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Clinical Spectrum of Acute Coronary Syndromes in Qatar

Manish Barman* and Bendaas Djamel

Department of Cardiology, Al Ahli Hospital, Doha, Qatar

Abstract

Objectives: The clinical profile among patients with acute coronary syndromes (ACS) is not well reported in Qatar**.** To determine the clinical characteristics and profile of patients having acute coronary syndromes presenting to a private tertiary hospital in Qatar.

Methods: Retrospective study conducted at a large tertiary center. Successive cases presenting with ACS to the coronary-care unit between January 2009 and December 2013 were included. Cases were grouped into ST-segment elevation myocardial infarction (STEMI) and non-ST-segment elevation myocardial infarction/unstable angina (NSTEMI/UA) for the purpose of analysis.

Results: Among 451 patients treated for ACS, 327(72.7%) were males and 123(27.3%) females. 36 (8%) patients had STEMI, 269 (59.8%) NSTEMI and 145(32.2%) had unstable angina. 343 (76.2%) had hypertension, 228 (50.7%) had diabetes mellitus and 195(43.3%) were smokers. In 238(52.9%) patients the time of onset and reaching hospital was between 12 am to 6 am. More than 70% patients with ACS were in the age group of 41 to 60 years of age.

Conclusions: In a varied, multi ethnic and rapidly growing economy of Qatar the number of males suffering ACS far exceeds the females. A high prevalence of cardiovascular risk factors implies a continuing burden of cardiovascular morbidity and mortality. Improving the lifestyles of patients in the region will be crucial for improving long-term outcomes. Appropriate vision and emphasis is required for the management of cardiovascular risk factors and cardiovascular disease in this part of the world. The patient profile and characteristics including the risk profile helps us to understand the demographic variation and prevalence in our mix of multi ethnic, migrant and expat population utilizing the private healthcare sector services.

Keywords: Acute coronary syndrome; Cardiovascular disease burden; Qatar

Introduction

Coronary heart disease (CHD) is a major cause of death and disability in developed countries. Although CHD mortality rates have declined over the past four decades in the United States (and elsewhere), CHD remains responsible for about one-third of all deaths in individuals over age 35 [1,2]. It has been estimated that nearly one-half of all middle-aged men and one-third of middle-aged women in the United States will develop some manifestation of CHD [3].

Globally coronary artery disease (CAD) is one of the leading causes of premature death and disability. In 2001 CAD was responsible for 11.8% deaths in low and middle income countries and 17.3% in high income countries, accounting for more than 7 million deaths worldwide [4]. CAD is a chronic degenerative condition which may present via a wide spectrum of clinical syndromes including stable angina, acute coronary syndrome, heart failure, arrhythmia and death. As with CAD mortality, there are marked regional, socio-economic and ethnic variations in the incidence and prevalence of myocardial infarction (MI) [5].

Countries in Africa and the Middle East bear a heavy burden from cardiovascular disease. The prevalence of coronary heart disease is promoted in turn by a high prevalence of cardiovascular risk factors, particularly smoking, hypertension, dyslipidemia, diabetes, and sedentary lifestyles. Patients in Africa and the Middle East present with myocardial infarction at a younger age, on average, compared with patients elsewhere. The projected future burden of mortality from coronary heart disease in Africa and the Middle East is set to outstrip that observed in other geographical regions [6].

Coronary artery disease (CAD) is the leading cause of mortality and morbidity in the world and acute coronary syndromes (ACS), which encompass unstable angina (UA), non-ST-segment elevation myocardial infarction (NSTEMI) and ST-segment elevation myocardial infarction (STEMI), are the commonest causes of mortality in patients with CAD. With the introduction of a huge armamentarium of invasive and noninvasive therapeutic strategies, the mortality related to ACS has significantly reduced in the developed world over the past 20 years [7-12].

The prevalence of heart disease and premature morbidity and mortality from it are becoming apparent in various rapidly developing Middle Eastern countries such as Qatar [13].

