

Clinical Presentation and Outcome of Acute Coronary Syndrome in a Tertiary Hospital in Jeddah, KSA

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Abstract. The aim is to study the pattern and outcome of acute coronary syndrome of patients admitted from the emergency room to medical wards of King Abdulaziz University Hospital in Jeddah. By evaluating charts of those cases admitted from January 2005–December 2006, detailed data, clinical diagnosis and outcome were recorded. 279 cases were studied. 53% had unstable angina; 38% had non ST elevation myocardial infarction and 9% had ST elevation myocardial infarction; 62% were males. The number of males exceeded the number of females for the age group 35 to 70 years; in contrast, females constituted 73% of cases for the age group from 70 years and above ($p=0.0001$). 77% of ST elevation myocardial infarction cases were younger than 60 years ($p=0.016$) and 75% of those cases were males ($p=0.001$). 15% of patients with ST elevation myocardial infarction died; 3% with non ST elevation myocardial infarction died but non with unstable angina ($p=0.0001$). 20% had angiography, 6.5% had percutaneous transluminal coronary angiography, and 6% had coronary artery bypass grafting. More than 79% were males. The results of this study suggest that acute coronary syndrome cases should be admitted to the coronary care unit due to high mortality rate and interventional procedures should be accessible as needed.

Keywords: Acute coronary, syndrome, ST elevation myocardial infarction, Presentation, Outcome.

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Introduction

Acute coronary syndrome (ACS) is one of the most common causes for admission to hospitals. It includes the spectrum of acute ST segment elevation myocardial infarction (STEMI), non ST segment elevation myocardial infarction (NSTEMI) and unstable angina (UA). The main difference between NSTEMI and UA is that in the latter, ischemia is not severe enough to cause cardiac enzyme elevations or tissue injury, however the difference may not be apparent on initial presentation^[1]. All ACS should be admitted in coronary care units (CCU), intensive care units (ICU) or monitored care cardiology units because of the high rate of sudden death.

In King Abdulaziz University Hospital (KAUH), an increasing number of ACS admissions have been noticed in the medical wards because of the limitations of the number of beds in the ICU and the absence of a CCU. It is thought that these patients have increase of in-hospital mortality and under utilization of cardiac interventional procedures. Therefore, this analysis was conducted to study this concern together with the clinical characteristics of these patients.

Methods

The charts of all patients admitted from the emergency room (ER) to the medical wards in KAUH between January 2005 and December 2006 with confirmed diagnosis of ACS at discharge were reviewed. Details of demographic data, clinical diagnosis (STEMI, NSTEMI and UA), rate of transfer to the ICU, in-hospital mortality and performance of angiography, percutaneous transluminal coronary angiography (PTCA) and coronary artery bypass grafting (CABG) were collected.

The statistical analysis was carried out using Statistical Package for Social Sciences (SPSS) version 13.0. Chi-square test was used to analyze group differences for categorical variables. P value of <0.05 was considered significant.

Results

During the 2 years of the study period, there were 279 ACS cases admitted through the ER to the medical wards. Their ages ranged from 35

to 91 years, mean 54 years \pm 10 standard deviations (SD). 58% were between 50 and 70 years.

For males the age range was 35-77 years, mean 52 years \pm 9 SD while for females it was 35-91, mean 57 years \pm 12 SD. Males constituted 62% of cases, 58% of them were below 60 years of age, while the opposite was true for females as 59% were older than 60 years of age.

The number of males exceeded the number of females for the age group 35 to 70 years, in contrast, females constituted 73% of cases for age group from 70 years and above, (41/56) with significant p value ($p = 0.0001$) as shown in Fig. 1.

