An Ignored Disease of Cardiovascular System: Peripheral Arterial Disease

Bilgin Bahadir Basgoz*, Musa Barış Aykan and Ilker Tascı

Department of Internal Medicine, Gulhane Training and Research Hospital, Turkey

Submission: November 16, 2017; Published: November 27, 2017

*Corresponding author: Bilgin Bahadir Basgoz, Department of Internal Medicine, Gulhane Training and Research Hospital, Ankara, Turkey, Tel: +903123044015; Email: bbbasgoz@gmail.com

Abstract

Peripheral arterial disease (PAD) is the chronic and progressive deterioration of lower extremity arterial blood flow due to systemic atherosclerosis. Currently, PAD is considered not only a disorder of lower extremity circulation and but also a predictor of increased mortality and morbidity. In prevalence surveys conducted in Turkey, the frequency of PAD was found up to 20-30%, increasing with advancing age. The diagnosis of PAD can easily be made by the ankle brachial index measurement. The incidence of coronary artery disease and congestive heart failure is higher in individuals with PAD. In addition, in patients with coronary artery disease or congestive heart failure, cardiovascular mortality and all-cause mortality increases in the presence of PAD. In conclusion, PAD is a systemic disease and should be treated systematically and effectively in addition to interventional therapies.

Keywords: Peripheral arterial disease; Coronary artery disease; Heart failure; Ankle brachial index; Drug therapy

Introduction

Peripheral arterial disease (PAD) is defined as the chronic and progressive deterioration of the lower extremity arterial blood circulation due to systemic atherosclerosis. Today, PAD constitutes one of the four main categories of cardiovascular disease (CVD) along with coronary heart disease (CHD), cerebrovascular disease, and aorta atherosclerosis/aneurysm [1]. This classification was first described in the National Cholesterol Education Program (NCEP) Adult Treatment Panel III-ATPIII guide and is still relevant [1]. PAD is associated with increased all-cause mortality, cardiovascular mortality and other cardiovascular outcomes [2]. In other words, no difference exists between PAD diagnosed individuals and individuals who have had CHD or cerebrovascular disease in terms of clinical outcomes.

Epidemiology

Among the diseases under the definition CVD, PAD is the most frequent one across different populations. In the first ever survey conducted to explore the prevalence of PAD among Turkish adults and elderly, the frequency of PAD was 20% among individuals aged 50-69 years with at least one cardiovascular risk factor [3]. The study found 30% of PAD among older adults aged 70 years or older, irrespective of risk factors. In a study conducted in the USA with a similar design, overall frequency of PAD was 29% [4]. On the other hand, findings have also been obtained that lower prevalence of PAD was found in outpatient practice of internal medicine [5]. With a very low prevalence in young people [6], the prevalence of PAD increases linearly with age after the fourth decade. The US National Health and Nutrition Examination Survey (NHANES) reported a 0.9% prevalence of PAD between 40 to 49 years of age, whereas 2.5%, 4.7%, and 14.5% were calculated for 50 to 59, 60 to 69, and 70 years and over, respectively, with an average prevalence of 4.3% over 40 years of age [7].

Diagnosis

Angiographic methods are the gold standard for PAD diagnosis [8]. Doppler ultrasonography can also be used for diagnosis, providing additional benefits prior to surgical interventions [9]. The Edinburgh claudication questionnaire not only displays lower sensitivity, but also may vary depending on the procedure selection [10,11]. Today, the most preferred diagnostic method is measurement of the ABI [10,12-14]. While, correct calculation of the index value is seriously important [15], a low ABI value (≤0.9) is not only diagnostic for lower extremity occlusive disease but also a marker of systemic atherosclerosis [16-18].
diagnostic accuracy of the ABI testing is falsely reduced due to
calcinosis on the arterial wall [19]. In any case, ABI is a highly
reliable, noninvasive diagnostic method to detect PAD, allowing
categorization of the severity of the occlusion [20,21].

PAD and CHD

In patients with CHD, diagnosis of PAD causes significant
increases in the frequency of new cardiovascular events and
all-cause mortality compared to those without PAD [1]. The
incidence of atherosclerosis in coronary arteries is also increased
in the presence of PAD [22,23]. Currently, screening for CHD is
recommended in individuals with the diagnosis of PAD [24].
However, even in the presence of PAD alone, intensive treatment
is required to reduce the risk of atherosclerotic events [1]. There
is no clear recommendation to screen for PAD in asymptomatic
patients with CHD which is already a major type of CVD with
established prevention and treatment goals. In the presence of
PAD, it is suggested that screening for concomitant CHD may be
beneficial in reducing the risk of coronary ischemic events and
death by correctly and early defining the patients who are true
candidates of revascularization treatment [25]. However, it has
not yet been proven whether such an assumption is met in the
clinical practice.

