



Original Research Article

PREVALENCE OF RISK FACTORS IN DIABETIC PATIENTS CANDIDATE FOR CABG SURGERY

Fatemeh Javaherforoosh Zadeh^{1*} and Simin Azemati²¹Department of Cardiac Anesthesiology, Atherosclerosis Research Center Golestan Hospital, and Pain Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran²Shiraz anesthesiology and critical care research center, Shiraz University of Medical Sciences, Shiraz, Iran

Received for publication: November 19, 2014; Revised: November 27, 2014; Accepted: December 15, 2014

Abstract: The prevalence of diabetes is increasing worldwide and the Middle East, diabetic patient have many risk factor and comorbidity that can high risk for any surgery especially for cardiac surgery. The aim of this study is determining the prevalence of comorbidities in diabetic patients scheduled for CABG. This is a retrospective study. We referred to archive of Faghihi hospitals, gathered files of the Diabetic patients who underwent CABG in 2013 and extracted required data from them. Data gathering instrument was researcher-constructed questionnaire including patients' demographic information. In this study, we have examined 75 diabetic patients scheduled for CABG, 30 of them male and there were 45 female. The most and least common comorbidities were hypertension (62.6%) and renal failure (2.6%). But in male patients, the most and least common risk factors were smoking (63.6%) and renal failure (3.3%) respectively. Also in female patients, hypertension (80%) and renal failure (2.2%) were the most and least common risk factors. According to high prevalence of hypertension in diabetic patients scheduled for CABG, it is better to control diet in these patients to decrease morbidity and mortality rates. More studies are suggested to evaluate more variables

Key Words: Diabetic Patients, CABG, Cardiac Surgery

INTRODUCTION

The prevalence of diabetes is increasing worldwide and the Middle East, so that the number of diabetics in 2000 as 17 Million will reach 366 million in 2030 and is expected prevalence in the Middle East until 2030 to reach its highest. The main cause of mortality in diabetic patients is coronary heart diseases (1, 2) so high rate of mortality in patients with diabetes is due to cardiovascular diseases. Consequently, it is important to pay a particular attention to control risk factors of cardiovascular diseases in diabetic patients (3). Type II diabetes and cardiovascular diseases are growing rapidly in developing countries. In Iran, prevalence of diabetes in people older than 30 years old is 10% (4-7), they are susceptible to cardiovascular diseases and it is the most common cause of mortality in diabetic patients. Prevalence of cardiovascular diseases in patients with diabetes is two-fold (5, 6). There are four risk factors in diabetics that increase probability of cardiovascular diseases in them, and one of them is dyslipidemia. Elevated triglyceride levels, reduced cholesterol HDL, increased levels of Dense LDL are the most common lipid abnormalities associated with type 2 diabetes that increase prevalence of cardiovascular diseases in these patients (7). In patients with obesity and weight gain there are several mechanisms making them more prone to cardiovascular events (8). On the other hand, high blood pressure is a Common cause of type 2 diabetes and cardiovascular involvement with it (9). Poor control diabetes, high levels of fasting blood

sugar and glycosylated hemoglobin are known causes of cardiovascular diseases in diabetic patients (10). Different levels of nephropathies from micro albuminuria to overt nephropathy make diabetics prone to cardiovascular events (11, 12). Finally, metabolic syndrome in diabetic patients is an important cause of cardiovascular diseases (13). These patients may schedule as the others for CABG, this is a kind of surgical treatment of coronary diseases in which, some veins from leg will be transplanted to replace involved coronary arteries, and it will be a bypass between the parts of coronary arteries before and after the site of occlusion, so coronary circulation increases or a new perfusion creates through internal mammillary artery (14). This is an efficient surgical treatment for angina pectoris. In other words, it is a kind of treatment that improves the quality of life and decreases mortality rate. The aim of this study is determining the prevalence of comorbidities in diabetic patients scheduled for CABG.

MATERIALS AND METHODS

This is a retrospective a descriptive epidemiologic study. The statistical population included the Diabetic patients who underwent CABG in Shiraz Faghihi Hospital. After obtaining approval from the Ethics Committee of Shiraz University of Medical Sciences, the records of patients who had undergone cardiac surgery were collected. Then, the required information was obtained from the records. Data

*Corresponding Author:

Dr. Fatemeh Javaherforoosh Zadeh,
Associate Professor of Cardiac Anesthesiology,
Department of Cardiac Anesthesiology,
Atherosclerosis Research Center,
Golestan Hospital and Pain Research Center,
Ahvaz Jundishapur University of Medical Sciences,
Ahvaz, Iran.



collection tool for this study was a researcher-made questionnaire, which includes both demographic data and variables studied. At the end, the data was entered into the computer and was analyzed using SPSS. Descriptive statistics was used to present the tables and graphs. Moreover, analytical statistics such as chi-square was used in order to compare the conditions in terms of two different sexes and various ages.

