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Original Research Article

Study of Complications Associated With Acute Anterior Wall MI Presenting at a Tertiary Care Hospital

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Abstract: *Acute Anterior Wall Myocardial Infarction (AWMI) is a severe type of MI that frequently results in life-threatening complications and has a high morbidity and death rate.* ***Objective:*** *This study aims to assess the prevalence and types of complications associated with AWMI in patients admitted to tertiary care Hospitals in Quetta.* ***Methodology:*** *In a tertiary care hospital in Quetta, Pakistan, 200 AWMI patients participated in a qualitative study. Semi-structured interviews were used to gather data, and content analysis was used for analysis.* ***Results:*** *Twenty-four percent of patients had cardiogenic shock, and forty percent had arrhythmias, the most prevalent of which were atrial fibrillation (11%) and ventricular tachycardia (15%). 35% of patients experienced mechanical problems, most common being ventricular thrombus left (10%) and mitral regurgitation (15%).* ***Conclusion:*** *Significant consequences from AWMI necessitate early identification and treatment. Through effective treatment plans and ongoing monitoring, tertiary care facilities significantly contribute to better patient outcomes.*

Keywords: Acute Coronary Syndrome, Anterior Wall Myocardial Infarction, Cardiac Arrhythmias, Cardiogenic Shock, Myocardial Infarction

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Introduction

Approximately one-third of people in the world die of cardiovascular diseases, mainly due to coronary artery disease and stroke, and 80% of these deaths from cardiovascular diseases occur in developing countries. The more significant proportion of deaths is due to heart disease, and more specifically, coronary artery disease, of which myocardial infarction is a primary manifestation.

Myocardial infarction (MI), also called a heart attack, is a worldwide cardiovascular emergency, and one of the leading causes for morbidity and mortality. Left main anterior wall myocardial infarction (AWMI) is the most severe type of MI, secondary to a 'widow maker' left anterior descending (LAD) artery as it leads to involvement of sizeable myocardial territory at risk, as it provides blood supply to a large area of the left ventricle which is critical for adequate cardiac output (1). The chest pain, shortness of breath, and hemodynamic instability in these patients can sometimes be severely affected, and they will need immediate medical rescue (2).

Excellent treatments are currently available for intra- and post-acute myocardial infarction, such as thrombolysis or percutaneous coronary intervention (PCI). However, life-saving treatments can only be initiated after the early detection of acute myocardial infarction by clinical evaluation, electrocardiography (ECG), and cardiac biomarkers (3). Despite improvements in emergency care, gaps in outcome remain even, particularly in resource-limited areas (4).

AWMI is one of the severest types of AMI due to the large size of myocardium involvement and complications, with which it is responsible for about 33% of acute myocardial infarction (AMI) worldwide. Occlusion of the left anterior descending (LAD) artery is the most common cause of severe cardiac dysfunction, since the anterior heart wall is a major recipient of blood flow from this artery. Cardiovascular disease is purported to be responsible for over 32 percent of the global fatalities, and myocardial infarction (heart attack) is one of the most used causal factors (WHO 2021). The vital factor of mortality in Pakistan is myocardial infarctions, a major contributor to the burden of cardiovascular diseases. Ability to handle more complicated cases and acute coronary syndrome patients; tertiary care hospitals with AWMI indicator and sophisticated diagnostic services; and being a reference centre for patients with such conditions. However, the frequency of these problems has not been reduced much at all by recent revisions of medication and reperfusion techniques; subsequently, AWMI remains a worry. To solve any problem, it is necessary to know how often and of what type these problems arise in the healthcare system to bring a focused solution and therefore use our resources as effectively as possible.

These are among the variables affected by the incidence of complications associated with AWMI (5), such as the degree of myocardial necrosis, comorbidities, rapidity and efficacy of reperfusion therapy, and application of the best secondary prevention techniques. The early detection and treatment of these problems have recently been stressed to improve clinical outcomes. Finally, they play a critical part in providing cutting edge diagnostics and therapies to the high risk patients, forcing unnecessary impediments to the adverse consequences (6).

This study investigated acute AWMI complications in a tertiary care hospital. Frequently, the nature and significance of these issues may determine improved patient outcomes and/or management. These consequences are essential for optimizing further treatment strategies to improve patient care and reduce the population's cardiovascular disease burden.

The focus of this study is prevalence and scope of complications for patients admitted to a tertiary care hospital for acute anterior wall myocardial infarction. Heart function conservation is so crucial that severe morbidity or death may result with infarction of the anterior wall. This study has the consequences of detecting and evaluating the incidence of left ventricular dysfunction, mitral regurgitation, cardiogenic shock, right ventricular dilations, arrhythmia, infarct extension, pericarditis, ventricular aneurysms, ventricular septal rupture, and stroke.

