

Major Risk Factors For Myocardial Infarction

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Abstract:

140 patients (89 males and 51 females) aged between 40-89 years were studied to identify the major risk factors among myocardial infarction patients from October 2010 to February 2011 in the intensive care unit ,respiratory care unit, and coronary care unit at Ibn Al-Betar for Cardiac Surgery and Al-kademia Teaching Hospitals in Baghdad city.

For achieving this goal, a questionnaire type include data concerning the study was designed and the data were collected by interview method and review of patients records.They were confirmed as myocardial infarction cases by the cardiologists.

The results of this study showed that 9.3 % of the sample had no risk factor while the majority (90.7%) of the sample had at least one or more risk factors,also it's declared that the males (63.6 %) were at higher risk of myocardial infarction (MI) than the females (36.4%) and most of MI(s) (81.4%) occurred in people younger than 69 years old.

The prevalent risk factors were hypertension (66.4%) and its prevalent was higher in males (40%) than in females (26.4%) , also high blood cholesterol (61.4%) , smoking (60.7%) , and type 2 diabetes mellitus (52.1%).

Smoking was the most prevalent risk factor among males (49.3%) in relation to other risk factors, while hypertension was the main one among females (26.4%).The high prevalence of hypertension,blood cholesterol ,smoking, and diabetes mellitus in this study calls for an action plan by the primary health care team to prevent and control these risk factors. More effort is needed to improve attendees, knowledge, and promote healthy attitudes and behaviour.

Key words: Myocardial infarction; risk factors.

الخلاصة:

تمت دراسة 140 مريضا (89 من الذكور و 51 من الإناث) تتراوح أعمارهم بين 40-89 سنة لتحديد عوامل الخطورة الأكثر شيوعا بين مرضى إحتشاء عضلة القلب للفترة من تشرين الأول 2010 إلى شباط 2011 في وحدة العناية المركزة ووحدة العناية التنفسية ووحدة العناية التاجية في مستشفى ابن البيطار لجراحة القلب ومستشفى الكاظمية التعليمي في مدينة بغداد.

لتحقيق هدف الدراسة تم تصميم استمارة استبنايه تشمل البيانات المتعلقة بالدراسة، وجمعت البيانات عن طريق أسلوب المقابلة ومراجعة سجلات المرضى.

أظهرت نتائج هذه الدراسة أن 9.3 % من أفراد العينة ليس لديهم عامل خطورة يذكر لاحتشاء عضلة القلب في حين إن معظم أفراد العينة (90.7%) لديهم عامل خطورة واحد على الأقل أو أكثر. كما أوضحت النتائج أن الذكور (63.6%) كانوا الأكثر تعرضا لخطر إحتشاء عضلة القلب من النساء (36.4%) وان معظم الإصابات (81.4%) حصلت في المرضى الذين تقل أعمارهم عن 69 سنة.

كانت اغلب عوامل الخطورة انتشارا ارتفاع ضغط الدم (66.4%) حيث كان معدل انتشاره في الرجال (40%) أعلى منه مقارنة بالنساء (26.4%)، وارتفاع الكوليسترول في الدم (61.4%) والتدخين (60.7%)، وداء السكري النوع الثاني (52.1%)، وكان التدخين عامل الخطورة الأكثر انتشارا بين الذكور (49.3 %) بالنسبة لعوامل الخطورة الأخرى، في حين كان ارتفاع ضغط الدم الأكثر انتشارا بين الإناث (26.4%).

إن ارتفاع معدل انتشار ارتفاع ضغط الدم وكوليسترول الدم والتدخين والسكري في هذه الدراسة تدعو إلى وضع خطة عمل من قبل فريق الرعاية الصحية الأولية لمنع ومكافحة عوامل الخطورة هذه. هناك حاجة إلى مزيد من الجهد لتحسين المعرفة والحضور وتعزيز المواقف والسلوك الصحي.

Introduction:

A heart attack is when blood vessels that supply blood to the heart are blocked, preventing enough oxygen from getting to the cardiac muscle. The heart muscle dies or becomes permanently damaged.

