

ASSESSMENT OF RISK FACTOR IN PATIENTS WITH ISCHEMIC HEART DISEASE IN BASRAH (HOSPITAL BASED STUDY)

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ABSTRACT

Risk factors for ischemic heart disease in 421 middle aged and elderly patients attending three hospitals in Basrah were studied. Metabolic syndrome defined as the presence of three or more of these risk factors were studied too. Obesity, hypertension, smoking, diabetes and dyslipidemia were present in 46%, 42%, 40%, 30% and 30% of patients respectively. Most of these factors were uncontrolled. 161(38%) of patients had no detectable risk factor. Metabolic syndrome was present in 118(28%) of the studied patients.

INTRODUCTION

I

ischemic heart disease (IHD) is the most important cause of mortality, morbidity, huge economic burden and of various health complications all over the world. The high mortality due atherosclerotic coronary heart disease necessitates the identification and control of its risk factors^[1]. There are many risk factors, which by deleting or modifying can prevent and control the disease, the most common recognized risk factors include: High blood pressure, diabetes mellitus, abnormal lipid profile level, over weight, cigarette smoking, family history of angina or heart attack at young, sedentary life style, ageing and coronary artery spasm. Sometime no obvious risk factors can be detected^[2,3]. Most of these risk factors are highly correlated to each other and reflect a common metabolic pathway^[4]. The metabolic syndrome is said to consist of a cluster of heart disease risk factors including low level of high density lipoprotein (HDL) cholesterol, high triglycerides, impaired carbohydrate metabolism, central obesity and high blood pressure. An important feature of this syndrome is insulin resistant characterized in non-diabetics by increased level of serum insulin^[5]. In both sexes there are significant positive associations between IHD and age, systolic blood pressure, fasting and post challenge hyperglycemia, total cholesterol/HDL cholesterol ratio and triglyceride, and an inverse significant association with HDL cholesterol. It needs to be emphasized that in any patient with IHD an early detection of risk factors are necessary in order to control symptoms and decrease complications of coronary heart disease^[6,7].

1. *This study was conducted: To study the incidence of risk factors among those patients with IHD in Basrah hospitals.*
2. *To study the incidence of multiple risk factors (metabolic syndrome) in IHD patients.*
3. *To study those risk factors which are controlled in patients with IHD.*

PATIENTS AND METHODS

Between February 2002 and November 2004, a total of 421 patients with IHD attending three different hospitals in Basrah were studied, detailed history and clinical examination were obtained from each patients regarding risk factors for IHD: Height and weight were measured while the participants wearing light clothing and no shoes; body mass index (BMI) was calculated as weight (Kg)/height (m)², BMI of 30 was most commonly used as threshold for obesity in both males and females. Other approach to quantify obesity was by measuring waist circumference, values (>40) inches for males and (>35) inches for females were used^[6,7]. Blood pressure was measured according to the Hypertension detection and follow up program protocol, by using standard mercury sphygmomanometer after the subject had been seated for at least 5-minutes, the mean value of two measurements taken at least one minute apart was used in the analysis^[7]. Fasting blood glucose level was determined on venous blood obtained before breakfast; glucose level was measured by glucose oxidase assay^[8]. Total plasma cholesterol and triglyceride were measured by enzymatic techniques. HDL cholesterol was measured according to the standardized procedures of the Lipid research clinic's protocol^[9]. All the investigations were done to the patients in the laboratory room of Al-Mowani General Hospital, except HbA1c for

Aims of the study:

diabetic patients which was done in Al-Basrah General Hospital. Metabolic syndrome was defined according to the national cholesterol education program as the presence of any three of the following conditions:

1. Excess weight around the waist (*abdomen circumference >40 inches in males and >35 inches in females*)
2. High level of triglycerides (150 mg or higher).
3. Low level of HDL (below 40 mg/dl for male and below 50 mg/dl for female).
4. High blood pressure (135/85 mmHg or higher).
5. High fasting blood glucose (110 mg/dl or higher)^[3,5,10].
Diagnosis of IHD was based on clinical features, resting ECG or exercise ECG and coronary angiography when available^[10].

The following risk factors were considered as controlled in IHD patients if: ^[11,12]

- I. The blood sugar =<120 mg/dl and HgA1c <7gm/dl.
- II. The blood pressure < 140/90 mmHg.
- III. The BMI = < 25 Kg/m2.
- IV. Fasting total cholesterol < 200 and or LDL < 110 mg/dl.
- V. Patients had stopped smoking completely.