RESULTS

In this study, we have examined 75 diabetic patients scheduled for CABG, 30 of them male and there were 45 female. Mean age and weight of patients were 59.8 + 9.77 and 65.13 + 7.75 respectively. Generally, the most and least common comorbidities were hypertension (62.6%) and renal failure (2.6%). But in male patients, the most and least common risk factors were smoking (63.6%) and renal failure (3.3%) respectively. Also in female patients, hypertension (80%) and renal failure (2.2%) were the most and least common risk factors (Table 1 & Figure 1).

Table 1: patient’s characterizations and prevalence risk Factors among Diabetic Patients (The separation of male and female)

Parameters	Male	Female	p-value
Age	59.15 ±9.85	57.8 ±7.66	NS
Weight	69.55 ±8.75	61.13 ±8.12	NS
Hypertension	36.6%	80%	P<0.05
History of MI	46.6%	35.5%	P<0.05
Smoker	63.6%	8.8%	P<0.05
Renal Feiler	2.6%	2.2%	NS
Arrhythmia	6.6%	4.4%	NS

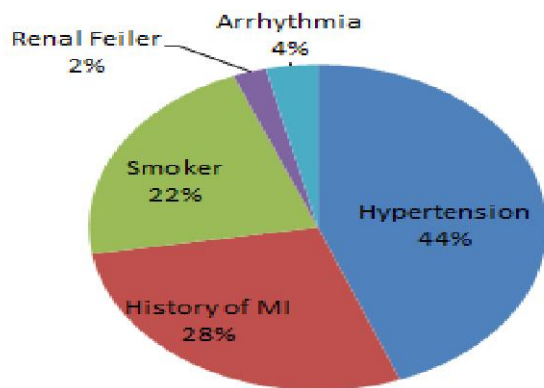


Figure 1: Prevalence of Risk Factors among Diabetic Patients Candidate for CABG

DISCUSSION

Coronary artery diseases are one of the most common causes of mortality all over the world (15). Unlike significant decreases in prevalence of these diseases in USA and Europe, it is growing in developing countries (16). CAD is the most common cardiovascular disease in male (6.9%) and female (6%) and one of the causes of mortality and morbidity in Iran (17, 18). It causes 50% of mortality annually. And now it is the first

cause of death in people older than 38 years old in Iran (19). Prevalence of mortality due to cardiovascular diseases is 28 to 48% and prevalence of ischemic heart disease is so high in this country. We can prevent CAD by preventing risk factors (20). Coronary artery diseases are one of the most common cardiovascular diseases and diabetes, hypertension, smoking, hypercholestromia, obesity and inactivity and psychologic factors such as depression, social problems and stress, are the most important risk factors (21). Coronary artery bypass graft is one of the most efficient and common surgical treatments for coronary artery diseases. So recognizing risk factors and comorbidities of CAD is the subject of many studies worldwide. There are many diabetic patients scheduled for CABG, so it is important to treat and control the comorbidities and risk factors. Generally hypertension is the most common comorbidity, and renal failure is then least, and it is similar in female and male. Also the most common risk factor is smoking in male, but it is hypertension in women. Others studies were consistent to our study, like a study by Forouzannia (22) *et al.*, Compared Effects of Continuous Insulin Infusion with or without Subcutaneous Glaring Insulin on Glycemic Control in Diabetic Patients Undergoing Coronary Artery Bypass Graft, reported the prevalence of hypertension, smoking and myocardial infarction as 53.7%, 20.8% and 34.7%, respectively, according to our study, the most common was hypertension. Another study by Gunjan (23) *et al.*, who compared Intensive Intraoperative Insulin Therapy to Conventional Glucose Management during Cardiac Surgery showed that, smoking (56%) and myocardial infarction (13.5%) are the most common risk factors and also renal failure (1.5%) is the least. In a study by Bangash (24), who evaluated the effects of strict glycemic control on morbidity and mortality of diabetic patients post CABG, hypertension was so prevalent (59.2%) as our study. Furnay (25) *et al.*, in a large study, examined the effects of Diabetic Continuous Insulin Infusions in Reducing Mortality of CABG patients, showed that hypertension (68%) and renal failure (4%) are the most and least common risk factors, although smoking was prevalent too (25%) that is so similar to our study.

CONCLUSION

According to high prevalence of hypertension in diabetic patients scheduled for CABG, it is better to control diet in these patients to decrease morbidity and mortality rates. More studies are suggested to evaluate more variables.

