| **Original Research Article** | **Cardiology** |

Clinical Status of Patients with Coronary Artery Disease Treated in a Tertiary Care Hospital, Dhaka, Bangladesh

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Abstract

Background: Coronary artery disease (CAD) is the most common form of heart disease. It is the result of atheromatous changes in the vessels supplying the heart. CAD is used to describe a range of clinical disorders from asymptomatic atherosclerosis and stable angina to acute coronary syndrome (unstable angina, NSTEMI, STEMI). ***Objective***: To assess the clinical status of patients with coronary artery disease (CAD). ***Methods***: This prospective observational study was conducted in the Department of Cardiology, Dhaka Medical College Hospital, Dhaka, Bangladesh from July, 2017 to Dec, 2017. Total 110 confirmed coronary artery disease (CAD) patients were included as the study subjects for this study. A predesigned questionnaire was used in data collection. All data were collected, processed and analyzed by using MS Office and SPSS version 23 programs as per need. ***Results***: In this study, among total 110 participants, 67.3% were male and the rest 32.7% were female. The mean ($\pm$SD) age and BMI of the participants were 47.28$\pm$11.87 years and 23.68$\pm$ 2.44 Kg/m2 respective. The waist and hip circumferences of the participants were found 89.81$\pm$10.32 cm and 106.82$\pm$18.56 cm respectively. The mean ($\pm$SD) total cholesterol (mg/dl), S creatinine (mg/dl) and ESR (mm in 1st hour) of the participants were found as 177.69$\pm$31.55, 1.6$\pm$0.04 and 26.55$\pm$5.17 respectively. ***Conclusion***: The frequency of coronary artery disease among male population is found as alarming. The abnormalities in waist or hip circumferences, total cholesterol (mg/dl), S creatinine (mg/dl) and ESR (mm in 1st hour) of patients may be considered as some potential indicator for coronary artery diseases.
Keywords: Demographic, Clinical status, Coronary artery disease, CAD, Cardiology.

INTRODUCTION

Coronary artery disease (CAD) is the most common form of heart disease. It is the result of atheromatous changes in the vessels supplying the heart. CAD is used to describe a range of clinical disorders from asymptomatic atherosclerosis and stable angina to acute coronary syndrome (unstable angina, NSTEMI, STEMI). Although are mark able advancement in the prevention as well as management of coronary artery disease (CAD) has occurred in recent years, till now it is the primary cause of huge mortality and morbidity worldwide [1]. Chronic coronary artery disease (CAD) is estimated to affect 16.8 million people in the United States; of these, 9.8 million have angina pectoris, and nearly 8 million have had a myocardial infarction (MI) [2]. In 2005, CAD was the single most frequent cause of death in American men and women, causing 607,000 deaths (about 1 in every 5 deaths) [2]. In 2006, 1.76 million patients were discharged from US hospitals with a diagnosis of CAD. The estimated direct and indirect economic cost of CAD in the United States for 2009 is $165.4 billion [2]. Globally, the South Asian countries are considered among the highest incidence of CAD (coronary artery disease) [3]. The global burden of disease study suggests that, by 2020, this part (South Asian countries) of the world will have more people with atherosclerotic coronary artery disease (CAD) than in any other region [4]. Data related to different aspects of coronary artery disease (CAD) in Bangladesh are inadequate but it is highly prevalent in

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Bangladesh [5]. While the death rates related to coronary artery disease have been declining during the past three decades in the western countries, these rates are rising in Bangladesh [6]. In some studies of demographic and clinical status of CAD, diabetes, low high-density lipoprotein cholesterol (HDL-C), metabolic syndrome and smoking were fond as the potential risk factors for such diseases [7, 8].

MATERIALS & METHODS

This prospective observational study was conducted in the Department of Cardiology, Dhaka Medical College Hospital, Dhaka, Bangladesh from July, 2017 to Dec, 2017. Total 110 confirmed coronary artery disease (CAD) patients were included as the study subjects for this study. The clinical presentations of patient were categorized as per American College of Cardiology/American Heart Association (ACC/AHA) definitions [9]. As per the exclusion criteria of this study, patients with concomitant valvular heart disease and cases associated with cardiomyopathy were excluded. A predesigned questionnaire was used in data collection. Age, gender, CAD risk factor profile, status of dyslipidemia, cigarette/bidi smoking history of all the participants was recorded. Besides these, presence of hypertension, family history of CAD, obesity defined using BMI, left ventricular ejection fraction, hematologic indices, and treatment strategy were

recorded. $p < 0.05$ was considered as statistically significant. All the statistical analyses were carried out via Statistical Package for Social Sciences version 20 (SPSS, IL, Chicago Inc., USA).

RESULTS

Total 110 participants, 67.3% was male whereas the rest 32.7% was female. So male participants were dominating in number and the male-female ratio was 2:1. The patients were divided in to six age groups ranging from 34 years & 74 years. Even though, CAD was found to be more prevalent in the age group of 65-74 and it is 34.5%. The mean (±SD) age and BMI of the participants were 47.28±11.87 years and 23.68± 2.44 Kg/m2 respectively. The waist and hip circumferences of the participants were found 89.81±10.32 cm and 106.82±18.56 cm respectively. The mean (±SD) total cholesterol (mg/dl), S creatinine (mg/dl) and ESR (mm in 1st hour) of the participants were found as 177.69±31.55, 1.6±0.04 and 26.55±5.17 respectively. In this study, as the major risk factors of CAD: hypertension, smoking & tobacco use, obesity, ischemic heart disease and diabetes were found among 29.1%, 26.4%, 23.6%, 19.1% and 12.7% cases respectively. Besides these Dyslipidemia, family history of CAD, previous CABG, OCP (Oral contraceptives), menopause and alcohol were associated with some participants.