Z-test was used for statistical analysis, P-value <0.05 was taken as the minimal level of significant.

RESULTS

Four hundred twenty one patients (421) with IHD were studied, 244(58%) males and 177(42%) females. 271(64%) of patients were below 65 year of age. While 150(35%) of the patients were aged 65 years and more representing 78(32%) of the total males and 72(40%) of the total females as shown in (Table-1).

Table 1. Age and sex distribution of IHD patients.

Age	Males No. %	Females No. %	Total No. %
45-64 years	166 68	106 60	271 64
65-and above	78 32	71 40	150 38
Total	244 100.0	177 100.0	421 100.0

Table-2 shows the distribution of the coronary risk factors among the studied patients: Obesity and over weight were present in 195(46%) of patients, males 103(42%) as compared to 82(46%) of female patients (P>0.05). Hypertension was the second frequent risk factor of IHD, 98(40%) of male patients, as compared to 82(46%) of female patients. (P<0.05) Smoking habit was present in 170(40%) of patients, 122(50%) of patients were males, while 48(27%) of patients were

female smokers. (P<0.05) Diabetes Mellitus was present in 127(30%) of patients, more common in females 73(41%) as compared to males 54(22%). (P<0.05)

Hyperlipidemia was present in 129(30%) of patients, males 73(30%) and females 56(31%). (P>0.05) This table also shows that 161(38%) of patients had no detectable risk factors; 128(52%) were males patients and 33(18.5%) females. (P<0.05)

Table 2. Distribution of Ischemic risk factors among the studied patients.

Risk factor	Males No.116 (47%)	Females No.144 (81%)	Total No.260 (62%)	P-value
hypertension	98 (40%)	82(46%)	180(42%)	>0.05
Diabetes	54 (22%)	73(41%)	127(30%)	<0.05
Smoking	122(50%)	48(27%)	170(40%)	<0.05
Obesity	103(42%)	92(52%)	195(46%)	<0.05
Dyslipidemia	73 (30%)	56(31%)	129(30%)	>0.05
No risk factor	128(52%)	33(18.6%)	161(38%)	<0.05

Table-3 shows the distribution of metabolic syndrome among IHD patients 118(28%). 78(39%) were females as compared to 40(16%) of males. While 303(72%) of patients didn't had all the elements of metabolic syndrome; 204(84%) were males and 119(61%) were females. (P<0.05)

Table 3. Distribution of metabolic syndrome among IHD patients.

	Male No.244	Female No.177	Total No.421	P-value
Metabolic syndrome	40(16%)	78(39%)	118(28%)	<0.05
No metabolic syndrome	204(84%)	119(61%)	303(72%)	

Table-4 shows the distributions of controlled risk factors among IHD patients. Hypertension was controlled in 62(35%) of IHD hypertensive patients, males 28(30%) were less than females 34(40%). (P<0.05) Diabetes was controlled in 45(36%) of patients, males 25(42%) were more than females 20(30%). (P<0.05) 105(65%) of smoker patients had stopped smoking, 50(53%) were males and 55(63%) were females. (P<0.05) Obesity was controlled in 80(41%) of patients, males were 26(40%) while females were 54(42%). P<0.05 Normal lipid level were

seen in 73(57%) of dyslipidemic patients, males were 36(60%) while females were 37(54%), this was statistically not significant ($P>0.05$).

Table 4. Distribution of controlled risk factors among IHD patients.

Risk factor	Males	Females	Total	p-value
Hypertension	28(30%)	34(40%)	62(35%)	<0.05
Diabetes	25(42%)	20(30%)	45(36%)	<0.05
Smoking	50(53%)	55(63%)	105(65%)	<0.05
Obesity	26(40%)	54(42%)	80(41%)	<0.05
Dyslipidemia	36(60%)	37(54%)	73(57%)	>0.05 NS

DISCUSSION

In this cross-sectional study, we observed that most of the cases of IHD were in younger age group (45-64 years) 271(64%) as compared to elderly 150(36%) with no much sex difference. This might be explained by the fact that IHD are asymptomatic in large number of elderly patients and because high percentage of metabolic syndrome and inactive lifestyle as an independent risk factor for the development of IHD were seen in the middle age group. This was similar to other studies^[13,14]. Table-2 shows that 195(46%) of patients had increasing body weight, high abdomen circumference or increase BMI as the most frequent factor associated with IHD, which was similar to other studies^[14,15]. With slight female predominance, probably because of sedentary life style without optimal exercise for most female patients. Hypertension account for 180(42%) of patients, which was higher than reported in other studies^[16,17], no significant difference between males and females were seen. Hypertension was a significant independent risk factor for IHD associated with increase risk of adverse clinical events from coronary atherosclerosis^[18]. Cigarette smoking accelerates coronary atherosclerosis in both sexes and at all ages and increases the risk of myocardial infarction^[19].

