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ACUTE CORONARY SYNDROME

By

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ABSTRACT

Objective; In this study we looked at the demographic characteristics and the frequency of the various risk factors and categories of acute coronary syndrome among patients presenting to Queen Alia Heart Institute/ King Hussein Medical Centre –Amman - Jordan. Method; This was a retrospective analysis of patients who presented to our cardiac centre with acute coronary syndrome in the period between January 2005 and December 2008.Demographic data, risk factors for coronary artery disease, type of the acute coronary syndrome, hospital stay and in hospital morbidity& mortality were collected using a specially designed form. Results; We looked at 2355 patients with a diagnosis of acute coronary syndrome who were treated during the index period. Thirty five percent were females. The mean age and standard deviation (SD) of the study group was 55.9 (±12.2) years. The mean age for females was 59.7 (±13.2) years and for males was 53.8 (±11.6) years ($P < 0.001$). Prevalence of smoking was 58.7% compared to 26.9% in the general population ($P < 0.001$). Only 33.2% of females were smokers compared to 72.5% of males ($P < 0.001$).Diabetic's accounted for 43.7% of the population and hypertensive's for 44.3% of our population. In females the prevalence of diabetes and hypertension was 62.3% and 61.5% respectively compared to a prevalence of 34.2% and 35.1% in males ($P < 0.001$). Family history of coronary artery disease was present in 20.6% of patients (24.3% in females and 18.6% in males) (P value not significant). Hypercholesterolemia was present in 24.4% of the study population (26.1% of females& 23.5% of males) (P value not significant).Conclusion; Our data showed high frequency of smoking, diabetes, hypertension with the later two being more prevalent in females, who were significantly older. Males had significantly higher in hospital complications than females. The main delay to reperfusion we found to be in seeking medical advice especially in females but once done our times are comparable to that in Western countries.

Key words: Acute coronary syndrome, demographic characteristics, risk factors, Jordan.

INTRODUCTION

Coronary artery disease is a majorpublic health problem in industrialized nations1. According to the Jordan Ministry of Health statistics it was found to have a significant prevalence in Jordan2. Hence, emphasis on its primary as well as secondary prevention has been given great attention by health authorities worldwide.

The term acute coronary syndrome refers to a range of acutemyocardial ischemic states. It encompasses unstable angina,non-ST segment elevation myocardial infarction (NSTEMI) and ST segment elevation infarction (STEMI).

Although there is no universally accepted definition ofunstable angina,Three main presentations have been described—angina at rest, new onset angina, and increasing angina.

While age adjusted mortality from coronary artery disease (CAD) is gradually falling in developed countries [3,4], it is set to become an epidemic in developing countries, and over the next 20 years will probably become the most important global health problem[5].

In this study we looked at the demographic characteristics and the frequency of the various risk factors and categories of acute coronary syndrome among patients presenting to Queen Alia Heart Institute/ King Hussein Medical Centre –Amman - Jordan.

METHOD

We looked at patients who presented to our cardiac centre with acute coronary syndrome in the period between January 2005 and December 2008.

Demographic data, risk factors for coronary artery disease, type of the acute coronary

syndrome, hospital stay and in hospital morbidity & mortality were collected using a specially designed form.

Simple descriptive statistical analysis using mean percentages, Chi-square test were used to determine the significant differences. A P- value of ≤0.05 was used to denote statistical significance.

Inclusion criteria were all patients who were admitted with acute coronary syndrome.

Data collected included demographic characteristics, risk factors for coronary artery disease (CAD), type of acute coronary syndrome, hospital stay and complications encountered during the index hospitalization period and in hospital mortality.

The door to needle time in patients with acute ST- elevation myocardial infarction (STEMI), was taken from the time of arrival to the emergency room to the start of thrombolysis or to the first balloon inflation in those who had acute coronary angioplasty of the infarct related artery.

Hypercholesterolemia was defined as a total cholesterol of ≥ 200 mg/dl or LDL cholesterol of ≥ 130 mg/dl of the blood sample withdrawn on arrival to hospital, or the current use of anti-hyprelipidemic drugs.

Bleeding was defined as any bleeding with a significant drop of the hemoglobin of more than 15% , intracranial or at any other site that needed medical attention or blood transfusion.

Hypotension was defined as a drop of blood pressure that required inotropic support. Re-infarction was defined as a rise in creatinine phosphokinase (CPK) of 1.5 times the previous value if within 24 hours of the index event , or 3 times the normal (190 u/l) if more than 48 hours of the index event.

RESULTS

We looked at 2355 patients with a diagnosis of acute coronary syndrome who were treated during the index period. Table 1 describes the characteristics of the study group.

Table one. Characteristics of patients.

