Position Statement on the Use of the Ankle Brachial Index in the Evaluation of Patients with Peripheral Vascular Disease

A Consensus Statement Developed by the Standards Division of the Society of Interventional Radiology

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J Vasc Interv Radiol 2003; 14:S389

PERIPHERAL vascular disease (PVD), also known as peripheral arterial disease, affects more than 8–10 million Americans, and its incidence is growing annually (1). PVD is a risk marker for coronary disease, cerebrovascular disease, aneurysmal disease, diabetes, hypertension, and many other conditions. Patients with objectively documented PVD have a four- to six-fold increase in cardiovascular mortality rate over healthy age-matched individuals (2). Fifty percent of people with PVD are symptomatic (3). One of the simplest and most useful parameters to objectively assess lower extremity arterial perfusion is the ankle-brachial index (ABI). The ABI helps to define the severity of the disease and successfully screens for hemodynamically significant disease. The Society of Interventional Radiology (SIR) recommends that all patients being evaluated for peripheral vascular disease should have their ABI measured.

The following methodology is recommended:

With the patient placed in a supine position, the brachial and ankle systolic pressure measurements are obtained. The higher systolic pressure of the anterior tibial or posterior tibial measurement for each foot is divided by the highest brachial systolic pressure to obtain an ankle brachial pressure ratio. For example, to obtain the left ABI, first measure the systolic brachial pressure in both the left and the right arm. Select the higher of these two values as the brachial artery pressure measurement. There should be a difference of less than 10 mm Hg between each brachial pressure measurement. Next, measure the left anterior tibial and posterior tibial arterial systolic pressures. Select the higher of these two values as the ankle pressure measurement. Then, divide the selected ankle pressure measurement by the previously selected brachial artery systolic pressure measurement. This will give the ABI.

ABIs as high as 1.10 are normal; abnormal values are those less than 1.0. The majority of patients with claudication have ABIs ranging from 0.3 to 0.9. Rest pain or severe occlusive disease typically occurs with an ABI lower than 0.50. Indexes lower than 0.20 are associated with ischemic or gangrenous extremities.

In patients with diabetes and heavily calcified vessels, the arteries are frequently incompressible. This results in an artifactually elevated ankle pressure, which can underestimate disease severity. In these patients, toe pressure determinations more accurately reflect perfusion.

This article first appeared in J Vasc Interv Radiol 2002; 13:353.

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DOI: 10.1097/01.RVI.0000094611.61428.3b

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