The rising incidence of ACS in Qatar may be related to the changes in the lifestyle, the westernization of the food practices, the increasing prevalence of diabetes mellitus and probably genetic factors The health status of Qatar population differs from that of other developing states owing to its higher literacy rate, better distribution of its healthcare manpower within the country, and its better access to healthcare institutions. The clinical spectrum, the age and gender-specific differences in patients with ACS are not studied properly in Qatar

***Corresponding author:** Dr. Manish Barman, Department of Cardiology, Al Ahli Hospital, PO Box 6401, Doha, Qatar, Tel: +974-66936385; E-mail: drbarman@yahoo.com

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on a large- scale basis. In this background, this study was performed using the data extracted from the case records of patients treated with ACS between January 2009 to December 2013 in the Department of Cardiology of one of the biggest private referral centers and a tertiary-care hospital of Qatar.

Patients and Methods

Case records of all the cases admitted to the coronary care unit under the Department of Cardiology during these 5 years were searched. Those cases with proven non-cardiac chest pain and those who were discharged before completion of the treatment for any reasons were excluded from the analysis. The cases were grouped into two:

1) Those presented with STEMI &

2) Those presented with NSTEMI/UA, for the purpose of analysis.

Cases of chest pain/discomfort with elevation of ST segment in electrocardiographic (ECG) leads/presumed new onset left bundle branch block in ECG were categorized as STEMI. Cases of angina at rest without ST segment elevation were categorized as NSTEMI if their cardiac Troponin I (Trop I) levels exceeded 0.04 ng/ml and as Unstable Angina if their Trop I levels were negative.

The baseline clinical characteristics analyzed in each group were the age, gender, hypertension (blood pressure >140/90 mmHg and/or those already taking treatment for hypertension), diabetes mellitus,dyslipidemia, smoking status, time of occurrence of the ACS, clinical course in the hospital and the mean duration of hospital stay. Region of myocardium involved (territory) was also noted.

Statistical Methods

Data were summarized as mean ± Standard Deviation (SD) if they were normally distributed; otherwise, they were summarized as the median and interquartile range (IQR).

Differences between groups were assessed using Chi square or Fisher's exact tests for categorical variables, student's t tests for continuous and normally distributed variables, and the Mann-Whitney U test for skewed variables. All analyses were considered significant at $P<0.05$. The analysis was performed using IBM SPSS software

Results

574 patients were admitted to the coronary care unit during the study period with suspected ACS, of which, 451 cases qualified the inclusion criteria and their data was analyzed in the study. Gender and age distribution is represented through Pie charts. ACS cases with co-existent cardiovascular risk factors like diabetes mellitus, hypertension and smoking history were also analyzed. Among 450 patients treated for ACS, 327(72.7%) were males and 123(27.3%) females. 36(8%) patients had STEMI, 269(59.8%) NSTEMI and 145(32.2%) had unstable angina. 343(76.2%) had hypertension, 228(50.7%) had diabetes mellitus and 195(43.3%) were smokers. In 238(52.9%) patients the time of onset and reaching hospital was between 12 am to 6 am. More than 70% patients with ACS were in the age group of 41 to 60 years of age. Among the patients with ACS, the anterior region involvement was 64% and Inferior wall was involved in 35.6% the remaining were posterior/lateral involvement**.** The mean duration of hospital stay in patients with STEMI was 3 ± 1 day (Table 1 and Figures 1-4).

Conclusions

The prevalence of coronary heart disease is high in countries of Middle East. A high prevalence of cardiovascular risk factors implies a continuing burden of cardiovascular morbidity and mortality. Improving the lifestyles of patients in the region will be crucial for improving long-term outcomes, although cultural and other barriers will need to be overcome. Appropriate vision and emphasis is required for the management of cardiovascular risk factors and cardiovascular disease in this part of the world. The patient profile and characteristics including the risk profile helps us to understand the demographic variation and prevalence in our mix of multi ethnic, migrant and expat population utilizing the private healthcare sector services.

ACS	STEMI	NSTEMI	UA	HTN	DM	SM	REGION	Age Group	M	F	CAG	PTCA
2009	4	52	35	67	42	30	Ant 62	A 6	58	33	91	16
							Inf 29	B 26				
								C 35				
								D 23				
2010	5	63	40	82	55	35	Ant 60	A 8	72	36	108	52
							Inf 48	B 32				
								C 41				
								D 27				
2011	5	52	33	71	48	40	Ant 57	A 5	63	27	90	30
							Inf 31	B 25				
							Post 2	C 38				
								D 22				
2012	15	60	27	80	52	58	Ant 70	A 6	81	21	102	39
							Inf 32	B 32				
								C 44				
								D 20				
2013	7	43	10	43	31	32	Ant 40	A 3	53	7	60	35
							Inf 20	B 27				
								C 25				
								D 5				
Total	36	269	145	343	228	195					451	172

