SOCIODEMOGRAPHIC AND CLINICO-PATHOLOGICAL STUDY OF POST CORONARY ARTERY BYPASS SURGERY PATIENTS

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Abstract

Coronary Artery Disease (CAD) is the leading cause of cardiovascular mortality worldwide, with >4.5 million deaths occurring in the developing world. Despite a recent decline in developed countries, both CAD mortality and the prevalence of CAD risk factors continue to rise rapidly in developing countries. We retrospectively followed 86 patients those who underwent coronary artery bypass grafting during a period from January 1999 to March 1999 at Institute of Cardio Vascular Diseases, Madras Medical Mission, Chennai, Tamilnadu, India with the aim to study the sociodemographic and clinico-pathologic conditions associated with CAD.

Key words: coronary artery disease; post CABG sociodemography; clinico-pathology; myocardial infarction

Introduction

Coronary artery disease (CAD) is the single most common cause of death in the developed world, especially in the United States, 1 in every 5 deaths are attributed to CAD, the leading cause of death of both males and females in the country. The morbidity, mortality, and socioeconomic importance of this disease make the timely accurate diagnosis and cost-effective management of CAD of utmost importance[1].Many lifestyle-related risk factors for coronary heart disease have been identified, but little is known about their effect on the risk of disease when they are considered together in patients with coronary artery bypass grafting. Many of the factors were correlated, but each independently and significantly predicted risks, even after further adjustment for age, family history, presence or absence of diagnosed hypertension or diagnosed high cholesterol level, and menopausal status.[2]

The study of epidemiology is vital in identifying the connections which exist between lifestyle, environment, and disease, thus providing knowledge of the factors, distribution, and pathology of the disease. It is multifaceted, influenced by social status, genetics, lifestyle (culture), and environmental factors. The risk of development of CAD is said to increase with the transition of rural, agrarian, economically underdeveloped to urbanized, industrialized modern societies.

Further, modernization leads to a more sedentary lifestyle, junk food (high calorie), and psychosocial stresses. In developed countries, lower socioeconomic groups have a greater prevalence of risk factors, higher incidence of disease and higher mortality whereas in developing countries, as the CVD epidemic matures, the burden will shift to the lower socioeconomic groups[3]. Low socioeconomic status is associated with increased risk of CVD.[4]

Risk factors such as hypertension, physical inactivity, tobacco use, diet (modifiable risk factors), genetics, age, race, and gender (no modifiable risk factors) are associated with CAD. To monitor and control the prevalence of CAD in populations, demography and clinico-pathological researches would provide better guidelines to decrease death rates caused by such a devastating disease worldwide.[5]

Material and method

This was a retrospective observational qualitative study done at the Institute of Cardio Vascular Diseases, Madras Medical Mission, Chennai, Tamilnadu, India during January 1999 to March 1999. The data for the present study was collected from the secondary sources such as the hospital records. Purposive sampling method was adopted where 86 post CABG patients with a mean age of 56.44 comprising both of males and females formed the sample for the study.

Statistical analysis was done using SPSS version 15.0 for windows.

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Results

Table I : Age distribution of patients (n=86)

Age group(yrs)	Frequency	Percent
≤ 40	5	5.8
41-50	18	20.9
51-60	30	34.9
> 60	33	38.4

Table I shows the age distribution of patients where a majority (38.4%) of the patients were in the >60 years age group followed by 34.9% in the 51-60 years. Only 5.8% of patients were gripped in the age group of ≤ 40 years.

Table II : Sex distribution of patients (n=86)

Sex	Frequency	Percent
Male	76	88.4
Female	10	11.6

Table II shows that more subjects were male (88.4%) than female (11.6%).

Table III : Demographic and lipid profile of patients (n=86)

Characteristics	Mean (±SD)
Age (years)	56.44(±9.39)
Height(meters)	1.65(±0.07)
Weight(kg)	64.88(±9.86)
BMI(kg/M2)	23.67(±2.99)
Total cholesterol(mg/dL)	183.09(±30.24)
Triglyceride(mg/dL)	174.88(±71.85)
HDL-C(mg/dL)	38.59(±3.15)
LDL-C(mg/dL)	109.93(±24.54)

Table III shows mean of different demographic characteristics and lipid profile of patients. Mean age was 56.44(±9.39) years, height 1.65(±0.07) meters, weight 64.88(±9.86) kg, BMI 23.67(±2.99) (kg/M2), total cholesterol 183.09(±30.24) mg/dL, triglyceride 174.88(±71.85) mg/dL,HDL-C 38.59 (±3.15) mg/dL and LDL-C 109.93(±24.54) mg/dL.

Table IV : Dietary habit, life style and other risk factors of patients (n=86)

Characteristics	Frequency	Percent
Vegetable diet only	32	37.2
Smoker	38	44.2
Diabetes	41	47.7
Hypertension	40	46.5
Family history of heart disease	32	37.2

Table IV reveals different characteristics of risk factors of disease where major proportions of the patients were diabetic (47.7%) followed by hypertensive patients (46.5%), smokers (44.2%), vegetarians (37.2%) & family history of CAD (37.2%).

