ACUTE CORONARY SYNDROME AND ITS SUB-TYPES AMONG PATIENTS ADMITTED IN CHEST PAIN UNIT

Junaid Mustafa,[1] Akmal Hussain,[1] Moeen Akhtar Malik,[1] Shabbir Warraich[1]

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ABSTRACT

Background: Acute coronary syndrome (ACS) is an acute emergency. It covers a wide spectrum of symptoms ranging from anginal pain to life threatening emergencies of myocardial infarctions. ACS can end up in various complications. **Objective:** To determine the patterns of acute coronary syndrome, in cases presenting to chest pain unit of Sheikh Zayed Hospital, Rahim Yar Khan. **Methodology:** This cross sectional study was carried out at chest pain unit at (CPU), Emergency Department, Sheikh Zayed Hospital, Rahim Yar Khan from 15th January to 16th July 2015. The cases with age range of 30 to 80 years with typical chest pain and ECG changes were included. The case with end stage renal failure, electrolyte imbalance, trauma, and documented cases of IHD were excluded from the study. The cases with ST segment elevation were labeled as STEMI while with ST-T changes with raised cardiac enzymes as NSTEMI and normal enzymes as unstable angina. They were also assessed for in hospital complications. The data was entered and analyzed by SPSS version 22. **Results**: In this study there were 50 cases, out of which 33 (66%) were males and 17 (34%) females. The mean age was 49± 10 years. STEMI was seen in 35 (70%) cases followed by NSTEMI in 9 (18%) and UA in 6 (12%) cases. All the components of ACS were more common in males as compared to females with (P= 0.76). The most cases of ACS were seen in age groups of 41 to 49 years (p=0.54). There was no significant association of any of the risk factors with any type of ACS. Recurrent angina and arrhythmia were the two most common complications. **Conclusion:** ACS is well-reported entity and STEMI is the most common subtype found, at chest pain unit.
Key words: ACS, STEMI, NSTEMI, Unstable angina

INTRODUCTION

Chest pain is one of the common entity reported in emergency departments and among these, the diagnosis of cases with acute coronary syndrome (ACS) is important because of its fatal consequences, if not managed early.[1] Acute coronary syndrome comprises unstable angina, non-ST elevation myocardial infarction (NSTEMI) and ST elevation myocardial infarction.[2-3] The cases usually present with sudden sub sternal and central chest pain which may radiate to neck, jaw or left arm.[4,5] Moreover, clinically severe pain and lasting more than 30 minutes can indicate the possibility of MI but yet electrocardiogram in needed to diagnose and categories it. Further confirmation is strengthened by the help of cardiac enzymes in the form of Troponin T, Troponin I, CK-MB etc.[6-7]

The cases with angina pectoris can be discharged and managed on outpatient basis. In contrast to this, myocardial infarction with either ST elevation or not need admission for close monitoring.[8] Acute coronary syndrome can end up in lots of complications, that need to be supervised and active management. The comlications include recurrent angina, arrhythmias, cardiogenic shock,[9] pericarditis. Multiple risk factors may be associated including DM, family history of ischemic heart disease, hypertension, smoking, hyperlipidemias, male gender, hyper uricemia.[9-10] The objective of current study was to determine the pattern of acute coronary syndrome among patients admitted in chest pain unit.

METHODOLOGY

This cross sectional study was carried out at Chest Pain Unit (CPU) of Emergency Department, Sheikh Zayed Hospital, Rahim Yar Khan 15th January to 16th July 2015. Fifty randomly selected patients with acute coronary syndrome were included in this study. The cases with age range of 30 to 80 years with typical chest pain and ECG changes were included. The case with end stage renal failure, electrolyte imbalance, trauma, and documented cases of IHD were excluded from the study. The data regarding the risk factors of ACS like hypertension, diabetes mellitus, smoking, family history of IHD and dyslipidemia was also collected. STEMI was labelled as yes when there was new ST elevation at the J point in two contiguous leads V2-V3 where the following cut points apply : ≥ 0.2 mV in men ≥ 40 years; ≥ 0.25 mV in men ≤ 40 years, or ≥ 0.15 mV in women. NSTEMI was labelled as yes when there was new horizontal or down-sloping ST depression > 0.05

1. Department of Medicine, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan, University of Health Sciences Lahore, Pakistan.

Correspondence: Dr. Junaid Mustafa, Department of Medicine, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan, Pakistan.

