

# Ankle-brachial index in coronary artery disease

Sevket Balta,<sup>1\*</sup> Sait Demirkol,<sup>II</sup> Mustafa Demir,<sup>II</sup> Cengiz Ozturk,<sup>II</sup> Mustafa Aparcı,<sup>III</sup> Turgay Celik<sup>II</sup>

<sup>I</sup>Eskişehir Military Hospital, Department of Cardiology, Eskişehir, Turkey. <sup>II</sup>Gulhane Medical Academy, Department of Cardiology, Ankara, Turkey.

<sup>III</sup>Etimesgut Military Hospital, Department of Cardiology, Ankara, Turkey.

Email: drsevketb@gmail.com

Tel.: +90 222 220 45 30

\*corresponding author

Dear Editor,

We have read the article "Ankle-brachial index as a predictor of coronary disease events in elderly patients submitted to coronary angiography" by Eduardo D. E. Papa et al. (1). These authors aimed to evaluate the value of the ankle-brachial index (ABI) as a marker of cardiovascular events in elderly patients and to evaluate the relationship between the ABI and the extent of coronary artery disease (CAD), as documented by coronary angiography. They demonstrated that in elderly patients with documented coronary disease, a low ABI (<0.9) was associated with the severity and extent of CAD. Additionally, at late follow-up appointments, a low index was correlated with an increase in the occurrence of major cardiovascular events.

This study was interesting and relatively well presented. However, there are certain essential points that must be further discussed. An abnormal ABI is not only a valuable diagnostic tool for peripheral arterial disease but also a predictor of generalized atherosclerosis (2). However, although the ABI provides several benefits (i.e., it is relatively simple, noninvasive and inexpensive) and is more than 90% sensitive and specific compared with angiography, it has certain limitations. Approximately 10% of the population lacks the dorsalis pedis or posterior tibial artery, meaning that their ABI cannot be accurately measured. Additionally, the ABI is not precise in noncompressible pedal arteries, which may be found in diabetic and elderly patients (3). In addition, certain medications, such as antihypertensive treatments, antiplatelet drug therapies and statins, may influence ABI parameters (4). For this reason, the results might have been different if the authors had mentioned these factors in their study.

Furthermore, the extent of CAD was evaluated by calculating the number of vessels involved; CAD was uniarterial when there was an isolated lesion in one coronary artery and multiarterial when lesions were present

in two or more vessels. Previously, the extent of CAD was evaluated based on many other calculations. However, the syntax score (SS) has been accepted as the true method for grading coronary complexity based on visual angiographic assessment. The addition of clinical risk factors to the SS has been shown to potentially further augment its utility for objective evaluation of patients with severe CAD (5).

ABI deterioration is indeed associated with higher mortality in CAD patients, as presented in this study. However, it should be kept in mind that although the ABI is the easiest, most inexpensive, most reliable, least invasive and most widely available marker among the tested tools and can predict the mortality rate, further studies should discuss ABI-related factors (6).

## REFERENCES

1. Papa EDE, Helber I, Ehrlichmann MR, Alves CMR, Makdisse M, Matos LN, et al. Ankle-brachial index as a predictor of coronary disease events in elderly patients submitted to coronary angiography. *Clinics*. 2013;68(12):1481–7, [http://dx.doi.org/10.6061/clinics/2013\(12\)02](http://dx.doi.org/10.6061/clinics/2013(12)02).
2. Balta S, Balta I, Demirkol S, Cakar M, Sarlak H, Kurt O. Subclinical peripheral arterial disease and ankle-brachial index. *Angiology*. 2013;64(5):395–6, <http://dx.doi.org/10.1177/0003319712475206>.
3. Ro DH, Moon HJ, Kim JH, Lee KM, Kim SJ, Lee DY. Photoplethysmography and continuous-wave Doppler ultrasound as a complementary test to ankle-brachial index in detection of stenotic peripheral arterial disease. *Angiology*. 2013;64(4):314–20, <http://dx.doi.org/10.1177/0003319712464814>.
4. Balta S, Balta I, Demirkol S, Cakar M, Sarlak H, Kurt O. Subclinical peripheral arterial disease and ankle-brachial index. *Angiology*. 2013;64(5):395–6, <http://dx.doi.org/10.1177/0003319712475206>.
5. Farooq V, Vergouwe Y, Räber L, Vranckx P, Garcia-Garcia H, Diletti R, et al. Combined anatomical and clinical factors for the long-term risk stratification of patients undergoing percutaneous coronary intervention: the Logistic Clinical SYNTAX score. *Eur Hear J*. 2012;33(24):3098–104, <http://dx.doi.org/10.1093/eurheartj/ehs295>.
6. Balta S, Cakar M, Demirkol S. All risk factors and confounders should be discussed in order to precisely describe the ankle-brachial index and albuminuria. *J Atheroscler Thromb*. 2013;20(6):601, <http://dx.doi.org/10.5551/jat.17384>.

Copyright © 2014 CLINICS – This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

No potential conflict of interest was reported.

DOI: 10.6061/clinics/2014(09)13