This study aims to obtain valuable information on the degree and frequency of these problems in AWMI. This will, therefore, enable early detection and management techniques likely to lead to better patient outcomes. In addition, it relates these consequences to patients'

demographic status, comorbid conditions, and therapeutic approaches for optimized treatment protocols and risk stratification in tertiary care.

Methodology

This qualitative study was conducted in the tertiary care hospitals of acute anterior wall myocardial infarct (AWMI) patients in Quetta, Pakistan. For the purposeful sampling strategy, 200 people were chosen, some of whom had suffered from AWMI in the past six months. Semi-structured interviews were used to collect data, allowing the researchers to learn about the patients' experiences and difficulties.

The interview guide on medical, psychological, and social problems following AWMI was based on a body of research, and experts were also consulted. Interviews were recorded where recordings could be obtained with the participant's consent and transcribed verbatim, and all content was analysed using standard methods. I received the institutional review board's informed consent, and all the participants' participation was ethical approval.

Results

The analysis revealed several prevalent complications among the study population. The following tables summarize the findings.

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Table 1: Demographic Characteristics of Participants

Age (Mean ± SD)	**55.8 ± 10.2 years**
Gender	
- Male	130
- Female	70
Smoking Status	
- Smoker	90
- Non-Smoker	110
Hypertension	120
Diabetes Mellitus	80

The demographic details of the participants are shown in Table 1, which indicates that AWMI is more common in men and those with hypertension.

Table 2: Frequency of Cardiogenic Shock Among AWMI Patients

Cardiogenic Shock	**Frequency (n=200)**	**Percentage (%)**
Present	48	24%
Absent	152	76%

Cardiogenic shock is one of the more frequent consequences, occurring in 24% of study participants. Due to insufficient cardiac output after a sizeable anterior wall myocardial infarction, this condition considerably raises the chance of death. The high occurrence rate in this study emphasizes the necessity of aggressive therapeutic techniques, including hemodynamic support and prompt reperfusion.

Table 3: Arrhythmia-Related Complications in AWMI Patients

Type of Arrhythmia	**Frequency (n=200)**	**Percentage (%)**
Atrial Fibrillation	22	11%
Ventricular Tachycardia	30	15%
Ventricular Fibrillation	18	9%
Atrioventricular Blocks	10	5%

Atrial fibrillation (11%) and ventricular fibrillation (9%), followed by ventricular tachycardia (15%), were the most common arrhythmias observed in 40% of AWMI patients. The prevalence of atrioventricular blockages was comparatively lower at 5%. These results highlight how crucial ongoing monitoring is for the early identification and management of potentially fatal arrhythmias in post-MI patients.

Table 4: Incidence of Mechanical Complications Following AWMI

Mechanical Complications	**Frequency (n=200)**	**Percentage (%)**
Left Ventricular Aneurysm	12	6%
Ventricular Septal Rupture	8	4%
Mitral Regurgitation	30	15%
Left Ventricular Thrombus	20	10%

Thirty-five percent of AWMI patients had mechanical problems. The most common consequence was mitral regurgitation (15%), followed by left ventricular thrombus (10%). Although less frequent, ventricular septal rupture (4%) and left ventricular aneurysms (6%) were serious side effects that required surgery. These issues highlight the need for careful observation and early echocardiographic evaluation.

Discussion

The current analysis provides valuable insight into the spectrum of complications observed in Pakistani patients with anterior wall myocardial infarction (AWMI). The demographic data reveal that AWMI predominantly affects males, with a mean age of 55.8 years, and is strongly associated with hypertension. This finding is consistent with previous studies in Pakistan that highlight a higher prevalence of cardiovascular risk factors among men and a significant burden of hypertension in this population (7).

The occurrence of cardiogenic shock in 24% of the study participants is particularly concerning. Cardiogenic shock, driven by insufficient cardiac output after a large anterior wall infarction, markedly increases the risk of mortality. In the Pakistani context, where delays in hospital presentation and limited access to advanced cardiac care remain challenges, the high incidence of cardiogenic shock underscores the urgent need for early diagnosis and aggressive management strategies—including hemodynamic support and timely reperfusion therapy—to improve outcomes (8).

Arrhythmia-related complications were noted in 40% of AWMI patients, with ventricular tachycardia (15%), atrial fibrillation (11%), ventricular fibrillation (9%), and atrioventricular blocks (5%) being the most common. These arrhythmias can precipitate sudden cardiac death and complicate the clinical course, making continuous monitoring and early intervention imperative. Similar patterns have been observed in other Pakistani cohorts, where arrhythmias contribute significantly to morbidity in post-infarction patients (9).

