

Diabetes Mellitus in Patients with Coronary Heart Disease

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Abstract

Coronary heart disease is the most common form of heart disease and single most important cause of premature death in developed countries. It is estimated that coronary heart disease will become the major cause of death in all regions of the world by 2020. There are several modifiable risk factors of coronary heart disease. Among those diabetes mellitus is one major modifiable risk factor. So we designed this study to see the frequency of diabetes mellitus in patients with coronary heart disease in three tertiary hospitals in Bangladesh with an objective to see the frequency of diabetes mellitus in patients with coronary heart disease. This observational cross-sectional study was conducted in the department of Biochemistry of Bangabandhu Sheikh Mujib Medical University, Dhaka from July 2006 to June 2007. The study was done among 300 purposively selected diagnosed patients of coronary heart disease of both sexes. Diabetes mellitus was diagnosed according to WHO criteria. In this study we found that 23.7% of study subjects had diabetes mellitus. From this study, it can be concluded that the prevalence of diabetes (an important modifiable risk factor) is high in coronary heart disease patients.

Key words: Risk factors, Diabetes mellitus, Coronary heart disease (CHD)

Introduction

Coronary heart disease is a narrowing of the small blood vessels that supply blood and oxygen to the heart¹. It has two principal forms, angina and myocardial infarction (MI). Both angina and MI occur because the arteries carrying blood to the heart muscle become narrowed or blocked, usually by a deposit of fatty substances, a process known as atherosclerosis. Angina is a severe pain in the chest brought on by exertion and relieved by rest. MI is due to obstruction of coronary arteries either as a result of atherosclerosis or by a blood clot. Part of heart muscle is deprived of oxygen and dies².

At different times, the heart has a varying need for blood flow and the oxygen it carries. The heart receives its blood flow through its own set of blood vessels called the coronary arteries. With the relatively decreased blood flow and oxygen, the heart muscle produces chemicals that cause the pain and other symptoms of angina³. MI is the irreversible necrosis of heart muscle secondary to prolonged ischemia. The appearance of cardiac enzymes in the circulation generally indicates myocardial necrosis⁴.

There are several risk factors for the development of coronary heart disease (CHD). Diabetes mellitus is a potential risk factor for CHD⁵. Diabetes mellitus is associated with a four to eight fold excess risk of CHD. Patients with diabetes mellitus have an increased risk of CHD compared with those with normal fasting blood glucose level. Elevation of fasting glucose level is significantly related to CHD morbidity and mortality⁶. Recently, impaired fasting glucose (IFG) was called underestimated risk factor for cardiovascular death. Prevalence of diabetes mellitus in CHD patients differs in various aspects (age, sex etc)⁷. Diabetic patients have increased platelet adhesiveness and increased response to aggregating agents. These changes are likely to favor atherosclerosis in coronary arteries. Atherosclerosis begins to appear in most diabetic patients within a few years of onset of diabetes. Atherosclerosis may result in narrowing or occlusions in coronary arteries and attendant ischemic injury to the heart that may lead to CHD. Diabetes mellitus is one of the important modifiable risk factors for CHD, but there has been limited study addressing frequency of diabetes mellitus in patients with coronary heart disease. For this reason, this study was designed to find out the frequency of diabetes mellitus in patients with CHD.

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Materials and Methods

This observational cross-sectional study was conducted in the department of Biochemistry, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from July 2006 to June 2007. For the study 300 diagnosed patients (209 male and 91 female) of CHD were selected from departments of Cardiology of BSMMU, National Institute of Cardiovascular Diseases (NICVD) and Enam Medical College Hospital, Savar, Dhaka. Consent was taken from all study subjects preserving their rights, privileges and freedom. For estimating blood glucose level, blood was collected in fasting condition and glucose level was estimated by enzymatic assay. Diabetes was defined according to WHO criteria. All data were recorded systematically in a preformed data collection form. Statistical analysis was performed by using SPSS for windows version 12.0.

Results

Out of total 300 CHD patients 209 were male and 91 were female. Mean \pm SD of age was 51.56 ± 24.04 with the range of 25-74 years (Table I). Among the study subjects 71 (23.7%) had diabetes mellitus whereas 227 (76.3%) were nondiabetic (Table II). The mean \pm SD values of fasting blood glucose of diabetic CHD patients and nondiabetic CHD patients were 10.38 ± 2.51 and 4.50 ± 0.56 mmol/L respectively.

Table I: Mean \pm SD of age and sex distribution of study subjects (n=300)

Variables	Number	Percentage	Mean \pm SD (Range)
Age (years)	-	-	51.56 ± 24.04 (25-74)
Sex			
Male	210	70	-
Female	90	30	-

Table II: Frequency of diabetes mellitus in study subjects (n=300)

Status of diabetes	Number	Percentage
Diabetic	71	23.7
Nondiabetic	229	76.3

Discussion

In this study we found that 23.7% of CHD patients were diabetic. Similar type of findings were also observed by Gus et al, in which diabetic patients account for 24% of the coronary heart disease patients⁸. Pyorala et al⁹ reported that the proportion of patients with diabetes was 31% of CHD patients. This proportion is higher than that in our study. In another study in China by Li et al¹⁰ the proportion of patients with diabetes was also found higher (32.8%) compared with our study.

Due to time limitation and financial constraints, we had to conduct this observational cross-sectional study with small sample size. So further studies involving larger sample sizes are recommended.

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