	Total	Males	Females	P value
Percentage	100	65	35	
Mean age in years	55.9	53.8	59.7	< 0.001
Hypertension %	44.3	35.1	61.5	< 0.001
Diabetes %	43.7	34.2	62.3	< 0.001
Smoking %	58.7	72.5	33.2	< 0.001
Hypercholesterolemia %	24.4	23.5	26.1	Not significant
Family history of CAD %	20.6	18.6	24.3	Not significant

Thirty five percent were females. The mean age and standard deviation (SD) of the study group was 55.9 (±12.2) years. The mean age for females was 59.7 (±13.2) years and for males was 53.8 (±11.6) years (P <0.001).

Prevalence of smoking was 58.7% compared to 26.9% in the general population (P

<0.001). Only 33.2% of females were smokers compared to 72.5% of males (P < 0.001).

Diabetics accounted for 43.7% of the population and hypertensive's for 44.3% of our population. In females the prevalence of diabetes and hypertension was 62.3% and 61.5% respectively compared to a prevalence of 34.2% and 35.1% in males (P < 0.001).

Family history of coronary artery disease was present in 20.6% of patients (24.3% in females and 18.6% in males) (P value not significant).

Hypercholesterolemia was present in 24.4% of the study population (26.1% of females& 23.5% of males) (P value not significant).

Twenty two percent of the study group had a diagnosis of ST-Elevation Myocardial Infarction (STEMI) and 53.9% had a diagnosis of Non ST-Elevation Myocardial Infarction (NSTEMI). The rest of the population (24.1%) was diagnosed as having Unstable Angina (UA). In patients with STEMI, anterior MI was seen in 52% (55% in males & 49.7% in females) (P<0.05), inferior MI in 42% (35% in females & 44% in males) (P < 0.05). The rest had a diagnosis of lateral, right ventricular or posterior infarcts.

In patients with STEMI who presented acutely to our centre, the time (SD) from the onset of pain to seeking medical advice was 235 ± 147 minutes. In females it was 262 ± 178 minutes compared to 221 ± 138 minutes in males (P < 0.01).

The mean door to balloon inflation was 42 ± 35 minutes. Females had a mean ± SD of 44.3 ± 39.6 minutes compared to 38.5 ± 32.6 minutes in males (P not significant).

Complications encountered during the hospital admission occurred in 14.5% of females compared to 19.3% of males (P < 0.01). They included bleeding (4%), hypotension (4.2%), ventricular arrhythmias (5.2%),conduction defects (2.6%) and re-infarction (1.6%).

The mean hospital stay was 3.5 (± 2.7) days. With a value of 4.1 (±3.2) days in females, compared to 3.2 (± 2.1) days in males, which had no statistical difference.

In hospital mortality was 2.6 % with no statistical difference between females (2.1%) and males (2.9%).

DISCUSSION

Acute coronary syndrome is an alarming and serious presentation of coronary artery disease.The process central to the initiation of an acute coronary syndrome is disruption of an atheromatous plaque. Fissuring or rupture of these plaques leads to the local generation of thrombin and deposition of fibrin. This in turn promotes platelet aggregation and adhesion and the formation of intracoronary thrombus.

Unstable angina and NSTEMI are generally associated with platelet rich, white thrombus, and only partial occlusion of the coronary arteries. In contrast STEMI has red, fibrin rich, and more stable occlusive thrombus. The three main presentations of unstable angina are; angina at rest (usually longer than 20 minutes, new onset angina (Canadian Cardiovascular Society) class III, or a previously diagnosed angina which is increasing in frequency, duration or occurring at lower work threshold.

Numerous surveys and epidemiological studies revealed the major risks for coronary artery disease, which include smoking, diabetes mellitus, hypertension, hyperlipidemia, and family history[6].

Prevention remains of primary importance, and proper prevention mandates identification and correction of these factors in risky patients. Thus significantly lowering the mortality and reducing the economic burden of coronary artery disease[6].

The mean age of our population was 55.9 years compared to 62 years in the USA, and 61 years in the UK[7,8](P < 0.001).This could

be a reflection of the longer life expectancy in these countries, and the relatively higher prevalence of diabetes and hypertension in our population.

Males with CAD constituted65% of our population compared to 72% in USA & 80% of UK data.

Active smoking is one of the most important modifiable risks for CAD [9-11]. 58.7% of our patients were smokers compared to 41% of USA & 49% of UK figures(P< 0.001). The relatively high figures confirm the need for national strategy to combat this widely spread and modifiable risk factor.

Our results show a higher frequency of diabetes 43.7% versus 19% in figures from the USA (19%) & the UK (21%). This is similar to earlier reports from Queen Alia Heart Institute [12]. The reported frequencies were 59.4% in females and 33% in males. Several reports have pointed to the increase in the frequency and incidence of diabetes mellitus in Jordan [13,14].

Data from the Framingham Heart Study in subjects aged 35-64 years at 30 years follow up, showed that the age adjusted annual risk of vascular disease ranged from 2 fold increase in relative risk for CAD (in diabetic men) to more than eight fold for intermittent claudication and cardiac failure (in diabetic women). Diabetic women lose the customary protection from CAD enjoyed by their non diabetic premenopausal colleagues[15].

