

Low Ankle-Brachial Index as a Predictor of Adverse Six-Month Outcomes After Acute Myocardial Infarction

Thesis

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Introduction

The ankle-brachial pressure index (ABI), which is the ratio of ankle to brachial systolic blood pressure, provides a simple measurement that can be performed in primary care settings without expensive or elaborate equipment or extensive training or experience. An ankle-brachial pressure index value <0.9 is widely acknowledged to indicate an abnormally low level (1). Several studies have shown that a low ankle-brachial pressure index is associated with increased risk of subsequent mortality in populations, including (2) and excluding (3–7) people known to have cardiovascular disease (CVD).

A low ankle-brachial pressure index was shown to predict increased risk of fatal myocardial infarction in the Edinburgh Artery Study cohort (8) and increased risk of cardiovascular disease mortality in other studies (3,4,6,7) independent of conventional risk factors.

In one systematic review (1), data on the relation between a low ankle-brachial pressure index and incident cardiovascular outcomes from prospective studies were examined. The researchers used weighted, rather than individual level data, so that adjustment for other risk factors was not possible. They determined that a low ankle-brachial pressure index has a high specificity and low sensitivity for subsequent cardiovascular outcomes (1). Their results indicated that a normal ankle-brachial pressure index alone might still be associated with increased risk of cardiovascular disease, so that further information on other cardiovascular risk factors is required.

The researchers concluded that further study of the incremental predictive role of a low ankle-brachial pressure index was required in studies that could adjust for conventional risk factors.

Effective interventions to reduce cardiovascular disease risk are available; thus it is important to identify high-risk individuals so they can be treated. Because the number of people at risk for cardiovascular disease is high, the methods used to identify such individuals should be easily performed in primary care.

Aim Of The Work

The aim of this study is to correlate the ankle-brachial pressure index value (normal or low) with six-month clinical outcome in patients hospitalized for acute ST-segment elevation myocardial infarction.

Materials and methods

This study will be conducted at Mahalla Cardiac Center and will enroll 60 patients with the **first episode** of acute ST-segment elevation myocardial infarction presenting to the coronary care unit.

Exclusion criteria:

- Patients with a life expectancy of less than 6 months.
- Patients with a recurrent myocardial infarction .
- Patients with juvenile onset Diabetes Mellitus .
- Patients with chronic renal impairment, with serum creatinine level above 2.5 mg/dl.
- Patients with end stage renal disease on dialysis.
- Patients with allergy to thrombolytic therapy.
- Patients with contraindications to thrombolytic therapy.
- Patients with allergies/contraindications to Angiotensin-converting enzyme inhibitors, β -Blockers, Statins, Aspirin.

Methods:

All patients will be subjected to the following:

- 1)- Careful history analysis.
- 2)- full clinical examination.
- 3)- The ankle-brachial pressure index will be calculated according to McDermott (9) by measuring the systolic blood pressure from both the right and left brachial arteries, the right and left posterior tibial arteries and the dorsalis pedis arteries while the patient is supine. Appropriately sized cuffs will be used.

The ankle systolic pressure will be measured on either side using a hand-held 8-MHz Doppler ultrasound probe (D900; Huntleigh, UK), and a sphygmomanometer. The tibial artery will be located using the doppler ultrasound probe and the cuff will then be inflated until the pulse is obliterated. The cuff will then be slowly deflated and the pressure at which Doppler flow is redetected will be recorded as the ankle pressure. The same procedure will be repeated on the brachial artery.

The ankle-brachial pressure index will be calculated as the ratio between the higher of the systolic blood pressure at the anterior or the posterior tibial artery in the right or in the left ankle, and the systolic pressure in the corresponding right or left arm.

4) - Patients will be categorized according to ankle-brachial pressure index values:

- a- lower than or equal to 0.90 (abnormal ankle-brachial pressure index).
- b- higher than 0.90 (normal ankle-brachial pressure index) .

5) - At the time of discharge, all patients will receive the following medications, if there are no contraindications to any of them:

- 1- Angiotensin-converting enzyme inhibitors.
- 2- Beta-Blockers.
- 3- Acetyl salicylic acid.
- 4- Clopidogrel.
- 5- Statins.

Doses of these medications will be accurately recorded for every patient.

6)- Six-months clinical follow up will include a follow up visit at the cardiac clinic. major adverse cardiac events rates; will be carefully reported .

Major adverse cardiac events include:

- (a) Cardiovascular mortality .
- (b) Fatal and non fatal myocardial reinfarction .
- (c) Cerebrovascular stroke .
- (d) Rehospitalization for an ischemic event .

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