The term myocardial infarction (MI) should be used when there is evidence of myocardial necrosis in a clinical setting consistent with myocardial ischaemia ^[1].

It remains a leading cause of morbidity and mortality worldwide and is one of the major death reasons in our country as in western societies. In the United States, 13 million people die due to coronary artery disease (CAD) (one adult dies every minute). Published literature reported that the disease to be the primary cause of death representing 16.9% of all deaths in that year ^[2]. However the relative importance of the disease varies from one country to another, as well as across regions within one country. The disease is common in Turkish population ^[3].

Although the incidence of cardiovascular diseases has been decreasing in most countries, including Poland, the predictions still indicate that it will constitute the major burden of disease worldwide in the foreseeable future ^[4].

It was projected to be largest cause of death and disability by the 2020, with 2.6 million Indians predicated to die due to coronary heart disease predominantly with MI in India and low middle income countries, accounting for all deaths ^[5]. High risk of the disease has been reported among South Asians, regardless of whether they live overseas or in their native lands. Presence of conventional risk factors such as smoking, diabetes mellitus, hypertension and hypercholesterolemia are clearly associated with CAD among them ^[6].

The aim of this present study was therefore to identify the major risk factors

for myocardial infarction among some Iraqi patients.

Materials and Methods:

A descriptive study was conducted on purposive sample of 140 hospitalized patients (89 males and 51 females) were between 40 - 89 years of age with MI from October 2010 to February 2011 in the intensive care unit, respiratory care unit, and coronary care unit at Ibn Al-Betar for Cardiac Surgery and Al - Kademia Teaching Hospitals in Baghdad city. The data were collected by interview method and review of patients records.

The criteria for diagnosis of MI cases and their risk factors depended on the medical decision by the cardiologists. Information on sex, age, cigarette smoking, blood cholesterol, type 2 diabetes mellitus, and hypertension were collected by using a structured questionnaire.

The obesity as a major risk factor of MI was excluded from the results of this study because its prevalence was very low.

The patients who were suffering from diabetes or hypertension had a different durations of the illness and they were on continuous treatment except few cases in which the patients forgot to take the drug(s) or doing rare exercise. Hypertension was defined as a systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg or reported treatment with antihypertensive medications ^[7]

The study dealt with a single type of lipids that greatly affected the risk of developing MI which was cholesterol.

Results:

The results as showed in table (1) that 9.3% of the sample had no risk factor while, the majority (90.7%) of the sample had at least one or more risk factors.

Table 1: The presence of risk factors among MI patients

Presence of risk factors	No.	%	
No presence	13	9.3	
One factor	48	34.3	90.7
Two factors	63	45	
Three factors	15	10.7	
Four factors	1	0.7	
Total	140	100	

While The results as showed in table (2) that 63.6 % of the sample were males, and 36.4% were females, also the majority (81.4%) of the cases were younger than 69 years old.

Table 2: The relationship between the age and the sex in relation to MI.

Age (year)	Sex				Total	%	
	Male No.	%	Female No.	%			
40-49	11	7.9	3	2.1	14	10	81.4
50-59	29	20.7	16	11.4	45	32.1	
60-69	33	23.6	22	15.7	55	39.3	
70-79	12	8.5	6	4.3	18	12.8	
80-89	4	2.9	4	2.9	8	5.8	
Total	89	63.6	51	36.4	140	100	

Also, the results as showed in table (3) that the major risk factor was hypertension (66.4%) and its prevalence was significantly higher in males (40 %) than in females (26.4%) , followed by, High blood cholesterol (61.4%), smoking (60.7%), and diabetes mellitus (52.1%). Smoking was the most prevalent risk factor among males (49.3%), while hypertension was the main one among females (26.4%).

Table 3 : The relationship between the sex and some risk factors for MI.

