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SCREENING FOR PERIPHERAL VASCLAR DISEASE WITH A SIMPLE OSCILLOMETRIC BLOOD PRESSURE EQUIPMENT

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The aim of the study was to test if an automated blood pressure measuring device could be used as a simple screening test for peripheral vascular disease. Blood pressure at the ankle level is a good predictor of vascular disease in the lower limbs. The ankle/arm index (AAI), i.e. the ratio between the ankle systolic blood pressure and arm (brachial) systolic blood pressure, is a useful non-invasive screening troll for the early detection of atherosclerosis. Ankle blood pressure is normally measured by techniques that involve specially designed and expensive equipment, often unavailable to the general practitioner, whereas the available ordinary blood pressure measuring equipment is considered unreliable for quantification of ankle blood pressure.

The study included 46 consecutive patients (22 women, 24 men) with a mean age of 73 years (sd: 11 years). The patients were suspected of having intermittent claudication. Blood pressure was measured on the upper arm and at the ankle level using an automated oscillometric measuring unit (Omron HEM-705CP). Immediately following this, blood pressure was measured at the ankle level using a standard plethysmographic technique. In normal individuals, blood pressure at the ankle is usually slightly higher than on the upper arm resulting in an AAI greater than or equal to 1.0.

Using the standard method, we found systolic blood pressure levels between 82 and 220 mmHg on the upper arm and between 55 and 230 mmHg at the ankle. One of the 92 ankle pressures could not be measured with any technique due to a skin lesion at the ankle. In all cases with AAI greater than or equal to 1.0, the oscillometric device gave result that was closely correlated to those obtained by the standard plethysmographic method. Measurements with the oscillometric device failed in 30% of cases with AAI less than 1.0 covering a broad spectrum of absolute pressure levels.

It is concluded that an oscillatory measuring device is able to record blood pressure at the ankle level in normal subjects with a sufficient accuracy. It is also concluded that if the device fails in measuring the blood pressure or shows a reduced AAI then it is highly probable that the subject is suffering from peripheral vascular disease. It is finally concluded that an inexpensive blood pressure device can be used for the initial screening for peripheral vascular disease due to a high sensitivity.

This greatly increases the possibility for early detection of vascular disease in general practice.