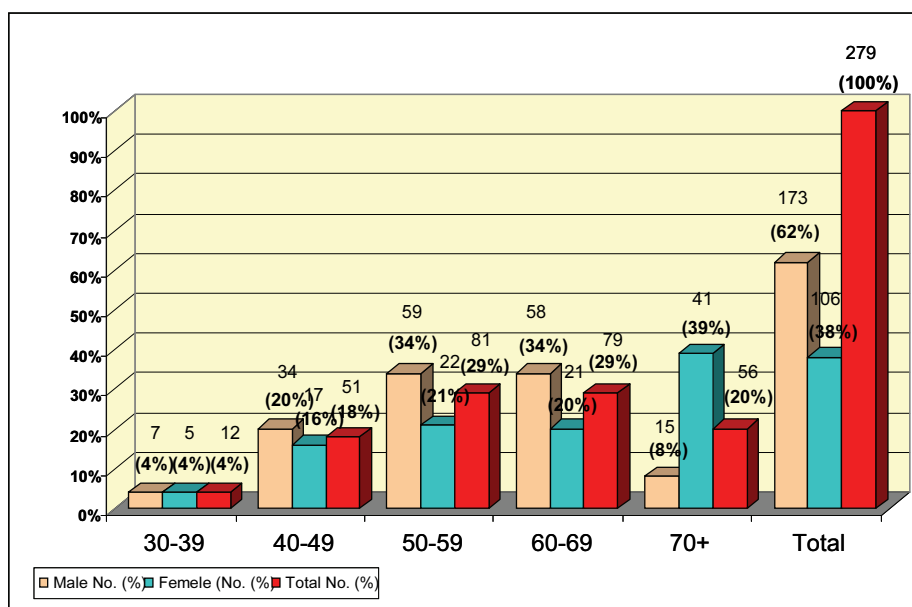


Fig. 1. Male and female distribution in different age groups ($p = 0.0001$).

For both Saudis and non-Saudis the ages ranged from 35-80 years; mean was 54 years \pm 11 SD. Non-Saudis constituted 67% of all cases. There were more non-Saudi men than non-Saudi women (73% vs. 58%), while the number of Saudi men and women was equal ($p=0.026$) as shown in Table 1.

Table 1. Distribution in Saudi and Non-Saudi.

Nationality	Male No. (%)	Female No. (%)	Total No. (%)
Saudi	47 (27%)	45 (42%)	92 (33%)
Non-Saudi	126 (73%)	61 (58%)	187 (67%)
Total	173 (62%)	106 (38%)	279 (100%)

$p = 0.026$

UA was diagnosed in 53% of cases, NSTEMI in 38% and STEMI in 9%. 77% of STEMI (20/26) were younger than 60-years old which was statistically significant with p value of 0.016 as shown in Fig. 2. 83% of males with STEMI (15/18) were younger than 60-years old which is also statistically significant with $p = 0.001$ as shown in Fig. 3. 15 out of 20 STEMI cases that were younger than 60-years old were males, (75%) but that was not of statistical significance, probably because of the small sample size. There were more ACS cases among females as age increased, but UA was more common after the age of 70, accounting for 46% of the cases, as shown in Fig. 4.

