Young Adults Undergoing CABG; A Multicenter Study

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ABSTRACT

Objective

T he aim of this study is to describe the population of young adults suffering from Coronary Artery Disease (CAD) and requiring coronary artery bypass grafting (CABG), and to assess early outcomes. And to identify risk factors in young patients undergoing CABG which is a major public health concern.

Materials and Methods

This is a Cross-sectional study, designed as an observational/descriptive study, conducted with the non-probability method i.e. based on the subjective judgment of the researcher rather than the random selection. The study population will be recruited from five different hospitals of Karachi. These hospitals are selected with the consideration to the massive inflow of the patients. The Research tool that is going to be used in this study will account for participant's previous data, personal and family history as provided by the patient at the time of procedure. The sample population of this study will be the patients who underwent elective CABG respectively. Patients aged 55 years or less undergoing CABG of both gender will be included.

Result

Our study spots Mild to Severe stresses in subjects diagnosed with fatal Myocardial Infarction. Along with huge changes in other biochemical markers.

Keywords

Young Adults;Coronary Artery Disease; Coronary Artery Bypass Grafting;Ischemic Heart Disease; Young Morbidity; Young Mortality

INTRODUCTION

Coronary Artery Disease (CAD) is a complex inflammatory illness, described by narrowing of coronary arteries providing oxygen to heart. It can have different clinical indications, including stable angina, acute coronary syndrome and sudden cardiovascular death. It has a complex etiopathogenesis and a multifactorial starting point identified with natural components, for example diet, smoking, and physical movement, and hereditary factors [1] that regulates risk of disease both, separately, individually and through connections.

Coronary artery disease is the main source of both early and late mortality. Coronary artery disease, is also known to be ischemic heart disease, is the main enemy of people around the world. In 2004, coronary artery disease was in charge of 7.2 million deaths, or 12.2% of all deaths universally and 5.8% of all periods of life lost [2].

Coronary Artery Bypass Grafting

Coronary-artery bypass grafting (CABG) was presented in 1968 and quickly turned into the standard of consideration for symptomatic patients with coronary artery Disease [3]. Coronary artery bypass grafting (CABG) remains the

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Gold standard for extra and exclusive coronary artery disease involving three vessels or the left main stem [4]. Percutaneous coronary intervention (PCI) involving drug-eluting stents is progressively used to treat complex coronary artery disease, although coronary-artery bypass grafting (CABG) has been the treatment of choice truly.

Role of CAD in young adults

Coronary artery disease is a major reason for death and incapacity in developed countries. Regardless of the way that prevalence accumulates with age, an expanding number of young patients experiencing CAD is being watched around the world. The literature is abundant with respect to risks of older patients experiencing cardiac surgeries [5]. In any case, reports about younger patients experiencing CABG are in adequate [6]. Multicenter data concerning patients under 50 years of age receiving CABG with 0a death rate of 0.9% overall [7].

METHODOLOGY

The study population was recruited from different cardiac hospitals of Karachi. These hospitals are selected with the consideration to the massive inflow of the patients. The Research tool used in this study accounted for participant's previous data, personal, and family history as provided by the patient at the time of procedure. The data has been gathered from the hospital records with the proper approval from Institutional Board Approval (IRB).

The sample size for this observational study comprised of 80 known cardiac patients, including both male and females with the age ranges between 20-55 years. The study has worked on data collection by means of purposive non probability sampling. The study has been conducted by acquisition of informed consents from ethical committees.

The data was collected using, Bio-data, Vital Signs, Personal History, Family history and few parameters from Sadaf Stress Scale (SSS) comprising of Likert scale-based questionnaires. The measurements and specified procedures are present in a manual of operations. All of the patients were examined at the time of randomization.

These patients were aged below 55 years suffering from myocardial infarction, which leads them towards CABG. The sample population of this study comprise of the patients who underwent elective CABG respectively. Patients aged 55 years or less undergoing CABG of both gender were included. Patients exceeding the age of 55 excluded from this study. There were no standard regional protocols, and the decision about time of treatment was obtained on the basis of local activities.

RESULTS AND DISCUSSION

A total of 80 questionnaires were received with complete information. The demographic details of the patients have been presented in table 1. The results have shown that majority of the recruited participants were from the age group 35 – 44 years (48.7 %) and the least percentage of participants (7.6 %) were from the age group 55 – 64 years. 21.7 % of the patients were from the age group 25 – 34 years; whereas, 25 % of the patients were from the age group of 45 – 54 years. The hemoglobin level of majority of the patients was between 7 – 12 (32.6 %); whereas, 6 of the patients (6.5 %) had low levels of hemoglobin (range 4 – 6). Normal level of hemoglobin (13 – 15) was present among 15.2 % of the patients.

The LDH level among majority of the patients (45.7 %) was between 250 and 349. The least percentage of patients (5.3 %) had LDH level between 150 and 249. The LDH levels of 350 – 449 and 450 – 549 were noted among 21.7 % and 13 % of the cardiac patients, respectively (Table 1).

The level of CKMB among 42.4 % of the patients was between 10 and 29; whereas, 35.9 % of the patients had CKMB level between 30 and 49. The least number of patients that is 6.5 % and 2.2 % had CKMB levels between 50 and 69, and 70 and 89, respectively. The level of INR between 4 to 6 and 7 to 9 was among 22.85 % of the patients; whereas, INR level between 1 – 3 was among majority of the cardiac patients (54.3 %) (Table 1).

