The Diagnostic and Predictive Role of Ankle-Brachial Index in Clinical Practice

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Editorial

Peripheral artery disease (PAD) has been associated with specific risk factors such as smoking, diabetes mellitus (DM) as well as previous coronary and cerebrovascular disease [1]. Data show that the distribution, extent, and progression of PAD are influenced by cardiovascular risk factors although the findings are not consistent [2]. PAD prevalence and incidence are both sharply age-related, rising >10% among patients in their 60s and 70s [1]. With aging of the global population, it seems likely that PAD will be increasingly common in the future. Additionally, symptomatic PAD events have been strongly associated with an increased risk for cardiovascular events [3]. Therefore, proper clinical evaluation and early diagnosis is imperative.

Regarding physical examination, inconsistencies of clinical findings in the diagnosis of PAD are frequent [4]. However, detailed medical history including a systematic review of symptoms (walking impairment, intermittent claudication, ischemic rest pain and/or non-healing wounds) as well as careful clinical examination should be included in the initial management of such patients, especially over 50 years old with atherosclerosis risk factors [5]. According to recent Guidelines, patients at risk for PAD such as the diabetic patients should undergo comprehensive pulse examination and inspection of the feet (Class I; level of evidence C) [5]. Although the most common symptom of PAD is intermittent claudication, non-invasive measures, such as the ankle-brachial index (ABI), show that asymptomatic PAD is several times more common in the population than intermittent claudication is [1].

Therefore, measurement of ABI in both extremities has been recommended in order to verify the presence of PAD and assess additional cardiovascular risk in patients with cardiovascular risk factors or symptoms [5]. However, there is still the question which asymptomatic individuals should ABI be applied to. Combination of American College of Cardiology and American Diabetes Association guidelines indicate: 1) to the <50 years old diabetic patient with additional risk factors, 2) to the >50 years old diabetic patient and 3) to the >70 years old individual even without risk factors. A recent meta-analysis has shown that ABI in combination with Framingham risk score may improve the accuracy of cardiovascular risk prediction [6]. Specifically in patients with known DM, those with low (<0.9) and high (>1.4) ABIs are both at higher risk for cardiovascular complications [7,8]. Additionally, very high (>1.4) as well as very low (<0.4) ABI has been associated with increased mortality [9]. Although increased arterial calcification and stiffness may limit the predictive value of ABI in diabetic patients leading to a large number of falsely high measurements, data indicate that other tools such as the toe-brachial index could overcome such limitations in patients with increased ABI (>1.4) [5,10]. Finally, in patients with normal resting index and symptoms of intermittent claudication, ABI should be measured after exercise as well [5].

Regarding the prognostic value of ABI in asymptomatic patients, abnormal ABI values have been associated with increased risk for future adverse cardiac events in patients with known coronary artery disease [11]. A recent study of almost 4,300 patients has identified ABI as a potent predictor of stroke in general population as well [12]. Furthermore, there is recent evidence that patients with values<0.9 or >1.4 are almost four times more likely to have a silent cerebral small vessel disease [13]. Low ABI has been also associated with carotid atherosclerosis [14], and there

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