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CLINICAL ASSESSMENT AND RISK FACTOR OF ACUTE CORONARY SYNDROME

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ABSTRACT

Background: Acute Coronary Syndrome (ACS) remains a significant contributor to morbidity and mortality in Pakistan. Understanding its clinical spectrum and associated risk factors is crucial for early diagnosis and prevention.

Objective: To assess the clinical presentation, risk factor distribution, and demographic characteristics of patients diagnosed with ACS at a teaching hospital.

Methods: A cross-sectional study was conducted in the teaching hospital Sehwan between January and March 2024. A total of 110 adult patients admitted with a diagnosis of ACS were evaluated through interviews, clinical assessments, ECG, and laboratory investigations. Data were analyzed using SPSS, with results expressed in percentages, means, and associations tested using chi-square statistics.

Results: The mean age of participants was 57.2 ± 10.6 years. Males accounted for 70.9% of the cases. ST-Elevation Myocardial Infarction (STEMI) was the most frequent presentation (55.4%), followed by Non-ST Elevation Myocardial Infarction (NSTEMI) (29.1%) and unstable angina (15.5%). The leading risk factors were hypertension (60.9%), diabetes mellitus (49.1%), smoking (45.5%), and dyslipidemia (38.2%). Delayed hospital presentation (>6 hours post-onset) was observed in 59.1% of patients.

Conclusion: ACS predominantly affects middle-aged males in Pakistan, with traditional modifiable risk factors being highly prevalent. There is an urgent need to enhance community awareness, establish routine screening protocols, and improve early access to emergency cardiovascular care.

Keywords: Acute Coronary Syndrome, STEMI, NSTEMI, risk factors and cardiovascular health.

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INTRODUCTION:

Cardiovascular diseases (CVDs) have exceeded all causes of mortality around the globe; with low and middle-income countries, including Pakistan, carrying a heavy burden of these [1]. Acute coronary syndrome (ACS), including ST-elevation myocardial infarction (STEMI), non-ST-elevation myocardial infarction (NSTEMI), and unstable angina, has emerged as an important and potentially fatal condition because of its rapid occurrence, life-threatening nature, as well as its presentation at a late stage in resource-limited settings [2].

There is an exponential rise in cases of ACS (acute coronary syndrome) all over the world including Pakistan,2, 3 which can be attributed to unhealthy diet, physical inactivity, smoking, and poor control of diabetes and hypertension. Add to these factors lack of awareness and failure to provide early intervention, and many patients end up with irreversible myocardial damage or death [4].

Although there have been many international studies showing the epidemiology of ACS, local studies would highlight local trends in presentation and risk profiles. There is scarce published literature on ACS profile from Hospital set-up in Pakistan especially in Pakistani adult population reflecting mixed socioeconomic background.

The aim of this study was to determine the prevalence of ACS sub-types, record its associated risk factors and present the demographic and clinical profiles of ACS patients hospitalized in a teaching hospital.

MATERIALS AND METHODS:

Materials and Methods

Study Design and Setting

This cross-sectional study was carried out at the teaching hospital Sehwan, a major public-sector hospital, from Jan to Mar 2024.

Sample Size and Sampling Technique

A total of 110 patients were recruited using consecutive non-probability sampling. All patients presenting with symptoms suggestive of ACS and confirmed through ECG and cardiac biomarkers were included.

Inclusion Criteria

• Adults aged ≥18 years
• Confirmed diagnosis of ACS (STEMI, NSTEMI, or unstable angina)
• Willing to provide informed consent

Exclusion Criteria

• Known history of non-ischemic cardiomyopathy
• Patients with valvular heart disease or congenital defects
• Incomplete clinical or laboratory records

Data Collection

Data were collected using a structured proforma for:

• Sociodemographic details (age, sex, place of residence, occupation)
• ACS type according to ECG and cardiac markers
• Mode of presenting chest pain, breathlessness, sweating, etc.
• Risk factors: smoking, hypertension, diabetes, dyslipidemia, obesity (BMI > 30 kg/m2), and family history
•Time from symptom onset to hospital arrival

Measurements of anthropometrics and BMI classification were performed. Cardiac enzymes (troponin I/T, CK-MB) and lipid profile were collected from patient's file.

