Risk Factors for Ischemic Heart Disease among Patients Admitted to Coronary Care Unit (CCU) in AL-Hussain Hospital in Karballa

Najlaa F Jamil [1] *FICMS/CM*, **Jalal Abdul Gahni**[2] *FIBMS/CM*

[1]Dept. Community Medicine, College of Medicine, Al-Mustansiriyah University,[2]Ministry of Health, Karballa Health Directory

Abstract

Background   Adequate control of cardiovascular disease risk factors and health habits are important for preventing ischemic heart disease, but it has been reported that many patients remain uncontrolled despite regular care.

Objective   To identify some of the risk factors of ischemic heart diseases among patients admitted to coronary care unit (CCU).

Methods   A hospital based case-control study was conducted in AL-Hussain Hospital in Karballa, from January 2007 to October 2007. The study included 300 cases of ischemic heart disease admitted to coronary care unit (CCU) of the hospital during the study period, and 300 age & sex matched controls, who attended the outpatient clinic of the same hospital. All the participants were interviewed with a special questionnaire form. In addition the weight and height were measured for both cases and controls to determine their body mass index (BMI).

Result   73 (24.3%) of the cases were in the age group (60-69) years. The females accounts for two third of cases, 199 (66.3%) in comparison to males 101 (33.7%).
The study showed a statistical significant association between the following risk factors and admission to CCU: smoking, alcohol consumption, obesity, hypertension, diabetes, and positive family history of various cardiovascular diseases among first degree relatives of the cases.

Conclusions   The admission to CCU was more common in the age group (60-69) years and the females were more likely than males need for CCU admission, patients with the following risk factors were in more need to CCU admission than others: smoking, elevated body mass index (BMI), hypertension, diabetes and positive family history of various cardiovascular diseases among first degree relatives of the cases.

Key words   risk factors, CCU admission

Introduction

Risk factors increase the chances of developing a disease or having it worsen. Over 300 risk factors have been associated with coronary heart disease and stroke. The major established factors meet three criteria: a high prevalence in many populations, a significant independent impact on the risk of coronary heart disease or stroke; and their treatment and control result in reducing the risk [1].

Risk factors for coronary heart diseases categorized into three groups: controllable, non controllable and predisposing factors. The controllable or life style factors include tobacco use, diet and physical activity.

Non controllable factors include gender, age, and family history. Predisposing risk factors include diabetes mellitus, hypertension, obesity, and hypercholesterolemia [1,2].

The prevalent behavioral risk factors reflect the underlying major social, economic and cultural driving forces like low education, unemployment, poor income, unhealthy environmental conditions, in addition to stressful events [3,4].

In the EMRO region of WHO, cardiovascular diseases (CVD) are emerging as a major health problem, the proportion of deaths from CVD range from 25-45 % [5].

In Iraq, CVD represent the main cause of hospital admission and account for around 40% of all causes of deaths in the country [6].

Heart disease is preventable, many action can be taken to reduce the risk of heart disease by focusing on human lifestyle and habits, also there is much that can be done to control the risk factors for heart disease, prevent heart attack, and increase the chances for a long and vital life [2,5].

The present study was conducted to determine the risk factors of ischemic heart diseases among patients admitted to coronary care unit (CCU) in AL-Hussein hospital in Karballa.

Methods

This is a hospital based case-control study conducted in the Coronary Care Unit (CCU) of AL- Hussain Hospital in Karballa, over a period of ten months, from January 2007 till the end of October 2007.

The patients who were admitted to the CCU due to ischemic heart disease during the study period were considered as cases according to the following inclusion criteria (any patient admitted to CCU with ECG evidence of angina or myocardial infarction), while the control group was collected from people attending the outpatient clinic of the same hospital (other than the internal medicine clinic), who were matched by age and gender with no history of any ischemic heart disease. A control to case ratio of 1: 1 was aimed.

All the participants were interviewed with a special questionnaire form consisting of sociodemographaic data which include age, sex, years of education, occupation, marital status, health habits (smoking habit was assessed among the smokers by asking them whether they smoke on daily basis or not and the average daily number of cigarette smoked and duration of smoking, alcohol consumption, eating habits was assessed by asking about eating fatty foods, type of fat used for cooking and methods used for cooking foods and number of eggs eating per week).