E-mail: agentmustafa@gmail.com   **Mobile:** 0300-9671650   **Received:** 25-10-2016   **Accepted:** 10-03-2017

mV in two contiguous leads and/or T inversion >0.1 mV in two contiguous leads with prominent R wave or R/S ration >1. Plus positive Trop T test and if Trop was negative, it was labelled as unstable angina (UA). These cases were also assessed for time and inciting event leading to ACS. In hospital complications were also documented. The data was entered in and analyzed with the help of SPSS version 22. Frequency and percentages were calculated for gender, risk factors of ACS, time frame and inciting event of ACS, type of ACS and in hospital complications. While mean and standard was calculated for numerical data. Data was stratified to see for significance with respect to type of ACS detected. Chi square test was applied and p value of ≤ 0.05 was taken as significant.

RESULTS

In this study, there were 50 cases out of which there were 33 (66%) males and 17 (34%) females. The mean age was 49± 10 years. Amongst risk factors DM was seen in 15 (30%), hypertension in 11 (22%), smoking 15 (30%), family history of IHD in 5 (10%) and dyslipidemia in 4 (8%) cases. STEMI was seen in 35 (70%) cases followed by NSTEMI in 9 (18%) and UA in 6 (12%) of cases. All the types of ACS were more common in males as compared to females with p value of 0.76. The most cases were seen in age groups of 41 to 50 years followed by 61 to 70 but this difference was statistically not significant (p=0.54) as in Table I.

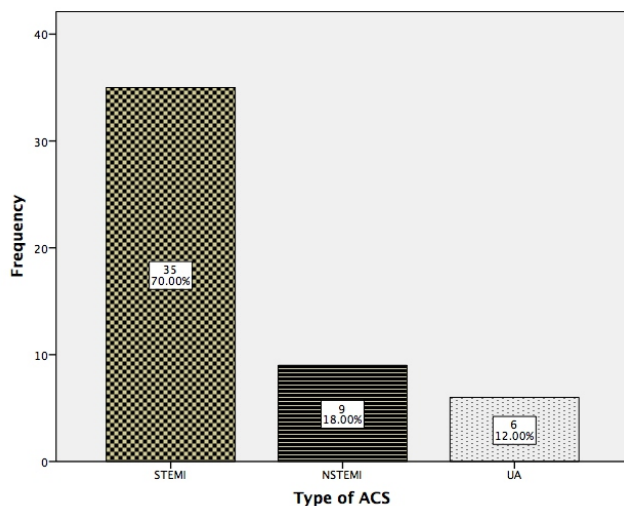**Figure I: Type of Acute Coronary Syndrome. (n = 50)**

Table I: ACS with respect to demographics (n= 50)

Variables		ACS				P.Value
		STEMI	NSTEMI	UA	Total	
Gender	Male	24	5	4	33	0.76
	Female	11	4	2	17	
Age Group (years)	30-40	7	0	0	7	
	41-50	10	5	4	19	
	51-60	7	1	1	9	0.54
	61-70	10	3	1	14	
	71-80	1	0	0	1	

Table II: ACS and Risk Factors (n=50)

Variables		ACS				P-Value
		STEMI	NSTEMI	UA	Total	
DM	Yes	10	3	2	15	0.95
	No	25	6	4	35	
Hypertension	Yes	8	2	1	11	0.94
	No	27	9	5	41	
Smoking	Yes	11	3	1	15	0.74
	No	24	6	5	35	
Family history of IHD	Yes	3	0	2	5	0.09
	No	32	9	4	45	
Dyslipidemia	Yes	3	0	1	4	0.49
	No	32	9	5	46	

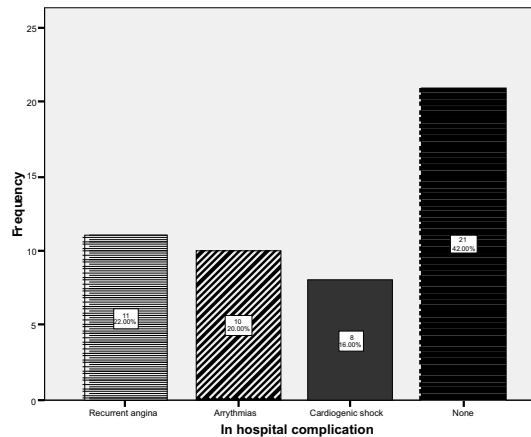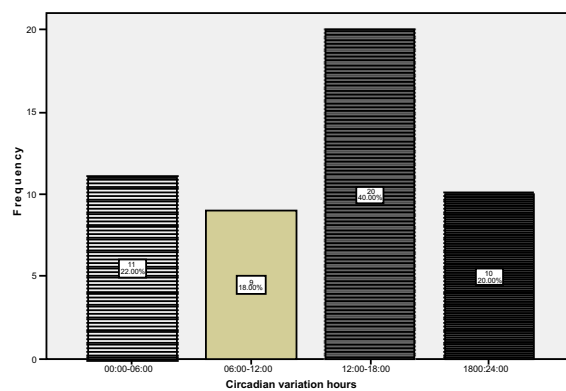**Figure II: In Hospital complications (n=50)**

