

Original Research Article

Prevalence of Diabetes Mellitus in Patients with Coronary Heart Disease: Data from a Rural Teaching Hospital

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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 by 2020, coronary heart disease will become the leading cause of mortality in all parts of the globe. Among several modifiable risk factors of coronary heart disease, diabetes mellitus is one major risk factor. To see the frequency of diabetes mellitus in patients with coronary heart disease in the rural tertiary hospital, this retrospective descriptive study was conducted in the Department of Medicine, of a rural teaching hospital. The study included 200 purposively selected diagnosed patients of coronary heart disease of both sexes. Diabetes mellitus was diagnosed according to WHO criteria. In this study, 25% of study subjects had diabetes mellitus. Mean \pm SD of age was 51.56 ± 24.04 (25-74) years. The mean \pm SD value of fasting blood sugar of diabetic CHD patients was 186.84 ± 45.18 mg%. 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.

INTRODUCTION

Coronary heart disease is a narrowing of the small blood vessels that supply blood and oxygen to the heart. [1] 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 dies. [2]

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 angina. [3] MI is their reversible necrosis of heart muscle secondary to prolonged ischemia. The appearance of cardiac enzymes in the circulation generally indicates myocardial necrosis. [4]

There are several risk factors for the development of coronary heart disease (CHD). Diabetes mellitus is a potential risk factor for CHD. [5] 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 mortality. [6] 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 favour 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.

MATERIALS AND METHODS

This retrospective descriptive study was conducted in the Department of Medicine at a rural teaching hospital. 140 males and 60 females (total = 200), diagnosed patients of coronary heart disease, were purposively selected.

A comprehensive case history was recorded on a semi-structured, close-ended proforma. Data were collected systematically in a preformed, pretested case record form which included patients' demographic profile, clinical information and laboratory investigation values. Diabetes mellitus was defined according to WHO criteria.

Statistical analysis

Data was cleaned, coded and analysed using Microsoft excel for Windows version 7. Descriptive statistics using frequency distribution was performed. All data were expressed as mean, standard deviation (SD), range, and percentage.

Ethical issue

Prior to commencement of the study, the protocol was approved by the local institutional ethics committee.

RESULTS

Out of total 200 CHD patients 140 were male and 60 were female. Mean \pm SD of age was 51.56 ± 24.04 with the range of 25-74 years (Table A).

Table A: Mean \pm SD of age and sex distribution of study subjects (n=200)

Variables	Number	Percentage (%)	Mean + SD (Range)
Age	200	-	51.56 \pm 24.04(25-74)
Sex			
Male	140	70	-
Female	60	30	

Among the study subjects 50 (25%) had diabetes mellitus whereas 150 (75%) were non-diabetic (Table B).

Table B: Frequency of diabetes mellitus in study subjects (n=200)

Status of diabetes	Number	Percentage
Diabetic	50	25
Non-diabetic	150	75

The mean \pm SD values of fasting blood sugar of diabetic CHD patients and non-diabetic CHD patients were 186.84 ± 45.18 mg% and 81 ± 10.08 mg% respectively.

DISCUSSION

In this study we found that 25% of CHD patients were diabetic. Similar type of finding was also observed by Gus et al, in which diabetic patients account for 24% of the coronary heart disease patients. [8] Pyorala et al [9] 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 al [10] the proportion of patients with

diabetes was also found higher (32.8%) compared with our study.

Our study had few limitations. Small patient population from single centre was studied, due to time limitation and financial constraints. Study patients were not categorised as type 1 or type 2 diabetes mellitus. We have not evaluated monitoring of treatment and outcome.

Hence, further studies involving larger sample sizes are recommended for the evaluation.

CONCLUSION

Our study showed that, approximately 1 in 4 middle aged male patient of CHD has associated diabetes mellitus.

REFERENCES

1. Newby DE, Grub NR, Bradbury A. Cardiovascular disease. In: College NR, Walker BR, Ralston SH, editors. Davidson's Principles and Practice of Medicine. 21st ed. Elsevier: Churchill Livingstone; 2010:525-529.
2. Gopinath N, Chandha SL, Jain P, Shekhawat S, Tendon. An epidemiological study of coronary heart disease in different ethnic groups in Delhi urban population. *J Assoc Physicians India* 1995; 43:30-33.
3. Toscano J. Angina: A patient guide. HEARTINFO.ORG, Retrieved March 11, 2003. Available at: <http://www.ml.2mdm.net>. Accessed
4. Panju AA, Hemmelgarn BR, Guyatt GH, Simel DL. Is this patient having a myocardial infarction? *JAMA* 1988; 280:1256-1263.
5. Ornish D, Brown SE, Scherwitz LW, Billing JH, Armstrong WT, Ports TA, McInahan SM, Kirkeeide RL, Brand RJ, Gould KL. Can lifestyle changes reverse coronary heart disease? The lifestyle heart Trial. *Lancet* 1990; 336:129-133.
6. Reddy NK, Kumar DN, Rayudu NV, Sastry BK, Raju BS. Prevalence of risk factors for coronary atherosclerosis in a cross sectional population of Andhra Pradesh. *Indian Heart J* 2002; 54:697-701.
7. Khot UN, Khot MB, Bajzer CT, Sapp SK, Ohman, Brener SJ, Ellis SG, Linciff AM, Topol EJ. Prevalence of conventional risk factors in patients with coronary heart disease. *JAMA* 2003; 290:898-904.
8. Gus I, Fishmann A, Medina. Prevalence of risk factors for coronary artery disease in the Brazilian state of Rio Grande do Sul. *Arqivas Brasileiros de Cardiologia* 2002; 78:766-782.
9. Pyorala K, Lehto S, Bacquer D. on behalf of the EUROASPIRE I and II Group. Risk factor management in diabetic and non-diabetic coronary heart disease patients. Findings from heart disease patients from EUROASPIRE I and II surveys. *Diabetologia* 2004; 47:1257-1265.
10. Li S, Tian Y, Zu M. Study on epidemiological methods for diabetes investigation in middle aged and old subjects. *J Pact Geratol* 1996; 10:175-176.

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