The physical activity was assessed according to the following definition (walking 30 minutes a day , five days or more in atypical week) [6].

Family history (1st degree relatives) for some of the medical conditions and medical health history for hypertension and diabetes mellitus, in addition the weight & height measurements for both cases and control were taken to determine their body mass index (BMI), the BMI was calculated and classified for each individual [7].

Data analysis

SPSS version 15 was used for data entry and analysis. The Pearson Chi-square test was used to assess the statistical significance of observed differences in proportion; in addition Odds ratio & 95% confidence interval were calculated [8]. A *p* value less than 0.05 was considered significant.

Results

The total sample studied included 300 cases and 300 controls. The females accounted 199 (66.3%) of the total cases admitted to CCU in comparison to males 101 (33.7%) cases. 24.62% of the female cases were in the age group 50-59 years, while the largest proportion among males (25.74%) were in the age group 60-69 years, Table 1.

Table 2 illustrates the distribution of the study groups according to some demographic characteristics, the years of education, marital status and occupation all shows statistical significant association with CCU admission.

The results in table 3 shows that smoking and alcohol consumption both increase the risk for CCU admission as the odds ratio were: 1.443 and 2.434 respectively. While the eating habits

revealed no statistical significant association with the CCU admission (p= 0.562).

The distribution of the cases and controls according to their BMI, shows that higher proportion of the cases (49%) were obese and extreme obese in comparison to their controls (43.4%) (p= 0.013), Table 4.

The history of hypertension and diabetes both increase the risk of CCU admission as the odds ratio were 1.563 & 1.528 respectively, Table 5. Table 6 revealed statistical significant associations between the family history of hypertension, diabetes, ischemic heart diseases and death from heart diseases and the CCU admission.

Table 1. The age and sex distribution of cases

Age group (years)	Females		Males		X^2; df; p
	No	%	No	%	
20-29	2	1	-	-	
30-39	16	8.04	7	6.93	
40-49	44	22.11	22	21.78	
50-59	49	24.62	18	17.82	5.526; 5;0.478
60-69	47	23.61	26	25.74	
70-79	27	13.56	22	21.78	
80-	14	7.03	6	5.94	
Total	199	100	101	100	

Table 2. The distribution of the study groups according to some demographic characteristics

Demographic character	Cases (N=300)		Control (N=300)		X^2; df; p
	No.	%	No.	%	
Years of education					
0-6	191	63.7	99	33	
7-12	69	23	101	33.7	60.924; 2; 0.0001
>12	40	13.3	100	33.3	
Marital status					
Married	197	65.7	199	66.3	
Unmarried	40	13.3	20	6.7	25.473; 3; 0.0001
Widow	32	10.7	67	22.3	
Divorced	31	10.3	14	4.7	
Occupation					
Governmental employee	42	14	67	22.33	
Self-employee*	87	29	87	29	8.206; 3; 0.04
House wife	124	41.33	111	37	
Retired	47	15.67	35	11.67	

*Self- employee [self-employee, daily payment seeker, farmer].

Table 3. The health habits of cases and controls

Health Habits	Cases (N= 300)		Controls (N=300)		X^2; df; p
	No.	%	No.	%	
Smoking					4.751;1,0.029
Yes	129	43	1.3	34.3	OR= 1.443,
No	171	57	137	65.7	95% CI= 1.037-2.007
Alcoholic					5.053;1;0.025
Yes	21	7	9	3	OR= 2.434;
No	279	93	291	97	95% CI= 1.096-5.405
Eating fatty foods					0.3361; 1;0.562
Yes	171	57	178	59.3	OR= 0.909;
No	129	43	122	40.7	95% CI= 0.657-1.257
Physical activity					572.38;1;0.0001
Yes	2	0.7	295	98.3	OR=8791
No	298	9..3	5	1.7	95% CI=1521.1-22026.5

Table 4. The BMI distribution of cases and controls

BMI	Cases (N= 300)		Controls (N=300)		X^2; df; p
	No.	%	No.	%	
Under- Weight (BMI< 18.5)	3	1	-	-	
Normal weight (BMI 18.5-24.9)	85	28.3	79	26.3	
Overweight (BMI 25-29.9)	65	21.7	91	30.3	10.7; 3; 0.013
Obese (BMI 30- 39.9)	126	42	122	40.7	
Extreme obese (BMI=>40)	21	7	8	2.7	

Table 5. The medical health history for the cases and controls.