PAD and CHF

Although there are many common risk factors between CHF
and PAD, a few studies could identify a relationship between
them. A meta-analysis of 11,300 patients showed 7.9%(5.3-
13.9%) prevalence of CHF in patients with PAD, while the
expected CHF frequency in the community was 4.1% (3.7-
4.5%) according to the NHANES database [26]. Accordingly,
the relative risk for CHF was 1.9 (1.35-3.1, p<0.001) times higher
in patients with PAD and it was estimated that if 13 (7-19)
subjects with PAD were screened, one CHF could be identified
[26]. Studies on clinical significance of this association have shown
that PAD causes worsening in advanced stages of CHF. In the HF-ACTION trial in which the effect of supervised
exercise was investigated in addition to standard treatment options
for patients with CHF, patients with PAD were less likely to benefit from cardiopulmonary exercise program and PAD
was an independent risk factor for all-cause mortality and
hospitalizations in patients with CHF [HR (95% CI); 1.31 (1.06-
1.62), p=0.011] [27]. Although this study demonstrated limited
benefit of exercise in patients with CHF having PAD, supervised exercise therapy is recommended with class IA evidence,
without distinction of PAD patients with presence or absence of
claudication, with or without CHF [25]. In conclusion, it may
be useful to screen individuals with PAD for heart failure due to
approximately 2-fold increase in its frequency and higher
mortality in patients with CHF having PAD.

Medical Treatment in PAD

All patients with PAD should have antiplatelet and statin
treatment if there is no contraindication. Furthermore, in the
presence of hypertension and or diabetes mellitus as additional
risk factors, treatment should be tailored to the patient. In
addition to medical treatment, smoking cessation should be a
part of management, along with effective exercise programs.

Statins

In individuals diagnosed with PAD, statin therapy reduced
major adverse cardiac events [28-30], limb-related adverse
events (worsening of claudication, critical leg ischemia,
revascularization and amputation) [27,29,31], limb loss, and
mortality after revascularization [30,32-35]. Furthermore,
statin therapy increased the total / painless walking distance in
patients with PAD [30,33].

Antiplatelet therapy

The use of aspirin alone (75-325mg/day) or clopidogrel
alone (75mg/day) in the presence of symptomatic PAD is
recommended to reduce the risk of MI, stroke, and vascular
death [34-37]. As an expert opinion (Class IIa) [25] using
antiplatelet therapy is reasonable in asymptomatic patients with
ABI detected PAD, although there is no sufficient data regarding
the use of antiplatelet medications to reduce the risk of MI,
stroke and vascular death.

Cilostazol and/or Pentoxifylline

While improvement in walking distance has been previously
shown with cilostazol treatment previously [38], a meta-
analysis of studies with pentoxifylline treatment did not show
any benefit [39]. Therefore, the use of pentoxifylline for this
purpose should be decided on a patient-based approach. Use of
cilostazol to reduce symptoms and increase walking distance in
patients with PAD having claudication is considered an effective
treatment option [25].

References

cholesterol education program (NCEP) expert panel on detection,
evaluation, and treatment of high blood cholesterol in adults (Adult
Ankle brachial index combined with framingham risk score to predict
artery disease assessed by ankle-brachial index in patients with
established cardiovascular disease or at least one risk factor for
atherothrombosis-CAREFUL study: a national, multi-center, cross-
4. Hirsch AT, Criqui MH, Treat-Jacobson D, Regensteiner JG, Creager MA,
et al. (2001) Peripheral arterial disease detection, awareness, and
of a decreased ankle brachial index and associated conditions in
the practice of internal medicine in a Turkish population sample. Int
obesity is associated with a lower ankle-brachial index in women with


An Ignored Disease of Cardiovascular System: Peripheral Arterial Disease

Bilgin B B, Musa B A, Ilker T.


DOI: 10.19080/JOCCT.2017.08.555739

Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats (Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

Track the below URL for one-step submission

https://juniperpublishers.com/online-submission.php

This work is licensed under Creative Commons Attribution 4.0 License

DOI: 10.19080/JOCCT.2017.08.555739