Table 2 has presented the history of patients whether they were smokers, tobacco users, had family history of coronary disease, suffering from any chronic disease (diabetes), had cerebrovascular disease, chronic lung disease, rheumatic fever, previous cardiac surgery, inserted pacemaker, beta blockers, ACE inhibitors, anticoagulants, undergone warfarin therapy, or bronchodilators. The results showed that majority of the patients did not have tobacco (65.2 %) nor smoked (73.9 %). However, few of the patients smoked cigarette (10.9 %) and 2.2 % of them were X-smokers and had left smoking recently. The results have also shown that

Table 1: Demographic Details

Measure	Items	Frequency	Percentage (%)
Age	25 – 34 years	20	21.7 %
	35 – 44 years	30	48.7 %
	45 – 54 years	23	25 %
	>55	7	7.6 %
Pulse Rate	35 – 54	2	2.2 %
	55 – 74	28	30.4 %
	75 – 94	46	50 %
	95 – 114	4	4.3 %
LDH	150 – 249	6	5.3 %
	250 – 349	42	45.7 %
	350 – 449	20	21.7 %
	450 – 549	12	13 %
CKMB	10 – 29	39	42.4 %
	30 – 49	33	35.9 %
	50 – 69	6	6.5 %
	70 – 89	2	2.2 %
INR	1 – 3	50	54.3 %
	4 – 6	15	22.85 %
	7 – 9	15	22.85 %

majority of the patients (54.3 %) had no family history of coronary disease, while; only 32.6 % had family history of coronary disease. There was not much difference in diabetic and non-diabetic individuals, as 45.7 % of the cardiac patients were diabetic; whereas, 41.3 % of the patients were non-diabetic (Table 2).

Around 64 of the patients (69.6 %) had no cerebrovascular disease; however, it was noted that 17.4 % of the recruited patients were also suffering from cerebrovascular disease. Similar results were observed when the patients were investigated for the presence of chronic lung disease, as the results showed that majority of the patients (69.6 %) were not affected by chronic lung disease (Table 2). The results have also shown that half of the patients had undergone previous cardiac surgery; whereas, other patients had no history of any previous cardiac surgery. There was no insertion of pacemaker among majority of the patients (82.6 %). Similarly, beta blockers (47.8 %), ACE inhibitors (54.3 %), warfarin therapy (62 %), and bronchodilators (68.5 %) were not used by majority of the recruited patients.

Majority of the patients (69.9 %) were suffering from cerebrovascular disease and chronic lung disease. Approximately, 50 % of the patients had undergone cardiac surgery before (Table 2). Moreover, warfarin

therapy and bronchodilators were used by 62 % and 68.5 % of the patients, respectively.

Table 2: History of the Patients

Measure	Items	Frequency	Percentage (%)
Tobacco User	Yes	20	21.7 %
	No	60	65.2 %
Smoker	Yes	10	10.9 %
	No	68	73.9 %
	X-Smoker	2	2.2 %
Family History of Coronary Disease	Yes	30	32.6 %
	No	50	54.3 %
Diabetes	Yes	42	45.7 %
	No	38	41.3 %
Family History of Diabetes	Yes	37	40.2 %
	No	43	46.7 %
Cerebrovascular Disease	Yes	16	17.4 %
	No	64	69.6 %
Chronic Lung Disease	Yes	16	17.4 %
	No	64	69.6 %
Rheumatic Fever or History	Yes	18	19.6 %
	No	62	67.4 %
Previous Cardiac Surgery	Yes	34	50 %
	No	46	50 %
Pacemaker	Yes	4	4.3 %
	No	76	82.6 %
Previous M.I	Yes	22	23.9 %
	No	58	63 %
Beta Blockers	Yes	36	39.1 %
	No	44	47.8 %
ACE Inhibitors	Yes	30	32.6 %
	No	50	54.3 %
Anticoagulants	Yes	33	35.9 %
	No	47	51.1 %
Warfarin Therapy	Yes	23	25 %
	No	57	62 %
Bronchodilators	Yes	17	18.5 %
	No	63	68.5 %

Tables under have represented the physical, mental, and psycho-social stress experienced by the young individuals undergoing CABG and diverse responses

were achieved among these individuals. Summarizing all three stresses i.e. Physical Stress, Mental Stress and Psychosocial Stress according to Sadaf Stress Scale (SSS) which shows

Stress type	Normal	Mild	Moderate	Severe
Physical Stress	29 or less	30-37	38-45	46 or greater
Mental stress	26 or less	27-33	34-40	41 or greater
Psychosocial Stress	60 or less	61-75	76-90	91 or greater

DISCUSSION

The topic we have taken under consideration, is mainly based upon the overly emerging issue, emphasizing upon the consequences and drawbacks of surgical procedure of CABG and its effects on young adults particularly. With the help of our detailed research and methodological experimentation, we have clearly evaluated that most of the patients, particularly young adults who undergo the surgical procedure of CABG, develops certain mental and psychological disorders and deformities with passage of time. However, the reason for emergence of these issues seem to be disturbed serum biomarkers of these individuals, as well as number of patients also complained about headaches, sleep disturbance, rapid or shallow breathing and increased heart rate. All of these issues and problems collectively resulted in multiple psychological effects on the patients, including detachment from their family, friends and social lifestyle, moreover these patients also seemed to be having mild to moderate levels of depression [8].

Our study summarizes the physiological and clinical results of young adults undergoing CABG, precisely analyzing the demographic details, serum biomarkers and life style alterations, we might conclude to the diagnostic point of the cause. It has been observed globally that young adults have shown raised risk of developing coronary artery diseases in this era. However, reverse happened decades before. This has raised the public concern towards the situation.

In order to find out different patterns regarding effects of CABG over individuals, we have performed detailed survey analysis and also multiple resources from already existing literature have been consulted to understand the problems related to CABG, which appears as after effects of this surgical procedure. We have considered multiple sampling techniques, which included certain non-probability measures, like Stress Scale, also we have analyzed LDH levels among the patients, and CK-MB was also used as a diagnostic tool.

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