

ORIGINAL ARTICLES

Management of Acute Myocardial Infarction in the Emergency Department of Elbasan Hospital.

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ABSTRACT

Background: Acute myocardial infarction (AMI) is a leading cause of morbidity and mortality. Early recognition and evidence-based ED management are critical, particularly in regional hospitals.

Aim of the study: To describe clinical management, diagnostic approach, and early outcomes of patients presenting with suspected AMI in the Elbasan Hospital ED.

Methods: Retrospective descriptive study using ED registry data from January 2025 to July 27, 2025. Adult patients with symptoms suggestive of acute coronary syndrome were included. A total of 66 patients were analyzed. Data on demographics, symptoms, initial management, transport, and time intervals were anonymized and aggregated.

Data Collection: Extracted from ED registry: age, sex, residence, presenting symptoms, preliminary diagnosis, initial management, transport mode, referral, and time intervals. Data were anonymized.

Analysis: Descriptive statistics summarized demographics and clinical management. Mean age $\pm$ SD was calculated. Frequencies and trends are reported.

Results: Mean age: 66.7 ± 13.8 years. Chest pain, hypotension, and syncope/lipidemia were the most common presenting symptoms. All patients received immediate assessment and stabilization; most were treated in Elbasan ED, while a subset was transferred to tertiary centers.

During the study period, 66 patients were included. The mean age was 66.7 ± 13.8 years, with both male and female patients represented. The majority (61, 92.4%) lived in urban areas, while 5 patients (7.6%) came from rural areas.

Conclusion: Early recognition and standardized ED management of suspected AMI are feasible in a regional hospital. Strengthening pre-hospital coordination, reducing transfer times, and continuous staff training may further improve outcomes.

Keywords: Acute myocardial infarction, emergency department, acute coronary syndrome, pre-hospital care.

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INTRODUCTION

Acute myocardial infarction (AMI) is a time-critical emergency caused by the acute interruption of coronary blood flow, leading to myocardial ischemia and necrosis (1,2). Despite advances in reperfusion therapy and pharmacologic management, AMI continues to carry a high mortality, especially when diagnosis or treatment is delayed (3).

The Emergency Department (ED) plays a pivotal role in early recognition and initial management, including rapid triage, electrocardiogram (ECG) evaluation, pharmacologic therapy, and timely referral for reperfusion (4,5). In regional hospitals such as Elbasan, coordination with tertiary centers is essential.

This study presents an overview of ED management of suspected AMI cases at Elbasan Hospital, highlighting patient characteristics, clinical presentation, and emergency care pathways.

Aim of the Study

The primary aim of this study was to describe and analyze the clinical management, diagnostic approach, and early outcomes of patients presenting with suspected AMI in the ED of Elbasan Hospital. The study seeks to evaluate how effectively a regional hospital can implement evidence-based protocols, ensure timely triage, and coordinate transfers to tertiary care centers for advanced management.

A secondary objective was to identify common presenting symptoms, patient demographics, and referral patterns, which may provide insights into local epidemiology and inform improvements in pre-hospital and emergency care systems. By examining these factors, the study aims to highlight strengths and challenges in AMI management within a resource-limited regional hospital setting and provide recommendations to optimize patient outcomes.

MATERIALS AND METHODS

Study Design: Retrospective descriptive study in the ED of Elbasan Hospital, a 24-hour regional referral center.

Population: Adults presenting with chest pain, hemodynamic instability, syncope, or other acute cardiovascular complaints between January 2025 and July 27, 2025. 66 patients met the inclusion criteria.

Data Collection: Extracted from ED registry: age, sex, residence, presenting symptoms, preliminary diagnosis, initial management, transport mode, referral, and time intervals. Data were anonymized.

Analysis: Descriptive statistics summarized demographics and clinical management. Mean age $\pm$ SD was calculated. Frequencies and trends are reported.

RESULTS

Demographics and Referral Patterns:

During the study period, 66 patients were included. The mean age was 66.7 ± 13.8 years, with both male and female patients represented. The majority (61, 92.4%) lived in urban areas, while 5 patients (7.6%) came from rural areas. (Tab. 1)

Table 1. Demographic Characteristics

Characteristic	Number	%
Total patients	66	100
Urban residence	61	92.4
Rural residence	5	7.6
Mean age (years)	66.7 ± 13.8	

Clinical Presentation

Presenting symptoms are summarized in Table 2 and Figure 1. Syncope/lipotemia was most frequent (23 patients, 34.8%), followed by chest pain (19 patients, 28.8%) and hypotension (12 patients, 18.2%). Less common symptoms included angina pectoris and thoracic discomfort (5 patients each, 7.6%) and hypertension with dyspnea (1 patient, 1.5%).

