right leg. In non diabetic subjects, the sensitivity and specificity of ABPI versus Duplex were 93.8% and 85.7% respectively in the left leg, and 85.7% and 80% respectively in the right leg. The positive predictive value of ABPI was 100% and 78.6% in the left and right leg respectively in diabetic patients and 93.8% and 92.3% in the left and right leg respectively in non diabetic subjects. 25 patients had died during the study period. Conclusions: Our data highlights limitations of ABPI as screening tool in subjects with diabetes. There seems to be an unexplained discrepancy in predictive value between both legs, and this may be related to asymmetric calcification, or a predilection for arterial disease to the right leg in subjects with diabetes. Larger studies are needed, but for now ABPI measurements need to be interpreted with caution, certainly in subjects with right sided problems!