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Research Article

## Incidence of Hypertension in Coronary Artery Disease Patients in Eastern Province Saudi Arabia

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### Abstract

**Background:** Epidemiological studies have suggested a strong association between hypertension and coronary artery disease (CAD). Hypertension is one of the major independent risk factor in CAD. The purpose of this study was to assess the incidence of hypertension among CAD patients attending cardiac outpatient clinic at Prince Sultan Cardiac Center Hospital, Al Hassa, Saudi Arabia.

**Keywords:** Hypertension; Coronary Artery Disease; Incidence; Saudi Arabia

**Methods:** The present study was conducted on 151 patients ( 64 men and 87 women) attending cardiac clinic at Prince Sultan Cardiac Center Hospital, Al Hassa, Saudi Arabia.

Hypertension was prospectively defined as a systolic  $\geq 140$  mmHg or diastolic  $\geq 90$  mmHg or patient on current anti-hypertensive drugs and CAD has been diagnosed by electrocardiogram, blood tests (cardiac markers), cardiac stress testing or a coronary angiogram.

**Results:** Hypertension was recorded in 76% of the CAD patients included in study. In addition 24% of the patients had at least one attack of myocardial infraction and 4% had stroke.

**Conclusion:** The Incidence of Hypertension among adults Saudis with CAD is three times higher than reported for the general population (26%). We recommend early screening and aggressive management of blood pressure in the general population.

### Introduction

The prevalence of coronary artery disease in Saudi Arabia is around 6% while the prevalence of hypertension is 26 % in general population [1]. Epidemiological studies suggest a strong and consistent link between hypertension and coronary artery disease. This does not mean that hypertension

is the cause of coronary artery disease. Less than a quarter of the risk of developing coronary artery disease can be attributed to raised blood pressure. The results of most of the trials, largely in men with mild to moderate uncomplicated hypertension, demonstrate that a modest short-term reduction in blood pressure confers a reduction in coronary artery disease events of about 16% [2]. However, from consider-

ation of epidemiological findings, it is clear that a large proportion (over 75%) of events in hypertensive patients is unlikely to be preventable by managing the elevated blood pressure alone [3].

There are several harmful consequences hypertension as the arteries and heart are made to exert higher pressure and that creates microscopic tears in the artery walls which then turn into scar tissue. Damaged arteries accumulate circulating materials such as cholesterol, platelets, fats and that results in plaque buildup. High Blood Pressure speeds up hardening of the arteries and hence become less elastic over time. Since arterial pressure interacts in a more than additive manner with coincident coronary risk factors, treatment should be initiated on the basis of overall risk and directed by predictors of myocardial infarction. In addition to a sustained level of blood pressure, these predictors include established coronary artery disease, older age and cigarette smoking. Whether metabolically neutral antihypertensive drugs can reduce the shortfall between expected and observed benefit remains uncertain. However, some newer agents (angiotensin converting enzyme inhibitors and calcium antagonists) appear to have an effect on vascular structure and function that is independent of blood pressure reduction. If these advantages are confirmed in clinical trials, these drugs offer the prospect of a much greater impact on coronary artery disease than currently obtained.

## Patients and Methods

### Setting and Design

This study included all adults CAD patients attended and admitted to PSCCH in Al Hassa, Eastern Province, Kingdom of Saudi Arabia. Permissions were obtained from PSCCH as well as from the authorities of PSCCH after approval of the study protocol and data complication form. Written consent forms were obtained from the included patients/their guardians after receiving proper orientations regarding the study objectives and outcome. Data confidentiality was maintained all through the study.

### Data Collection

Reviewing of patients medical records available at PSCCH over a 6 months period. All patients records were revised using a pre-tested data compilation form to gather information regarding: socio-demographics including age, gender, residence and educational/occupational statuses. Age at diagnosis with CAD and their symptoms, current management procedures, complications (history and their nature), admission frequency and reasons for these admissions, previous myocardial infarction and stroke. Laboratory investigations including cardiac markers, lipid profile and look for their (ECG), cardiac stress testing and a coronary angiogram. The primary end point was detecting the incidence of hypertension among 151 CAD

patients. Secondary points include duration of hypertension disease, frequency of admission, acute myocardial infarction and stroke

### Exclusion criteria

Eligible patients with valid and complete records and with regular compliance and follow up at the cardiac clinics were selected after obtaining their (or their legal) guardians' written consent form to be included in our study

All patients through history taking and physical examination and underwent the measurement their blood pressure followed by ECG and looking for cardiac stress testing or a coronary angiogram and a laboratory study for cardiac enzymes and lipid profile were also collected.

### Data Management and Statistical Analysis

Data entered and analyzed using SPSS version 20.0 (SPSS Inc. Chicago, IL). For categorical data, proportions, frequency and percentage will be used for expression; Chi square and t-test for proportions were used for comparison. Continuous data were expressed using median, mean and standard deviation. Inter correlation matrix was generated with reporting of correlation coefficient to determine the possible risk factors for the development of Hypertension in CAD patients. P value < 0.05 considered statistically significant.

**Table 1.** Characteristics of Incidence of Hypertension in Coronary Artery Disease Patients.

Characteristics	Male n= 63 (42%)	Female n= 87 (58%)	p value
Age in years mean ± SD	61.8 ± 14.4	57.5 ± 19.7	0.000
HTN	51 (34%)	63(42%)	0.227
HTN duration mean ± SD	6.43 ± 5.8	10.52 ± 9.3	0.003
DM	30 (20%)	54 (36%)	0.079
DM duration mean ± SD	6.52 ± 12.8	10.48 ± 10.1	0.037
NHTN	12 (6%)	24(15.1%)	0.002

## Results

A total after one male excluded to be 150 patients were included in our study for incidence of hypertension among CAD, females constituted 42% (n=63) and the male was 34% (n=51). From the data it appears 76% of the patients with CAD have hypertension. In case of females, the incidence of hypertension is higher than male subjects and also the proportion of women

not having hypertension is higher than male. Finally we found in our study the female they have higher incidence than the males to be the total incidence of hypertension among 150 CAD patient is 76%.

## References

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