Table V: Angiographic presentation of CAD according to number of vessels (n=86)

Presentation of CAD	Frequency	Percent
Single vessel disease (SVD)	8	9.3
Double vessel disease (DVD)	12	14.0
Triple vessel disease (TVD)	66	76.7

Table V represents the angiographic representations of the 86 patients of CAD. Triple vessel disease was the highest in number 66(76.7%) followed by double vessel (DVD) and single vessel (SVD) disease 12(14%) and 8(9.3%) respectively.

Discussion

According to the World Health Organization (WHO), in 2002 there were7.22 million deaths from coronary heart disease (CHD) globally.4WHO estimates, in 2003, 16.7 million people around the globe die of cardiovascular disease each year. This is over 29 percent of all deaths.[6]

In the present study the 86 post CABG patients were in the age group ranging between 41 to 60 years of age with a mean of 56.44 and the frequency of male sufferers were seven times higher than the females. Male preponderance is supported by the study report of British heart foundation that reveals 32 percent of premature deaths in men and 24 percent in women from cardio vascular diseases (CVD)[7,8]. Also Projected global CHD deaths by sex, all ages, 2005, show that 53 percent are in men and 47 percent are in women[9].

The total worldwide mortality currently attributable to inadequate consumption of fruits and vegetables is estimated to be up to 2.635 million deaths per year. Similarly in the present study inadequate consumption of vegetable (confounding variables of exact amount taking into account) by the patient having undergone CABG in the present study (vegetarian 37.2%) attributed their risk of CAD. Increasing individual fruit and vegetable consumption up to 600 g per day could reduce the total worldwide burden of disease by 1.8 percent, and reduce the burden of CHD and ischemic stroke by 31 and 19 percent respectively[10,11]. Another study by Halton et all evaluated data on 82,802 women in

the Nurses' Health Study and concluded that, diets lower in carbohydrate and higher in protein and fat were not associated with an increased risk of coronary heart disease in women as vegetable sources of fat and protein lower the risk of coronary heart disease[12]. Individuals who consume higher amount of fresh fruits and vegetables have lower rates of heart disease[13].

Subsequently raised BMI is a major risk factor for heart disease, stroke, type 2 diabetes and other chronic diseases.[14] Obesity appears to have an independent effect despite keeping the other risk factors in control. This clearly indicated that obesity is associated with CAD and is an important indicator of risk. The distribution of body fat may also play a role in development of CAD, with abdominal adiposity posing a substantially greater risk in both women and men[15]. In this study mean BMI (kg/M2) was 23.67 may be due to the fact that only a small proportion (n=86) of subject were followed and also weight was recorded preoperatively before CABG of patients with chronic heart disease having preventing cardiology advice of over weight and obesity correction.

Co-morbid condition of the study population was diabetes (47.7%), hypertension (46.5%) and dyslipidaemia (mean of total cholesterol 183.09mg/dL, triglyceride 174.88 mg/dL, HDL-C38.59 mg/dL and LDL-C 109.93 mg/dL). 44.2% of patient were smoker and 37.2% have family history of CHD. (Table III & Table IV). Worldwide, most important risk factors are smoking and abnormal lipids. Together they account for about two-thirds of the population's attributed risk (PAR) of an acute MI.10 a 50-year cohort study of British doctors showed that mortality from CHD was 60 percent higher in smokers than in nonsmokers. Low HDL and high TG tends to coincide and can occur alone or in combination with high LDL-level. HDL-C has emerged as an important independent predictor of CAD. Every 1mg/dl decrease in HDL-C causes a 3-4% increase in coronary artery disease. Fasting triglyceride level represents a useful marker of risk for CAD, especially when HDL-levels are considered[16].

The reduction in mortality, acute coronary event rate, and need for coronary revascularization attributable to lipid lowering in the recent primary coronary prevention trials has therefore been encouraging. This has led to an increased emphasis on the National Cholesterol Education Program Adult Treatment Panel II (ATP II) guidelines as also classic risk models that use the Framingham or MRFIT (Multiple Risk Factor Intervention Trial) studies. The ATP II guidelines are based on risk modeling, using age, sex, LDL cholesterol of 190 mg/dL or 160 mg/dL with $2 risk factors[17, 18,19,20,21].

While up to 80 percent of the almost 200 million adults worldwide with diabetes will die of CVD, people with metabolic syndrome are at increased risk, being twice as likely to die from and three times as likely to have a heart attack or stroke compared to people without the syndrome[22].

Conclusion

Cardio vascular disease affects people in the peak of their careers during mid-life years, disrupting the future of the families dependent on them and undermining the development of nations by depriving them of the most productive hands. In developing countries, the burden will shift to the lower socioeconomic group, where still the economy of the country is at stake. Cigarette smoking, hypercholesterolemia, and hypertension are causally related to CAD, and the corresponding interventions such as smoking cessation, cholesterol reduction, blood pressure management and life style modification are all cost effective in both primary and secondary prevention and intervention.

Recommendation

Further research studies with the aim of risk stratification of CAD among Bangladeshi population are recommended for a better productive and economically empowered country.

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