Table 1: Socio-demographic status of participants (N=110)

Characteristics	N (%)	(%)
Age of the participants		
<34	0	0.0%
35-44	08	7.3%
45-54	23	20.9%
55-64	28	25.5%
65-74	38	34.5%
>74	13	11.8%
Mean age (Years)	47.28±11.87	
Gender distribution of participants		
Male	74	67.3%
Female	36	32.7%

Table 2: Clinical findings among participants (N=110)

Characteristics	Mean	±SD
Waist circumference	89.81	±10.32
Hip circumference	106.82	±18.56
FBS (mmol/l)	7.12	±0.75
HbA1C	6.74	±0.62
Total Cholesterol (mg/dl) (%)	177.69	±31.55
LDL (mg/dl)	112.99	±16.22
HDL (mg/dl)	37.4	±7.39
TG (mg/dl)	190.49	±28.67
S creatinine (mg/dl)	1.6	±0.04
ESR (mm in 1st hour)	26.55	±5.17

Table 3: **Risk factor distribution among participants (N=110)**

	N	%
Hypertension	32	29.1%
Ischemic Heart Disease	29	26.4%
Family History of CAD	26	23.6%
Menopause	21	19.1%
Smoking & tobacco use	14	12.7%
Diabetes	9	8.2%
Previous CABG	7	6.4%
Alcohol	6	5.5%
Obesity	5	4.5%
Dyslipidaemia	3	2.7%
OCP (Oral contraceptives)	2	1.8%

DISCUSSION

Coronary angiography, which helps stratify risk in patients on the basis of the extent and location of atherosclerosis, is indicated in patients who have high-risk criteria on noninvasive testing, patients who have angina and signs and symptoms of congestive heart failure, patients who have survived sudden cardiac arrest or serious ventricular arrhythmias, and as a first test in patients with CCS class III or IV angina despite medical therapy. The aim of this study was to assess the clinical status of patients with coronary artery disease (CAD). Coronary artery disease (CAD) is the single most common cause of death in the developed world, responsible for about 1 in every 5 deaths. The morbidity, mortality, and socioeconomic importance of this disease make timely accurate diagnosis and cost-effective management of CAD of the utmost importance. This comprehensive review of the literature highlights key elements in the diagnosis, risk stratification, and management strategies of patients with chronic CAD. The epidemiological studies have revealed that, the prevalence of coronary artery disease is increasing along with the rising prevalence of conventional risk factors for CAD in Bangladesh. In this study, among total 110 participants, 68% were male whereas the rest 32% were female. So male participants were dominating in number and the male-female ratio was 2:1. The mean (±SD) age and BMI of the participants were 47.28±11.87 years and 23.68± 2.44 Kg/m2 respectively. The mean age of our study subjects was comparable to 52±10. [10] Years in a study reported by Maqbool Jafary *et al.*, [11] in Pakistan and 62±5 years in COURAGE trial [12] and 58±11 years by Sahed *et al.*, [13] conducted in USA. The gender distribution, males 78.5% versus females 21.5% of a study population can considered with our findings, which were near about similar to INTERHEART study and its South Asian cohort (overall male, 76% and South Asian cohort, 85%) [14]. In this study, as the major risk factors of CAD: hypertension, smoking & tobacco use, obesity, ischemic heart disease and diabetes were found among 29.1%, 26.4%, 23.6%, 19.1% and 12.7% cases respectively. Diabetes mellitus (T2DM) alone was a risk factor in 7.13% patient and combined with hypertension and diabetes mellitus were

been in 22.25% patients [5]. Although in our study T2DM was not found as a major risk factor, diabetes mellitus is well known to have an adverse influence on the prognosis of patients with acute myocardial infarction [11]. In the study [5] 36.13% patients was hypertensive. The prevalence of hypertension in South Asian cohort of INTERHEART study [15] (31.1%) is comparatively lower than this study but is similar to Akanda et al., [16] (35%). Mortality from cardiovascular disease is predicted to reach 23.4 million in 2030. Moreover, in the developing world, cardiovascular disease tends to affect people at a younger age and thus could negatively affect the workforce and economic productivity [17]. The morbidity, mortality, and socioeconomic importance of CAD make its diagnosis and management fundamental for all practicing physicians. A large part of secondary prevention also includes pharmacological therapy. In contrast to primary prevention, anti-platelet is strongly recommended unless contraindicated. The daily strength of 75 mg of clopidogrel is recommended for people who are intolerant or allergic to aspirin. Blood pressure should be lowered in all patients with coronary artery disease and stage 1 hypertension using both non-pharmacological and pharmacological therapies. Metformin remains the first-line therapy in diabetic patients for secondary prevention. High intensity or maximally tolerated statin is part of secondary prevention, independent of the lipid levels in as long as the patient can tolerate, and the goal is to achieve LDL less than 70 [18]. Differential diagnosis is made based on the presenting signs and symptoms. Other conditions presenting as chest pain and mimicking CAD could be musculoskeletal pains, pleural inflammation, diaphragmatic symptoms, GERD, dysphagia, panic attacks, and neuralgia from neck and shoulder. A careful initial evaluation should be done with these differentials in mind as other non-cardiac causes, as mentioned above, could be the reason for the patient's presentation. This was a single centered study with a small sized sample. So, findings of this study may not reflect the exact scenario of the whole country.

CONCLUSION & RECOMMENDATION

The frequency of coronary artery disease among male population is found as alarming. The

abnormalities in waist or hip circumferences, total cholesterol (mg/dl), S creatinine (mg/dl) and ESR (mm in 1st hour) of patients may be considered as some potential indicator for coronary artery diseases. For getting more specific findings we would like to recommend for conducting similar more studies with larger sized samples in several places.

Conflict of Interest: None declared.

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