Medical Health history	Cases (N= 300)		Controls (N=300)		X^2; df; p
	No.	%	No.	%	
Hypertension					7.3381; 1; 0.007
Yes	151	50.3	118	39.3	OR= 1.563
No	149	49.7	182	60.7	59% CI= 1.131-2.161
Diabetes mellitus					6.121; 1; 0.013
Yes	121	40.3	92	30.7	OR=1.528
No	179	59.7	208	69.3	95% CI= 1.091-2.140

Table 6. The distribution of cases and controls according to their family history of medical conditions

Family History	Cases (N= 300)		Controls (N=300)		X^2; df; p
	No.	%	No.	%	
Hypertension					11.4470; 1; 0.001
Yes	87	29	52	17.3	OR= 1.984
No	213	71	248	82.7	95%CI= 1.320-2.875
DM					19.103; 1; 0.0001
Yes	78	26	36	12	OR= 2.577;
No	222	74	264	88	95% CI= 1.670-3.974
Ischemic Heart disease					25.158; 1; 0.0001
Yes	36	12	5	1.7	OR= 8.045;
No	264	88	295	98.3	95% CI=3.111-20.804
Death from heart diseases					5.042; 1; 0.025
Yes	36	12	20	6.7	OR=1.909
No	264	88	280	93.3	95% CI= 1.078-3.382

Discussion

Adequate control of cardiovascular disease (CVD) risk factors and health habits are important for preventing heart problems, but it has been reported that many patients remain uncontrolled despite regular care [1].

The study results revealed that cardiovascular events were more common in the age group (60-69) years than in other age groups, a similar finding was also reported in previous study [8], this finding could be explained by that, the incidence and prevalence of heart diseases increases dramatically with advancing age may be due to changes of cardiovascular structure and function [8].

The current study showed that about two third of cases were women, and this disagree with study conducted in Tunis [9], were men affected more than women. There is no accurate model for heart disease in women, until now most researches were done in men, women have been under represented in heart studies, under investigated, under diagnosed and under treated, but heart attacks are often more severe in women and they are more likely than men to die of it [5,8,10].

Statistical significant association was observed between years of education and admission to CCU, which coincided with study done in Oman [11], this might be attributed to the fact that individuals of higher educational level follow dietary recommendation and adopt other risk avoidance behaviors.

Smokers' risk of developing CVD is 2-4 times than that of non smokers [11], this finding goes in parallel with the result of this study. Smoking narrows the blood vessels causing an increase in blood pressure and heart rate as well as leads to reduced blood flow in the arteries; this reduced flow can lead to a heart attack [12].

The risk of CCU admission was 2.4 times higher among alcoholic than in non alcoholic, this result is comparable with previous studies, which showed direct association between alcohol drinking and risk of heart attack [9,13].

The current study showed statistical significant association between hypertension and CCU admission, and this in agreement with previous studies [5, 9], and this could be due to the fact that the main effects of hypertension on the heart are a direct result of excess pressure or resistance against which the heart must eject. Hypertension can also cause deleterious

changes in the coronary arteries adversely, affecting blood flow to the heart [14].

The study reported that patients with diabetes were 1.5 times more liable for cardiovascular disease than non diabetic , this finding is due to that people with diabetes are more likely than others to develop additional heart risk factors such as (high blood pressure, obesity, and high cholesterol) so that instead of one heart – disease risk , they have a collection [15].

Obesity significantly associated with cardiovascular disease occurrence [16], the result in this study demonstrated statistical significant association between BMI and CCU admission, this result supported by other studies [9, 17].

Family history is an important risk factor for ischemic heart diseases, the present study found statistical significant association between CCU admission and positive family history of (hypertension, diabetes, ischemic heart disease and death due to heart disease) in the first degree relatives of the cases. This finding might be due to certain environmental risk factors like nutritional habits and common pathophysiologic pathway [9].

