

Risk factors in coronary artery bypass graft



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Association of selected risk factors and the number of grafts at Coronary Artery Bypass Graft (CABG) surgery: A preliminary study

E M S Bandara ¹, S Ekanayake ^{1*}, A D Kapuruge ² and C A Wanigatunge ³

Coronary Artery Disease (CAD) is associated with multi-factorial risk factors; i. e. family history, hyperlipidemia, obesity, hypertension, diabetes, environmental and life style variables. The study attempted to find the association of some selected risk factors (family history, hyperlipidemia, hypertension and diabetic) and the number of grafts (> 3 or ≤ 3 by considering the middle point as the maximum number of grafts bypassed at surgery is five) of the patients (n= 73) who underwent CABG at Cardiothoracic unit of Sri Jayewardenepura General Hospital (Ethical Approval No. 635/12).

Data on family history, hyperlipidemia, hypertension and diabetes were gathered by using an interviewer administered questionnaire. The patients were categorized into two groups depending on the number of coronary artery bypass grafts as those who have had ≤ 3 grafts (n= 38) and > 3 grafts (n= 35) irrespective of the gender. The prevalence of family history, hyperlipidemia, hypertension and diabetes of patients with ≤ 3 grafts were 63%, 71%, 79% and 50% respectively. The prevalence of above risk factors in patients who had > 3 grafts was 40%, 51%, 62%, and 54% respectively. From the total group 4% of patients did not have any of the above risk factors. The results indicate that hypertension was the most prevailing risk factor in both the groups. However, a significant difference was seen only between family history and number of grafts ($p < 0.05$, $\chi^2 = 3.9$). The

odds ratio of > 3 grafts being bypassed at surgery for patients with any of the four risk factors were 2.6 (95% CI: 0.96-6.88), 0.4 (95% CI: 0.16-1.23), 2.0 (95% CI: 0.67-6.0), 1.2 (95% CI: 0.67-6.05) respectively compared to those without above risk factors.

Even though not significant, those who have a family history of CAD and hypertension as risk factors are more likely to (2.6 times and twice respectively) have > 3 grafts bypassed at CABG irrespective of the gender or age. According to the above results contribution of hyperlipidemia to augment the number of grafts is less. Early detection and treatment for hypertension thus may contribute to reduce the number of grafts being performed at CABG. Therefore, CAD patients should be made aware of the contribution of above risk factors to contribute to increase the number of grafts at surgery.

Keywords: Coronary Artery Diseases, Risk factors, Grafts

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1. Introduction

A high incidence of Coronary Artery Disease (CAD) has been observed in South Asian countries including Sri Lanka. According to a recent estimation 524 deaths from 100 000 in Sri Lanka were from cardio- and cerebro-vascular diseases. Hospitalization due to non communicable diseases and ischemic heart disease has increased significantly over the past 10 years. Hypertension, smoking, diabetes, obesity and hyperlipidemia, age and family

history are established risk factors for cardiovascular disease. According to previous studies prevalence of hypertension was 63.7% in, over 70 years and it was 28.4% in over 20 yrs [1]. High prevalence of dyslipidemia is also reported in a study of Sri Lankan individuals > 18 years [2]. No data were found on the prevalence of above risk factors in patients with confirmed CAD or number of grafts performed and their association to the CAD risk factors. The study attempted to find the association of some selected risk factors (family history, hyperlipidemia, hypertension and diabetic) and the number of grafts (> 3 or ≤ 3 - by considering the middle point as the maximum number of grafts bypassed at surgery is five) of the patients who underwent CABG at Cardio-Thoracic unit of Sri Jayewardenepura General Hospital.

2. Methodology

This descriptive study was carried out with patients (n= 73, male- 48, female - 25) who underwent CABG at Cardio-Thoracic unit of Sri Jayewardenepura General Hospital (Ethical Approval No. 635/12). An interviewer administered questionnaire was used for gathering data on family history, hyperlipidemia, hypertension and diabetes.

Patients were categorized in to two groups, considering the middle point (03 grafts - as the maximum number of grafts bypassed at surgery is five) and those who have had ≤ 3 grafts (n= 38) and > 3 grafts (n= 35) irrespective of the gender and age. Data were analysed using SPSS version 16 statistical package.

3. Result and Discussion

The prevalence of family history, hyperlipidemia, hypertension and diabetes of the study population is summarized in table 01.

Table 1. Prevalence of risk factors

Risk factor	≤ 3 grafts (%)	> 3 grafts (%)
Family history	63	40
Hyperlipidemia	71	51
Hypertension	79	62
Diabetes	50	54

Hypertension was the most common risk factor among both groups. Hyperlipidemia and diabetes were second common risk factors among groups of ≤ 3 and > 3 grafts respectively. Prevalence of diabetes is comparatively low in the patients that have had ≤ 3 grafts.

According to Wijewardene et al (2005) the total prevalence of hypertension in Western, North central, Uva and Southern provinces of Sri Lanka was 18.8% for males and 19.3% for females among age group of 30 – 65 yrs [3].
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Katulanda et al (2010) reported the prevalence of hypertension as 28.4 % for males and 27.7 % for females of > 20 yrs among adults from seven provinces in Sri Lanka [1]. In the current study the patient's age ranged from 38 to 80 years and also all of them were confirmed as having CAD.

Sri Lanka diabetes and cardiovascular study, carried out in 2005 - 2006 period have concluded that high prevalence of dyslipidemia among Sri Lankan adults (> 18 years) [2]. In this study among confirmed patients of CAD hyperlipidemia was the second common risk factor among patient who had ≤ 3 grafts (71 %) and 51 % in patients who had > 3 grafts. According to Fernando et al (1994) prevalence of diabetes and hypertension was 15% and 61% for males and 18% and 41% for females in suburban community of age range 30 - 64 years respectively [4] which agrees with present data among CAD patients.

A significant difference was observed between the family history and number of grafts bypassed ($\chi^2 = 3.9, p < 0.05$). The odds ratios related to risk factors are shown in table 2.

Table 2. The odds ratios related to risk factors

Risk factors	Odds ratio	95% CI
Family history	2.6	0.96-6.88
Hyperlipide	0.4	0.16-

mia		1. 23
Hypertensio	2. 0	0. 67-
n		6. 0
Diabetes	1. 2	0. 67-
		6. 05

According to Veeranna et al (2010) diabetes mellitus was the only predictor of obstructive CAD in elderly (> 65 years) and lipid levels had no correlation or a weak correlation with obstructive CAD [5]. According to present data hyperlipidemia had the lowest odds ratio while diabetics had 1. 2 time risk of having > 3 grafts. However, those who have family history and hypertension are twice likely to have > 3 grafts performed at the surgery irrespective of the gender or age.

However, according to this study contribution of hyperlipidemia to increase the number of grafts is comparatively less. Early detection and treatment for hypertension thus may contribute to reduce the number of grafts being performed at surgery (CABG). Therefore, CAD patients should be made aware of the contribution of above risk factors to contribute to increase the number of grafts at surgery.

Referances

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