ACS acute coronary syndrome, STEMI ST elevation myocardial infarction, NSTEMI non ST elevation myocardial infarction, UA unstable angina, HTN hypertension, DM diabetes mellitus, SM smoking, REGION myocardial territory, Ant-Anterior region, Inf- Inferior region, Post Posterior/lateral region, M male, F female, CAG coronary angiogram, PTCA percutaneous transluminal coronary angioplasty.

Table 1: Data Master Chart for ACS in a Private Tertiary Hospital.

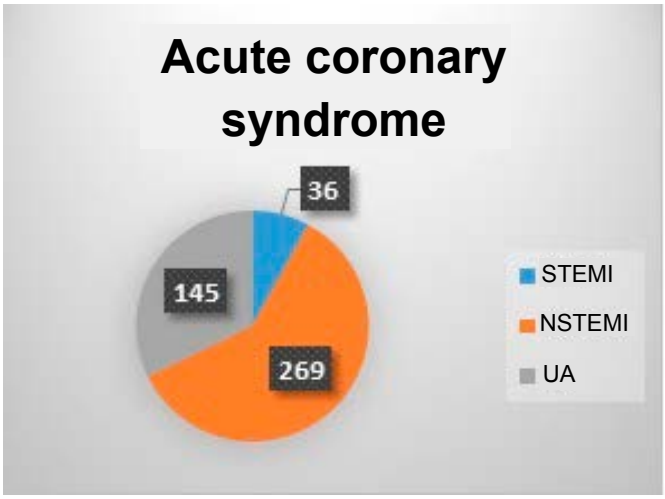

Figure 1: Distribution of ACS.

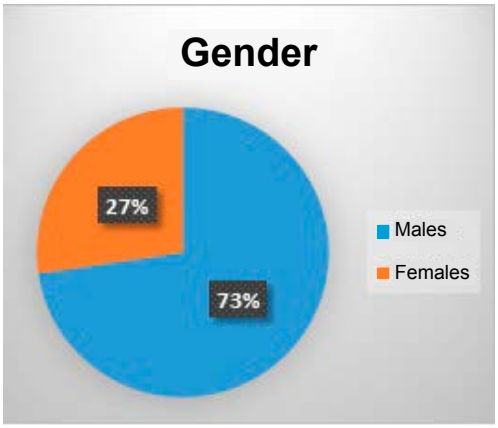

Figure 2: Gender distribution of ACS.

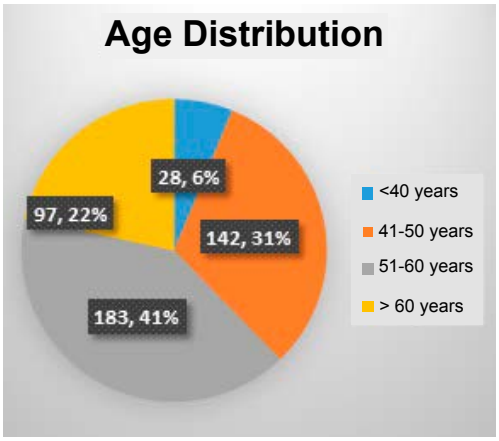

Figure 3: Age distribution of ACS.

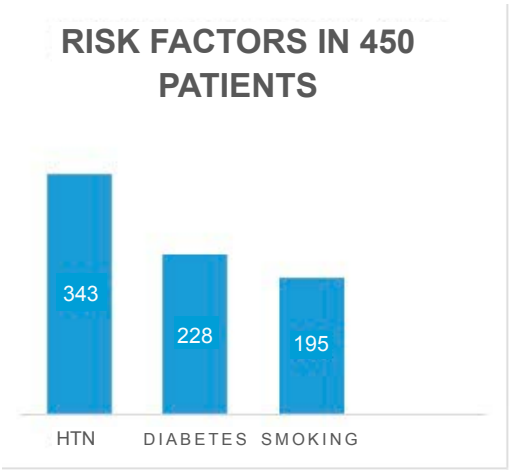

Figure 4: Risk factors in all patients. Overlap exists.

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