Lipid lowering treatment has been shown to significantly reduce the incidence of cardiovascular events, overall mortality, and the need for revascularization. In fact in low risk patients with stable CAD aggressive lipid lowering therapy is at least as effective as angioplasty[16-18]. Hypercholesterolemia was present in 24.4% compared to 37% of USA counterparts (P < 0.001). This could be due to our Mediterranean diet.

Family history of CAD was present in 20.6% of our population compared to 48% in US reports (P < 0.001).

The longest delay to treatment was found to be in getting medical advice. The average time to arrival in our emergency room has been 235 minutes in STEMI, thus missing out on the best window of benefit from reperfusion therapy. These are much longer the time delay reported from Western countries (around 110 minutes) [7,8] . This is a significant time delay that has to be addressed at a national level. Steps such as patient education and the general public about heart disease, how to deal with chest pain, and the use of the emergency medical services should be addressed.

Our door to needle time was 42 minutes. This is comparable to statistics for USA & UK hospitals[14,15].

Our hospital stay was 3.5 days. These figures are comparable to those reported from the USA[8]. Our rate of re-infarction is less than that in USA studies (1.6% versus 3.1%)

CONCLUSION

Our data showed high frequency of smoking, diabetes, hypertension with the later two being more prevalent in females, who were significantly older. Males had significantly higher in hospital complications than females. The main delay to reperfusion we found to be in seeking medical advice especially in females but once done our times are comparable to that in Western countries. There was a clear indication of the emerging need for better education of how to deal with chest pain for the general public and the importance of risk factors modification.

REFERENCES

1. Castelli WP. Epidemiology of coronary heart disease: The Framingham. Am J Med 1984; 76: 4-12.
2. Batieha A, Jaddou H, Ajlouni KM. Hyperlipidemia in Jordan: A

community-based survey. Saudi Med J 1997; 18: 279-285.
3. McGovern PG, Pankow JS, Shahar E, et al. Recent trends in acute coronary heart disease, mortality, morbidity, medical care, and Risk Factors. N Engl J Med 1996; 334: 884-890.
4. Systkowski PA, Kannel WB, D'Agostgino RB. Changes in risk factors and the decline in mortality from cardiovascular disease: The Framingham Heart Study. N Engl J Med 1990; 322: 1635-1641.
5. Freedman SB. Global cardiology comes to Australia. Proceeding of the 14th World Congress of Cardiology; 2002 May 5-9; Sydney, Australia. 2002.
6. Bary-Merz N. Secondary prevention based on NCEP guidelines more effective than primary prevention. J Am CollCardiol 1999; 34: 768-776.
7. Anderson HR, Nielsen TT, Rasmussen K, et al. A Comparison of Coronary Angioplasty with Fibrinolytic Therapy in Acute Myocardial Infarction. N Engl J Med 2003; 349: 733-742.
8. Grines CL, Cox DA, Stone GW, et al. Coronary Angioplasty with or without Stent implantation for Acute Myocardial Infarction. N Engl J Med 1999; 341: 1949-1956.
9. Doll R, Peto R, Wheatley K, et al. Mortality in relation to smoking: 40 years observation on male British doctors. BMJ 1994; 309: 901-911.
10. Department of Health and Human Services. The health consequences of smoking: Cardiovascular disease: a report of the Surgeons General: 1983. Washington D.C.: Government Printing Office, 1983. (DHHS publication no. (PHS) 84-50204.)
11. Okene IS, Miller NH. Cigarette smoking, cardiovascular disease, and stroke: a statement of healthcare professionals from the American Heart Association: American Heart Association Task Force on Risk Reduction. Circulation 1997; 96: 3243-3247.
12. Hadad FH, Omari AA, Shamaileh Q, et al. Lipid profile in patients with coronary artery disease. Saudi Med J 2002; 23(9): 1054-1058.
13. Ajlouni K, Jaddou H, Batieha A. Diabetes and impaired glucose tolerance in Jordan: Frequency and associated risk factors. Journal of Internal Medicine 1998; 244: 317-323.
14. Khawaldeh AK, Dabbas M, Abbadi M, et al. Frequency of Diabetes and Abnormalities of Carbohydrate Metabolism in the Jordanian Armed Forces Male Personnel. Journal of the Royal Medical Services 2001; 8: 23-26.
15. Kannel WB. Lipids, diabetes and coronary heart disease: Insights from the Framingham Study. Ann Heart J 1985; 110: 1100-1107.
16. Pitt B, Waters D, Virgil W, et al. Aggressive Lipid Lowering Therapy Compared with angioplasty in stable coronary artery disease. N Engl J Med 1999; 341: 70-76.
17. Scandinavian Simvastatin Survival Study Group. Randomized trial of cholesterol lowering in 4444 patients with coronary heart disease: the Scandinavian Simvastatin Survival Study (45). Lancet 1994; 344: 1383-1389.
18. Sacks FM, Pfeffer MA, Moye LA, et al. The effect of pravastatin on coronary events after myocardial infarction in patients with average cholesterol levels. N Engl J Med 1996; 335: 1001-1009.