REFERENCES

1. Adams, Gary G., *et al.*, The hypoglycaemic effect of pumpkins as anti-diabetic and functional medicines. *Food Research International* 44.4 (2011): 862-867.
2. Shaw, Jonathan E, Richard A Sicree and Paul Z. Zimmet. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes research and clinical practice* 87.1 (2010): 4-14.
3. Schramm, Tina Ken, *et al.*, Mortality and cardiovascular risk associated with different insulin secretagogues compared with metformin in type 2 diabetes, with or without a previous myocardial infarction: a nationwide study. *European heart journal* (2011): ehro77.
4. Harati H, Hadaegh F, Saadat N, Azizi F. Population based incidence of Type 2 diabetes and its associated risk factors: results from a six-year cohort study in Iran. *BMC Public Health* 2009; 9: 186.
5. Stirban AO, Tschoepe D. Cardiovascular complications in diabetes: targets and interventions. *Diabetes Care* 2008; 31 Suppl 2: S215-21.
6. Grundy SM, Cleeman JI, Merz CN, Brewer HB, Clark LT, Hunninghake DB, *et al.*, Implications of recent clinical trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines. *J Am Coll Cardiol* 2004; 44: 720-32.
7. Lu W, Resnick HE, Jablonski KA, Jones KL, Jain AK, Howard WJ, *et al.*, Non-HDL cholesterol as a predictor of cardiovascular disease in type 2 diabetes: the strong heart study. *Diabetes Care* 2003; 26: 16-23.
8. Khalangot M, Tronko M, Kravchenko V, Kulchinska J, Hu G. Body mass index and the risk of total and cardiovascular mortality among patients with type 2 diabetes: a large prospective study in Ukraine. *Heart* 2009; 95: 454-60.
9. Kalaitzidis R, Bakris G. Management of hypertension in patients with diabetes: the place of angiotensin-II receptor blockers. *Diabetes Obes Metab* 2009; 11: 757- 69.
10. Nathan DM, Cleary PA, Backlund JY, Genuth SM, Lachin JM, Orchard TJ, *et al.*, (Diabetes control and complications trial/epidemiology of diabetes interventions and complications study research group). Intensive diabetes treatment and cardiovascular disease in patients with type 1 diabetes. *N Eng J Med* 2005; 353: 2643-53.
11. Yokoyama H, Oishi M, Kawai K, Sone H. Reduced GFR and micro-albuminuria are independently associated with prevalent cardiovascular disease in Type 2 diabetes: JDDM study 16. *Diabet Med* 2008; 25: 1426- 32.
12. Klausen KP, Parving HH, Scharling H, Jensen JS. Micro-albuminuria and obesity: impact on cardiovascular disease and mortality. *Clin Endocrinol (Oxf)* 2009; 71: 40-5.
13. Grundy SM. Cardiovascular and metabolic risk factors: how can we improve outcomes in the high-risk patient? *Am J Med* 2007; 120 Suppl 1: S3-8.
14. Jamieson Meredith. Factors, Influencing Health Related Quality of life in Cardiac Rehabilitation Patient Progressing. *Cardiovascular Nursing* 2002, 17(3): 124-131.
15. Gupta S, Saxena SK, Lalchandani A, Chandra R, Gupta AC, Mishra MP. Significance of Platelet Volume Indices in Patients of Coronary Artery Diseases (Cad) and Acute Myocardial Infarction (MI): A New Predictor For Ihd. *Indian Journal of Cardiology* ISSN. 2.972:1622;012
16. Gersh BJ, Sliwa K, Mayosi BM, Yusuf S. Novel therapeutic conceptsThe epidemic of cardiovascular disease in the developing world: global implications. *European heart journal*. 2010;31(6):642-8.
17. Nazeer M, Naveed T, Ullah A. A Case–Control Study of Risk Factors for Coronary Artery Disease in Pakistani Females. *Annals of King Edward Medical University*. 2011;16, 3.
18. Hatmi Z, Tahvildari S, Motlag AG, Kashani AS. Prevalence of coronary artery disease risk factors in Iran: a population based survey. *BMC Cardiovascular Disorders*. 2007;7(1):32
19. World Health Organization. Cardiovascular disease. Geneva, Switzerland: WHO; 2008.
20. Moore S. CABG Discharge information addressing women’s recovery. *Clinical Nursing Research*. 2000; 5(1): 97-99
21. Eastwood, Jo-Ann and Lynn V. Doering. Gender differences in coronary artery disease. *Journal of Cardiovascular Nursing* 20, no. 5 (2005): 340-351.

22. Forouzannia, Seyed Khalil, *et al.*, Comparing Effects of Continuous Insulin Infusion with or without Subcutaneous Glargine Insulin on Glycemic Control in Diabetic Patients Undergoing Coronary Artery Bypass Graft (CABG). *Iranian Journal of Diabetes and Obesity* 1.1 (2009): 5-10.
23. Gandhi, Gunjan Y, *et al.*, Intensive Intraoperative Insulin Therapy versus Conventional Glucose Management during Cardiac Surgery A Randomized Trial. *Annals of internal medicine* 146.4 (2007): 233-243.
24. Bangash, Sohail Khan, Saad Bader Zakai, and Iqbal Hussain Pathan. Effects of Strict Glycemic Control on Morbidity & Mortality of Diabetic Patients Post-Cabg. *Pjc* 24 (2013): 28-32.
25. Furnary, Anthony P, *et al.*, Continuous Insulin Infusions Reduce Mortality in Diabetic CABG patients. *Providence* (2002). 2-47.

Cite this article as:

Fatemeh Javaherforoosh Zadeh and Simin Azemati. PREVALENCE OF RISK FACTORS IN DIABETIC PATIENTS CANDIDATE FOR CABG SURGERY. *International Journal of Bioassays*, 2015, 4 (01): 3644-3647.

Source of support: Nil

Conflict of interest: None Declared