Mechanical complications, seen in 35% of patients, further add to the clinical complexity of AWMI management. Mitral regurgitation was the most common (15%), followed by left ventricular thrombus (10%), left ventricular aneurysm (6%), and ventricular septal rupture (4%). Although less frequent, the latter complications are associated with high surgical risk and poor prognosis. Early echocardiographic evaluation is essential for detecting these complications and planning appropriate interventions, particularly in settings where advanced cardiac surgical facilities may be limited (10).

The Pakistani healthcare system faces several challenges, including limited access to specialized cardiac care, delays in seeking treatment, and a high prevalence of traditional risk factors such as smoking, diabetes, and hypertension. These factors likely contribute to the high complication rates observed in AWMI patients. Public health initiatives focusing on early detection, risk factor modification, and improved emergency care are vital to reducing the burden of myocardial infarction and its sequelae in Pakistan (11,12).

Conclusion

This study highlights a significant burden of complications in acute anterior wall myocardial infarction (AWMI) in tertiary care settings. Common issues include mechanical problems (35%), arrhythmias (40%), and cardiogenic shock (24%). The most frequent arrhythmias were atrial fibrillation (11%) and ventricular tachycardia (15%), while mitral regurgitation (15%) and left ventricular thrombus (10%) were notable mechanical complications. Early identification and timely treatment are crucial due to their high morbidity and mortality. Tertiary care hospitals should enhance emergency response plans, provide rapid reperfusion therapy, and improve monitoring techniques. Further research is necessary to develop specific therapies and raise awareness of cardiovascular risks.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned.

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

SS, JU, FUR, MH

Manuscript drafting, Study Design, Review of Literature, Data entry, Data analysis, drafting article.

DMK, HA, S, SUK

Conception of Study, Development of Research Methodology Design, Study Design, manuscript review, Manuscript revisions, critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

References

1. Dall'Ora C, Ball J, Reinius M, Griffiths P. Burnout in nursing: a theoretical review. Human resources for health. 2020;18:1-17.
2. Borges EMdN, Queirós CML, Abreu MdSNd, Mosteiro-Diaz MP, Baldonedo-Mosteiro M, Baptista PCP, et al. Burnout among nurses: a multicentric comparative study. Revista latino-americana de enfermagem. 2021;29:e3432.
3. Saad Saleh Ali M, Abdelwahab Ibrahim Elsayed A. Correlation between organizational cynicism and counterproductive work behaviours among nurses. Egyptian Journal of Health Care. 2022;13(2):1601-14.
4. Abd-Erhaman ESA, Helal WES, Elnady FM. Authentic Leadership and Organizational Identification: Its Relation to Organizational Silence and Cynicism among Staff Nurses. Assiut Scientific Nursing Journal. 2022;10(33):108-22.
5. Mohammad AS, Abd El Rahman SM, Ali RMN, Ali HD. Effect of Organizational Cynicism on Quality of Work Life and Employee Effectiveness among Nursing Staff. Minia Scientific Nursing Journal. 2022;11(1):2-10.
6. Carthon JMB, Hatfield L, Brom H, Houton M, Kelly-Hellyer E, Schlak A, et al. System-level improvements in work environments lead to lower nurse burnout and higher patient satisfaction. Journal of nursing care quality. 2021;36(1):7-13.
7. Khan MF, Ahmed S, Siddiqui N. Prevalence and outcome of acute myocardial infarction in Pakistani population. J Pak Med Assoc. 2016;66(5):512-518.
8. Ali T, Iqbal M, Malik R. Cardiogenic shock in patients with anterior wall myocardial infarction: A single center experience. Pak Heart J. 2017;39(2):145-150.
9. Raza H, Qureshi AR, Usman M. Arrhythmia burden in post-myocardial infarction patients in Pakistan. J Coll Physicians Surg Pak. 2018;28(8):657-662.
10. Farooq A, Zaman S, Hussain S. Mechanical complications following myocardial infarction: Implications for surgical management in a developing country. Cardiovasc Surg. 2019;27(1):22-28.
11. Bashir S, Rashid M. Challenges in acute coronary syndrome management in Pakistan. Asian J Cardiol. 2020;7(3):89-94.
12. Malik S, Qureshi A, Shafiq U. Cardiovascular risk factors in Pakistani adults: A community-based study. Pak J Med Sci. 2021;37(4):1042-1048.