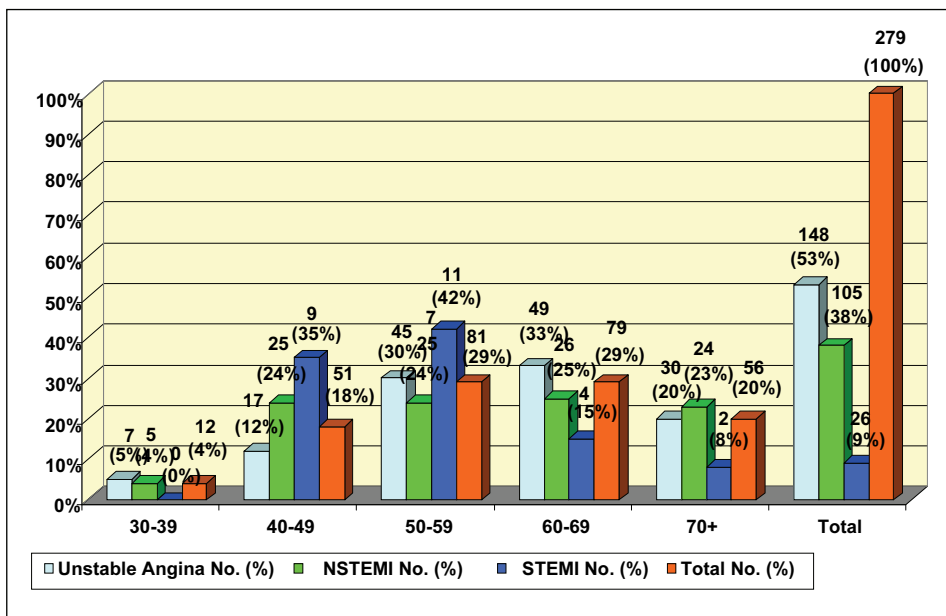


Fig. 2. Distribution of diagnosis according to the age groups ($p = 0.016$).

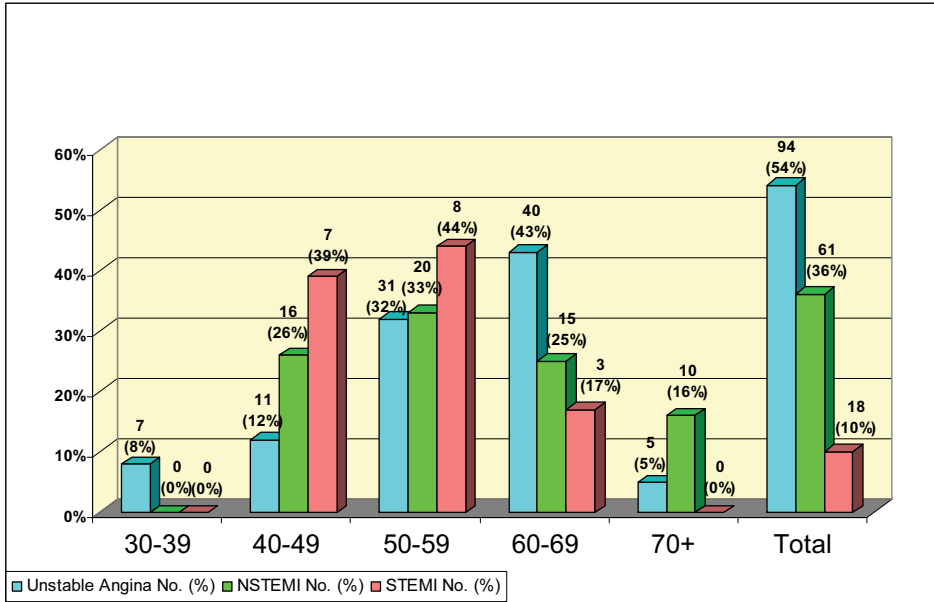


Fig. 3. Distribution of diagnosis according to the age in males (p = 0.001).