Figure III: Circadian Variation in ACS. (n=50)

There was no significant association of any of the risk factors with any type of ACS. (Table II) Recurrent angina and arrhythmia were the two most common complications seen in 11 (22%) and 10 (20%) cases. (Figure II)

Most cases had this events during 12.00 to 6:00 pm followed by 00:00 to 6:00 am affecting 20 (40%) and 11 (22%) cases respectively. (Figure III) Physical activity 18 (36%) and early morning awakening 10 (20%) were the most common triggering events. (Figure IV)

Figure IV: Triggering Factors for ACS (n=50)
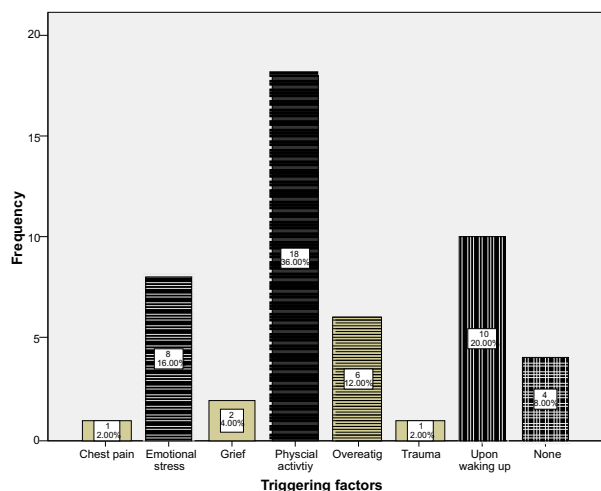
DISCUSSION

In the present study, STEMI was seen in 35 (70%) of cases followed by NSTEMI in 9 (18%) cases. According to a study, which was carried at multi center in Pakistan, it was seen that angina pectoris was the most common reporting event, which was found in 43% cases followed by STEMI in 40.5% cases.[11] The number of STEMI in this study was higher reason may be because it is a tertiary care unit covering a large area and hence most of the cases are referral cases form various hospitals.

All the types of ACS were more common in males as compared to females with p value of 0.76. This was also noted in other studies as well where the males were most common sufferers. The reason of this higher number can be due to smoking habits in males, and also the male gender is an independent risk factor for ACS as well.[12-13]

The most cases were seen in age groups of 41 to 50 years followed by 61 to 70 but this difference was also not statistically significant (p=0.54). The age of ACS was found slightly younger in this study than the trends in the developed countries.[14]

Similar pattern was also noted by Saleheen et al.[15] This was also endorsed by the study of Ahmed et al that also found in young age group.[16] This higher rate at younger age can be due to various genetic factors, family history and early smoking habits.[15-16] There was no significant association of any of the risk factors with any type of ACS. It was also observed by various studies regarding these risk factors i.e. DM, HTM, smoking, family history of IHD, dyslipidemia where few have shown significant association and the other not.[17-19]

Recurrent angina and arrhythmia were the two most common complications seen in 11 (22%) and 10 (20%) cases. This was also observed by studies conducted in the past.[20-21] Most cases had this events of ACS during 12.00 to 6:00 pm followed by 00:00 to 6:00 am affecting 20 (40%) and 11 (22%) cases respectively. Physical activity and early morning awakening were the most precipitating events. This can be explained by previous studies both by the mechanism of circadian rhythm theory involving the early morning time and exertion leading to decreased supply and stressors leading to MI in the later part of the day.[22-23] There were few limitations in this study, as this study did not check for various types of MI in STEMI. Secondly, mortality was also not addressed.

CONCLUSION

Acute coronary syndrome presented in chest pain unit most commonly as STEMI. It is common in male gender and relatively younger age group.

Conflict of interest:
The authors have declared no conflict of interest.

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