Data Analysis

Statistical analysis was carried out with SPSS. Both t-test and Chi-squared test were used, and descriptive statistics including mean, standard deviation and frequency were recorded. The association of ACS type with risk factors was determined using the chi-square test. A p-value <0.05 was considered as significant difference.

RESULTS:

Demographics

Out of 110 patients:

• Mean age: 57.2 ± 10.6 years
• Age distribution:
- 31-45 years: 17.3%
- 46-60 years: 50.9%
- 60 years: 31.8%

Gender:

- Male: 78 (70.9%)
- Female: 32 (29.1%)

TABLE 1: ACS SUBTYPE DISTRIBUTION

ACS Type	Frequency (n)	Percentage (%)
STEMI	61	55.4%
NSTEMI	32	29.1%
Unstable Angina	17	15.5%

Clinical Presentation

• Chest pain: 102 (92.7%)
• Dyspnea: 41 (37.3%)
• Diaphoresis: 38 (34.5%)
• Nausea/vomiting: 29 (26.4%)

TABLE 2: IDENTIFIED RISK FACTORS

Risk Factor	Frequency (n)	Percentage (%)
Hypertension	67	60.9
Diabetes mellitus	54	49.1
Smoking	50	45.5
Dyslipidemia	42	38.2
Obesity (BMI ≥30)	29	26.4
Family history of CAD	26	23.6

Time to Hospital Presentation
• <3 hours: 18 patients (16.4%)
• 3-5 hours: 27 patients (24.5%)
• 6 hours: 65 patients (59.1%)
A majority of patients presented late, reducing the window for timely thrombolysis or PCI

DISCUSSION:

Several important issues related to ACS in a Pakistani hospital setting are illuminated by our findings. The high percentage of STEMI (55.4%) among patients is in line with the regional specifics and as result of the frequent presence of total coronary occlusions [5]. The male preponderance (70.9%) is similar to the literature and does not exclude underestimations in females related to cultural or diagnostic delays [6].
Hypertension, diabetes, and smoking were the major identified risk factors in this study and it further emphasized the necessity of lifestyle and screening intervention at the population level. A few of the modifiable risk factors were highlighted in the INTERHEART study and identified as being of key importance to the risk of myocardial infarction in South Asia [7].
Patients presenting later than six hours constituted almost 60% of the cases similar to worrisome data reported from other public hospitals in Pakistan [8]. This is due to lack of awareness, non-availability of pre-hospital care and accessibility to emergency transportation, particularly from the rural areas.
There was also a high prevalence of dyslipidemia and obesity, but the patients were often previously undiagnosed before the ACS occurred. In Pakistan, lipid screening is rarely performed as a part of routine efforts mainly due to financial constraints and poor health knowledge [9].
The women in our study were however fewer but more diabetic and hypertensive, as reported elsewhere [10]. They frequently had atypical symptoms, highlighting the importance of gender-specific risk perception and education.
Limitations: Convenience sampling may generate selection bias. Furthermore, angiographic results, long-term follow-ups, and therapeutic methods were not covered in this study.

CONCLUSION:

This study re-emphasizes that ACS is still a considerable health problem in Pakistan, especially in middle aged men. ST, elevation (STEMI) was the most prevalent type and modifiable risk factors like hypertension, diabetes, smoking, and delay in reaching the hospital constituted the significant factors. Public policies for health should give priority to preventive measures, early identification and to the enhancement of emergency medical care of the cardiovascular type. Promoting community education and regular screening for cardiovascular health are key measures to minimize the burden of ACS in Pakistan.

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