Sex	Hypertension		High blood cholesterol		Smoking		Type 2 diabetes mellitus	
	No.	%	No.	%	No.	%	No.	%
Male	56	40	55	39.3	69	49.3	43	30.7
Female	37	26.4	31	22.1	16	11.4	30	21.4
Total	93	66.4	86	61.4	85	60.7	73	52.1

Discussion:

Myocardial infarction (MI) is result from the interacion of gene-environment factors. Things that can increase the risk for coronary artery disease are called risk factors. Some risk factors, such as gender, and age, can't be changed. Other risk factors for heart disease such as hypertntion, hypercholesterolemia, smoking, and diabetes mellitus associated with MI are tied to lifestyle and habits. These often are things you can change. Your chance of getting coronary artery disease rises with the number of risk factors you have ^[8].

In the recent study, the result (Table-1) showed that the majority of the subjects (90.7%) had one or more risk factors for MI.This result supported by early study which had shown that overall 92.1% of the patients had one or more coronary artery risk factors. The presence of at least one risk factor is significantly associated with MI patients ^[9].

The results of this study (Table-2) showed that the males (63.6 %) were at higher risk of MI than the females (36.4%) ,and MI is higher in men than women in all age groups, this result agree with a Iraqi study which performed in Krkuk stated that males were more affected with MI than females and the incidence of MI increases with age ^[10] ,also the study agreed with published literature declared that many people continue to believe that heart attacks represent a problem targeting solely older men, yet heart disease is the number one killer of both women and men in the United States.

The difference is that among men, the risk for heart attack increases steadily after 45 years of age. In women, the risk increases after 50 years of age. However, younger women and men can also have heart attacks ^[11].

Also the result confirmed that most of myocardial infarctions (81.4%) occurred in people younger than 69 years old. This result was in disagreement with

other study which showed that four out of five patients with coronary artery disease were 65 years of age or older ^[8].

This difference between the results of the two studies may be due to the differences between life stiles,habits, dietary regimen, cultures, policy and the health standards of their populations. Coronary heart disease and resulting death rates are decreasing in many developed countries, especially North America and western European countries. This decrease is the result of improved prevention, diagnosis and treatment, particularly reductions in cigarette smoking, blood cholesterol and blood pressures .

In developing and transitional countries, however, coronary heart disease is increasing, partly as a result of increasing longevity, urbanisation, and lifestyle changes.

More than 60% of the global burden of coronary heart disease occurs in developing countries. Most of the future increase in cardiovascular disease is expected to occur in developing countries^[12].

In the United Kingdom a MI is three times more common in men than women. However, after the menopause, the female hormones no longer protect the heart so the risk of having a MI is then the same for men and women ^[13]. But in present study the last fact was not observed clearly.

An alarming survey reported by the American Heart Association found that only 8% of women perceive heart disease as the greatest threat to their health despite the fact that heart disease is the leading cause of death among both women and men ^[9] . The age and sex, and family history risks of heart attack in early age (before age 60 years), which genetically prepared for the emergence of signs of the disease,all of this very serious factors are non-adjustable ^[14] .

Table-3 showed that the prevalence of hypertension in this study was (66.4%) and this result consistent

with the study which stated that in Saudi Arabia, the prevalence was (27 %) however, the rates are low compared with American rates ^[15], further-more it is a common disorder affecting approximately 20% of the adult populations of most developed countries, and a major risk factor for cardiovascular disease ^[16].

An interheart study showed that 22% of heart attacks in Western Europe were due to a history of high blood pressure and those with hypertension had almost twice the risk of a heart attack ^[17].

Hypertension prevalence in this study was significantly higher in men (40%) than in women (26.4%).

This result was in agreement with published literature in an urban Korean population which has shown that the prevalence was significantly higher in men (41.5%) than in women (24.5%) ^[17].

While in Nablus District of Palestine 80.56% of males and 71.42% of females of the sample were hypertensive ^[18].

The high prevalence of hypertension risk factor in Iraq, Korea and Palestine countries may be due to the emotional stress as a result of the political challenges and continuous threat of wars in their areas in addition to other causes. In the other hand, alone or in association with smoking, high blood cholesterol levels or diabetes, high blood pressure increases the risk of myocardial infarction and stroke ^[8]. Other study showed that of the 104 patients studied, 72.1% were males, 73.1% were older than 55 years, and 53.8% were hypertensive. Acute MI was the first manifestation of ischemic heart disease in 49% of the patients ^[19].

