Relationship between ankle Brachial Index and Pattern of Coronary Artery Disease: An observational study

To the Editor,

Morbidity and disability burden from Cardio Vascular Diseases remain the major cause accounting for 30–40% of all deaths. As Coronary Artery Disease (CAD) is of multi causal origin, primary prevention strategies are paramount. As CAD is predominantly asymptomatic in initial stages and the burden of Stable CAD is increasing, screening with appropriate strategies, early diagnosis and treatment is challenging.[1] Ankle Brachial Index (ABI) is a simple diagnostic technique which can be easily performed by primary care physician and other primary care workers using sphygmomanometer. It is defined as the ratio of highest systolic pressure at the ankle to that of the brachial artery. It has a high specificity and sensitivity, which combined with low costs, make ABI as good screening test of choice among peoples at risk.[2,3]

A prospective observational design was conducted to assess the relationship between ABI with the angiographic findings of patients with CAD. The target population of the study included both in- and out-patients suspected to have Coronary Artery Disease. Sample consisted of 385 patients undergoing diagnostic or interventional procedure of cardiac catheterization through either trans radial or femoral route. Patient having known peripheral arterial disease; lower extremity ulceration were excluded. Consecutive sampling technique was used. Sample size estimated was 385 with the expected percentage of patients with ABI less than 0.9 to correlate with significantly abnormal coronary arteries as 50 with 5% relative precision and 5% level of significance.

The study was approved by Institute Research committee and Ethical committee (JIP/IEC/SC/29/929). ABI was measured using standard sphygmomanometer. The data analysis was performed by using both descriptive and inferential statistical tests. All statistical analysis was carried out at 5% level of significance.

Majority (77.4%) of the participants were males. Mean age of the participants were 52.6 ± 10.30 years. 17.14% (66) participants had both Diabetes mellitus and Hypertension as co-morbidities. 44.67% (172) participants are ever smokers. 44.93% participants Body Mass Index (BMI) falls between 18.5 and 22.9. Out of 385 participants 35.58% of the participants were in normal ABI. 50.64% of the patients were in ABI of less than 0.9, which is considered to be increased risk for CAD and 13.76% of them had ABI more than 1.1, which is considered to be increasing risk for Peripheral Artery Disease (ABI Positive category) [Figure 1]. 137 participants in ABI –ve category (between 0.9 and 1.1 considered as normal) had increased pattern of normal coronaries and decreased no of vessels involvement compared with ABI + ve patients (248). Increased pattern of re-canalized coronaries were noted in ABI negative patients which was significant at $P < 0.005$ [Table 1].

As there was an increasing involvement of Coronary Artery disease noted among ABI positive patients, Ankle Brachial Index can be used for screening, diagnosing and preventing the occurrence of CAD in symptomatic and asymptomatic patients at all level of health care with added advantages to focus on primary prevention as it is easy to perform, non-invasive, more specific, and cost effective.[4,5]

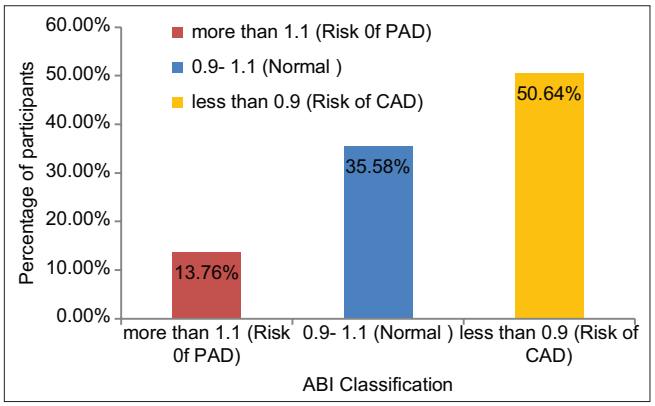

Figure 1: Distribution of Ankle Brachial index in study participants

Table 1: Ankle Brachial Index and its pattern of CAD (*n*=385)

Pattern of CAD	ABI + ve (<0.9 and more than 1.1) (*n*=248)	ABI – ve (0.9 -1.1, Normal) (*n*=137)	*p*
Normal Coronaries	2 (0.80%)	44 (29.93%)	*P*<0.005
Single Vessel Disease	51 (20.50%)	34 (23.12%)	
Double vessel disease	65 (26.20%)	33 (22.44%)	
Triple vessel disease	70 (28.22%)	10 (6.80%)	
Re-canalized CAD	11 (4.43%)	3 (2.04%)	
Slow flow Coronaries	27 (10.88%)	5 (3.40%)	
Minor CAD	22 (8.97%)	8 (5.44%)	

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Conflicts of interest

There are no conflicts of interest.

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