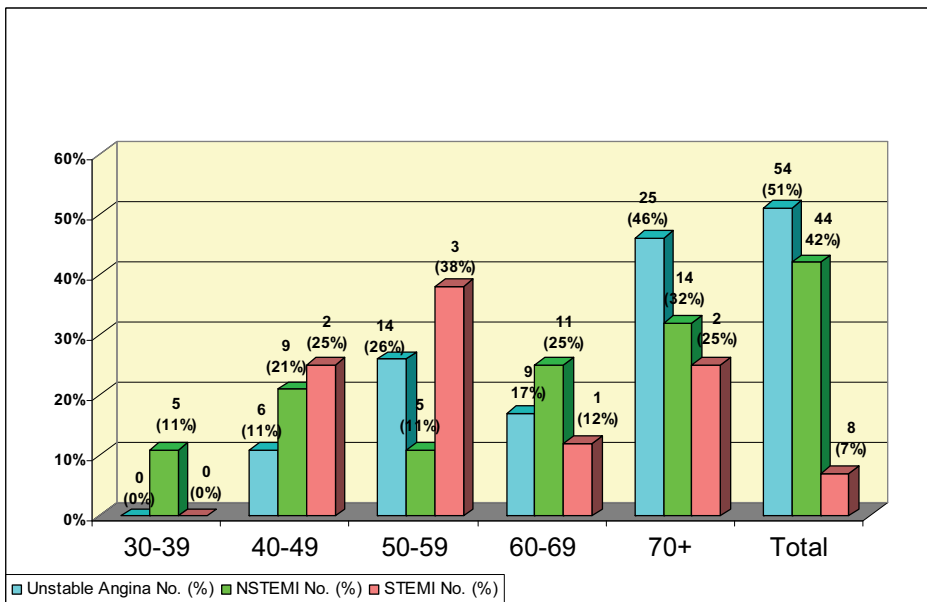


Fig. 4. Distribution of diagnosis according to the age in females (p = 0.054).

Twelve patients (5 females and 7 males) were younger than 40-years old. All females had NSTEMI and were non-Saudis, while all males had UA, 5 of whom were non-Saudis. Only 2 were shifted to the ICU, none of the others had further coronary intervention.

From the total number of admissions, only 2 patients had complications, leading to STEMI. Both were non-Saudi; their ages were 42 and 45 years, and both were transferred to the ICU but no intervention was done. Fifty patients (18%) of the total ACS cases could be transferred to ICU because of the unavailability of beds. In-hospital mortality was 2.5% for all cases (7/279), 15% STEMI (4/26), and 3% NSTEMI (3/105) with 0% for UA, ($p=0.0001$). Five cases were non-Saudi men and 2 were Saudi women. Only 3 patients were transferred to the ICU, one had angiography, which showed 3-vessel disease who subsequently died after CABG. Two cases were 45- year old, non-Saudi men with STEMI. No intervention was done.

Angiography was done in 20% of cases (56/279) [11% in 2005 and 26% in 2006]. 79% were males and 60% of the males had 3-vessel disease which was statistically significant with p value of 0.003. PTCA was performed in 6.5% of cases (18/279) [2% in 2005 and 9% in 2006]; 89% were males, ($p=0.0001$). CABG was done in 6% of cases (17/279) [4% in 2005 and 8% in 2006]; 88% were males, ($p=0.05$).

Discussion

The incidence of ACS increases with age and it is more so in men than in women, as women tend to be protected due to the influence of sex hormones^[2]. According to the data from the Framingham study, this statement has been proven as it has shown clearly that women lag behind men by about 10 years in total coronary events. This sex ratio narrows with advancing age as at 65-94 years old compared to ages 35-65 years old; it more than doubles in men and triples in women. After menopause the incidence and severity of coronary disease increases abruptly with 3 times the rate when compared to the same age group, who remain premenopausal^[3-4].

In our study, tendency of ACS seemed to increase with age. The incidence in males was more than females in all-clinical presentations of ACS up to the age of 70 after which the number of cases of women were more (73%), particularly in UA cases. Most men were younger than

women; 58% of men were younger than 60-years old, while 59% of women were older than 60-years old. These findings are similar to previously published reports^[5,6,7,8].

In our study, UA was the most common presentation for both sexes, STEMI was the least common presentation and that was in accordance with the Euro Heart Survey of Acute Coronary Syndromes (Euro Heart Survey ACS), GRACE study and other studies^[6,9-11]. Most STEMI occurred in patients below 60-years of age (77%). This occurrence was more in men (75%). The age of 83% of the men who had STEMI was younger than 60-years old. This has been shown in other studies^[7,8] and it has also been shown that there is an inverse association between the age and the likelihood of presenting with STEMI^[12]. It was found in our study that 67% of the cases were non-Saudis at all the age groups and 70% of those were from the Indian subcontinent. 10 out of 12 patients who were younger than 40-years old. 83% were non-Saudi which is statistically significant ($p=0.004$), similar to our previous findings^[13]. Further emphasizing the increased susceptibility of Asian migrants for ischemic heart disease compared to Asians who remain in their respective countries^[14,15]. Most of the non-Saudi admissions were men while half of the Saudis were women, meaning that there were less Saudi men admitted to the medical wards.