In this study 170(40%) of patients were smokers, predominantly in males. This study showed 127(30%) of patients had diabetes, significantly higher in females, which mimic other study^[20]. Diabetes mellitus accelerates atherosclerosis and increases the risk of angina, myocardial infarction and death^[21]. Dyslipidemia (*LDL, Triglyceride and lipid remnants*) play an important role in

atherosclerotic coronary heart disease^[22]. In this study 129(30%) of patients had Dyslipidemia, which was slightly lower than in other studies^[23,24], with no significant difference between males and females, possibly because of awareness of the patients to the diet and the use of statin drugs. Also this study shows high percentage of patients 161(38%) without risk factors, which is higher than in other studies^[25]. Large number of male patients had no any risk factor for IHD, while majority of female patients had a single or multiple risk factors associated with IHD, possibly because of sedentary life style and the dietary habit for most of the housewife make them more liable for IHD^[26,27].

Table-3 shows the distribution of metabolic syndrome in IHD between males and females. In this study 118(28%) of patients had metabolic syndrome. There was a significant association between IHD and metabolic syndrome variables in males and females. Body size, insulin level and dyslipidemia appear to represent a composite central metabolic factor, where as blood glucose and blood pressure may each reflect other physiological process^[28]. In this study females had a high percentage of metabolic syndrome 78(39%), $P<0.05$. Insulin resistant is proposed to be the driving mechanism for the metabolic syndrome^[29]. Insulin does not measure directly in this study, but other studies suggest that fasting serum insulin is a marker for insulin resistant in person without diabetes^[30,31].

Table-4 Shows that high percentage of IHD had uncontrolled, badly treated risk factors, and since there is clear evidence that treatment of hypertension, diabetes, obesity, hyperlipidemia, cessation of smoking and other aggravating factors can reduce the occurrence of angina, myocardial infarction and death both in chronic stable angina and acute coronary syndrome, the management policy in local setting should be reconsidered^[32,33]. Hypertension was treated and controlled to the normal level in 62(35%) of hypertensive IHD patients, while diabetes was controlled in 45(36%), which was similar to other studies^[34,35]; this is because most of these patients were asymptomatic, therefore not seeking medical attentions. Also body weight was decreased to the normal level in 80(41%) of obese patients only, possibly due to wrong

dietary habits and low exercise level, which mimic other studies^[36,37]. Obesity increases the risk of coronary events and is frequently associated with other risk factors like hypertension, diabetes and hyperlipidemia^[38,39]. Hyperlipidemia was decreased to the normal levels in 73(57%) of patients. Lipids were significantly associated with IHD, largely based on the impact of high low-density lipoprotein (LDL), high triglyceride and low high-density lipoprotein (HDL)^[40,41]. The controlling of dyslipidemia is central when aiming for long term relieve of angina, reduce need for revascularization and reduction of myocardial infarction and deaths^[42,43]. Smoking was stopped completely in 105(65%) of smoker patients. Cigarette smoking accelerate coronary atherosclerosis in both sexes and at all ages and increase the risk of myocardial infarction and deaths, by increasing myocardial oxygen need and reducing oxygen supply it aggravate angina. Studies of smoking cessation have demonstrated important benefits with a significant decline in the occurrence of these adverse outcomes^[44,45].

In conclusion, this study shows a positive association between risk factor variables and ischemic heart disease in males and females. Body size and dyslipidemia appear to represent a central metabolic factor in the atherosclerotic process, where as glucose, blood pressure and smoking may each reflect other physiological process.

Recommendations

1. It is recommended that standardized guidelines to help physicians in managing ischemic heart disease and associated risk factors are highly needed.
2. Patients need to be educated as regards to the risk factor of IHD, therefore a planned programs of rehabilitation can encourage patients to stop smoking, lose weight, improve exercise, ovoid sedentary life and to ovoid fatty diet. In addition a better control of blood pressure, blood sugar and hyperlipidemia are important to reduce attacks and complications of IHD.

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