The results of this study showed that the blood cholesterol was also high (61.4). The level of cholesterol in the bloodstream greatly affects the risk of developing heart disease or heart attack.

Patients who have recovered from MI and who have high cholesterol levels are at an increased long-term risk for

reinfarction, death from coronary heart disease, and all-cause mortality. Our results confirm the prognostic value of cholesterol levels measured after MI and support the role of lipid management in this population ^[20].

Published literature has shown approximately 90% of MI(s) result from an acute thrombus that obstructs an atherosclerotic coronary artery ^[21].

Sudden cardiac death (SCD) resulting from an acute MI is the result of a chain of events beginning with the development of the atherosclerotic plaque and ending with the terminal event of an untreated lethal arrhythmia provoked by sudden ischemia. Certain risk factors for atherosclerosis are particularly associated with SCD, especially smoking and smoking cessation is a critical element of prevention ^[22].

The prevalence of smoking in this study was also high (60.7%). Early studies have shown that cigarette smokers are twice as likely as non-smokers to have a heart attack and are more likely to die from a heart attack than are non-smokers. While the risk is not as great as with smoking cigarettes, smoking other products or inhaling second-hand smoke increases the risk of heart disease and heart attack ^[23].

Another case control study examined the relationship between environment tobacco smoke (ETS) and MI at home. The odds ratio for MI was 1.58 for an average daily passive exposure to the smoke from 20 cigarettes per day or more at home. Combined exposure at home and work showed an increasing odds ratio for MI up to 1.55 in the highest category of weighted duration, that is, more than 90 hour-years of exposure. In addition, more recent exposure appeared to convey a higher risk.

This study confirms an increased risk of MI from exposure to ETS and suggests that intensity of spousal exposure, combined exposure from home

and work, and time since last exposure are important^[24].

In Turkey, modifiable risk factors and especially smoking were found to have a high prevalence in patients with MI living in Central Anatolia^[3]. Smoking does have a negative effect on both cholesterol and blood pressure. So if you smoke and also have other risk factors for heart disease, your risk may be higher than this tool says it is^[8].

Smoking prevalence was significantly higher in men (49.3%) than in women (11.4%). Although in Iraqi society smoking among females is not socially acceptable, the decrease of smoking in females in this study might be due to underreporting.

Elevated blood glucose are a prognostic factor in MI patients. The findings of this study showed that the high prevalence rate of type 2 diabetes mellitus (DM) (52.1%) and smoking (60.7%) were consistent with Hospital-based studies in Saudi Arabia have shown that smoking, hypertension and DM are the common risk factors among patients with acute MI, similar results were reported in a study of 264 cases of acute MI in the Eastern Province of Saudi Arabia which showed that smoking was prevalent in 57%, DM in 28% and hypertension in 27%^[15]. Analysis of 100 patients admitted with acute MI in Gizan, Saudi Arabia also showed that the common risk factors were smoking (73%), hypertension (16%), and DM (15%)^[14].

Other studies have shown that up to 75 percent of DM patients develop heart and blood vessel diseases^[7] and approximately two-thirds of them die from the same reason. Adults with diabetes are three to seven times more likely to develop heart disease^[16]. variables are found to be statistically significant risk factors of MI in Kingdom of Saudi Arabia: age, male gender, hypertension, current smoking, fasting blood glucose, and fasting cholesterol^[25].

However, the high prevalence of these risk factors in the present study might be due to a real increase in the diseases in this community.

A further study of a large sample might be needed to clarify these threats and more effort is needed by the health care team to improve knowledge and promote healthy attitudes and behaviour. The latter poses a greater challenge. Furthermore, the primary health care team should be concerned with early detection and treatment of hypertension, high blood cholesterol, smoking, DM, and other risk factors of MI.

Health committees could participate in health education programmes to reduce illiteracy and improve knowledge and attitude of the attendees. These efforts should be supplemented with community-wide education programmes aimed at schools and homes.

Structured health education programmes for prevalent health problems should include ones in these disease. The help of experts in CHD should also be sought.

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