Conclusion

The admission to CCU was more common in the age group **(**60-69) years and the females were more likely than males need CCU Admission, patients with the following risk factors were in more need to CCU admission than others: smoking, elevated body mass index (BMI), Hypertension, diabetes, and positive family history of various cardiovascular diseases among first degree relatives of the cases.

Recommendation

To raise the awareness of the people about the risk factors of cardiovascular diseases and how to avoid them through effective health and nutrition education programs and encourages the people to adopt healthy life style.

References

1. WHO. The WHO step wise approach to chronic disease risk factor surveillance, Geneva: WHO, 2005.
2. Ridker PM, Cushman M, Stampfor MJ, Tracy RP, and Hennekens AC. Inflammation, Aspirin, and the risk of cardiovascular disease in apparently healthy men. *N Engl J Med*, 1997; 336: 973-979.
3. Kannel W. New perspectives of cardiovascular risk factors. *Am Heart J*, 1987; 114: 213-221.
4. Sobal J, and Stunkard AJ. Socioeconomic status and cardiovascular disease: A review of literature. *Psychological Bulletin*, 1989; 105: 260-275.
5. Block HR. The burden of cardiovascular disease: following the link from hypertension to myocardial infarction and heart failure. *Am J Hypertens*, 2003 Sep; 16(9 Pt 2): 4S-6S.
6. Ministry of Health; Directorate of Public Health and Primary Health Care, Ministry of Planning and Development Cooperation; Central Organization for Statistics and Information Technology, In collaboration with World Health Organization . Chronic Non-Communicable Diseases Risk Factors Survey in Iraq, A step wise approach, 2006.
7. Musaiger AO, and AL-Mannai MA. Weight, height, body mass index and prevalence of obesity among the adult population Bahrain. *Ann Hum Biol*, 2001, 28: 346-350.
8. Stone PH, Thompson B, Anderson HV, Kronenberg MW, Gibson RS, Rogers WJ, et al. Influence of race, sex, and age on management of unstable angina and non-Q-myocardial infarction. *JAMA*, 1996 Apr; 275(14): 1104-12.
9. Lihioui M, Boughzala E, Benfarhat M, Ammar H, Chaouech A, Jemaa R, and Kaabachil N. Distribution of cardiovascular risk factors in patients with coronary heart disease in Sahel Tunisia. *Eastern Mediterranean Health Journal*, 2007; 13(3): 536-543.
10. Eaker ED, Thorn T, and Castclli WP. Coronary heart disease in women. Journal of Preventive Medicine, 1998; 33: 10-16.
11. EL-Badawy AM, AL-Kharusi HM, and AL-Ghanemy SA. Health habits and risk factors among Omanis with hypertension. *Saudi Med J*, 2005; 26(4): 623-629.
12. Dallosso HM, and James WPT. The role of smoking in the regulation of energy balance. *Int J Obesity*, 1994; 8: 365-375.
13. Prentice AM. Alcohol and obesity. *Int J Obesity*, 1995; 19(5): s44-s50.
14. Stamler J, Neaton JD, and Went worth DM. Blood pressure (systolic and diastolic), and risk of fatal coronary heart disease. *Hypertension*, 1989; 13(5): 110-112.
15. Frier BM, and Fisher M. Diabetes Mellitus. In: Boon NA, Colledge NR, Walker BR, and Hunter JAA (eds).

Davidson's principles & practice of medicine, 20th edition, Churchill Livingstone, 2007; p. 805- 847.

16. Hanlon P, Byers M, Walker BR, and Summerton C. Environmental and nutritional factors in disease, obesity. In: Boon NA, Colledge NR, Walker BR, and Hunter JAA (eds). Davidson's principles & practice of medicine, 20th edition, Churchill Livingstone, 2007; 111.

17. Pi-Sunyer JKX. Medical hazards of obesity. *Ann Internal Medicine*, 1991; 655-660.

Correspondence to: Dr. Najlaa F Jamil,
E-mail: basil.jassar@hotmail.com
Received: 22nd Feb. 2010, Accepted: 3th Nov. 2010.