With regards to the outcome of our ACS cases, overall mortality was 2.5%, which is not high, but for STEMI it was 15%. This is higher than the reported figure in Euro Heart Survey ACS and GRACE study^[9,10] probably because our patients were admitted to wards without specialized monitors and readily available qualified medical staff.

Most of the angiographies were done to men and most of the men had three-vessel disease. Most of the PTCA and CABG were also done in men with very significant statistical value. There was no significant statistical difference between different age groups that were selected for these interventions or between Saudi and non-Saudi cases. These interventions were lower than reported elsewhere for all the presentations of ACS cases^[6,8-10]. Women were found to be less aggressively treated in our study as shown similarly in other studies^[5,16,17]. This may reflect a relatively more selective strategy with respect to coronary intervention in this study population and the lower threshold for referring patients for coronary angiography. The low rate of coronary interventions was especially

disturbing in the cases of those who died due to MI. The impact of this problem was more evident in non-Saudi patients who could not afford to go to other centers because of financial reasons. Even more disturbing was the observation of 12 young patients aged 35-40 and 2 others who were 45-years old who died with STEMI, and 2 with UA who changed to STEMI; none of these patients received coronary intervention.

The low rate of transferring cases of ACS to the ICU (50/279) is dangerously low, especially when there were young STEMI patients. It was also noticed that non-Saudis comprised the largest group of patients in our study, mostly young men, who had high in-hospital mortality.

Conclusion

Women and men with ACS had different profiles, presentations and outcomes. In-hospital mortality was high in STEMI cases. Rates of transfer to ICU and coronary interventions were limited and in general, women were less actively treated.

Based on the present findings, we believe, that the presence of CCU is mandatory in KAUH and that all cases of ACS should be admitted to the ICU or CCU for more appropriate care and management. Furthermore, all cases should have access to angiography with special attention to young patients and for those who show MI changes in the ECG after admission.

Awareness of deficiencies in patient care and adhering more strictly to the guidelines may help to improve management of ACS patients.

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الحضور الإكلينيكي والنتائج في قصور الشرايين التاجية الحاد في مستشفى متخصص في جدة، المملكة العربية السعودية

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المستخلص. دراسة ملفات مرضى قصور الشرايين التاجية الحاد و المنومين في عيبر أمراض الباطنة في مستشفى جامعة الملك عبدالعزيز بجدة، الذين دخلوا من قسم الطوارئ في الفترة بين يناير ٢٠٠٥ و ديسمبر ٢٠٠٦م. كان عدد المرضى ٢٧٩ مريضاً ٥٣٪ منهم مصابون بالذبحة الصدرية غير المستقرة، ٣٨٪ مصابون باحتشاء عضلة القلب بلا ارتفاع ST-Segment، و ٩٪ يعانون من احتشاء عضلة القلب مع ارتفاع ST-Segment. كانت نسبة الذكور لمن هم تحت السبعين من العمر ٦٢٪، في حين كانت نسبة الإناث لمن هم فوق السبعين ٧٥٪ ($P=٠,٠٠٠١$). كان ٧٧٪ من مرضى احتشاء عضلة القلب مع ارتفاع إس تي أصغر من ٦٠ سنة ($P=٠,٠١٦$) و ٧٥٪ ذكوراً ($P=٠,٠٠١$). توفي ١٥٪ من مرضى احتشاء عضلة القلب مع ارتفاع إس تي، ٣٪ من مرضى احتشاء عضلة القلب من غير ارتفاع إس تي، ولم يتوف أحد من مرضى الذبحة الصدرية غير المستقرة ($P=٠,٠٠٠١$). أجريت عملية قسطرة القلب لـ ٢٠٪ من المرضى وتوسعة للشرايين التاجية لـ ٦٠٪، وترقيع للشرايين التاجية لـ ٦٪. بلغت نسبة الذكور في جميع العمليات حوالي ٨٠٪. يجب تنويم مرضى قصور الشرايين التاجية الحاد في وحدة العناية بالقلب، لتسهيل لهم عملية القسطرة والتوسعة وذلك للعلاج الأمثل.