Table 2. Symptoms / Outcomes

Symptom / Outcome	Number	%
Chest pain	19	28.8
Hypotension	12	18.2
Lipotemia	23	34.8
Angina pectoris	5	7.6
Thoracic discomfort	5	7.6
Hypertension (HTA) + dyspnea	1	1.5
Treated at home	3	4.5
Transferred to QSUT	6	9.1
Treated in Elbasan ED	57	86.4

The figure illustrates the frequency of typical and atypical AMI symptoms. Syncope/lipotemia being most common 23 (34.8%), followed by chest pain with 19 (28.8%) and hypotension with 12 (18.2%) of the cases. Less common: angina pectoris, thoracic discomfort, HTA with dyspnea.

This bar chart illustrates the distribution of 66 patients according to their initial management or referral (Fig. 2). The majority (57 patients, 86.4%) were treated in the Elbasan ED, while 6 patients (9.1%) were transferred to QSUT for urgent care. A small number (3 patients, 4.5%) received treatment at home. This figure highlights Elbasan ED's role as the primary stabilization point and the importance of timely referral for specialized care.

This bar chart shows the geographic distribution of the patients (Fig. 3). Most patients (61, 92.4%) came

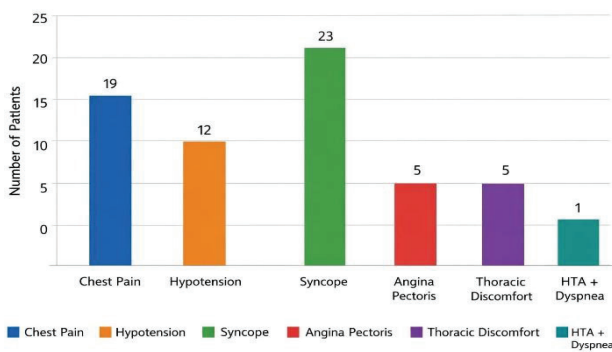


Figure 1. Distribution of Presenting Symptoms in AMI Patients

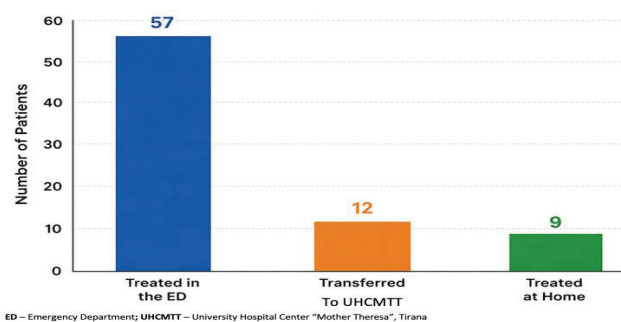


Figure 2 – Patient Referral/Transport Pattern

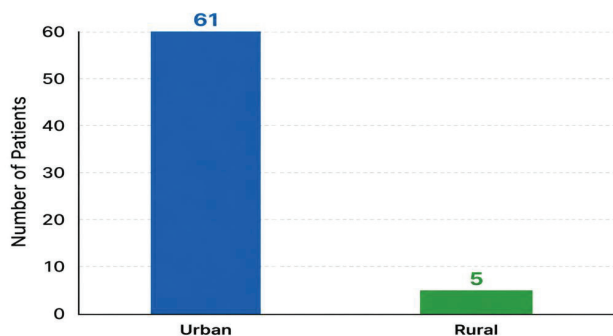


Figure 3. Patient Residence Distribution

from urban areas, while 5 patients (7.6%) were from rural areas. This distribution underscores potential challenges in pre-hospital care and transport for patients from rural areas.

DISCUSSION

The findings underscore the variability of AMI presentations in a regional ED setting. Although chest pain is a classic symptom, syncope/lipotemia and hypotension were also prevalent, highlighting the importance of recognizing atypical presentations (5,6), which is also confirmed in our study with Syncope/lipotemia being most common 23 (34.8%), followed by chest pain with 19 (28.8%) and hypotension with 12 (18.2%) of the cases.

Transport data demonstrate that most patients were stabilized at the Elbasan ED, while a subset required urgent referral to tertiary centers. Efficient triage and effective pre-hospital coordination are essential to minimizing delays in care. (7)

Figures 1–3 visually support these findings by illustrating symptom variability, referral patterns, and geographic distribution. These insights may help ED staff prioritize high-risk patients and optimize resource allocation.

This study provides a pragmatic overview of suspected AMI management in a regional ED setting, where early recognition, stabilization, and timely coordination with tertiary services are central to patient outcomes. The cohort's mean age (66.7 ± 13.8 years) is consistent with AMI epidemiology in European populations and underscores the relevance of atypical presentations and higher baseline vulnerability in older adults (8).

A key finding is the predominance of non-classical presentations. While chest pain remained frequent (28.8%), syncope/lipotemia was the most common presenting symptom (34.8%), and hypotension occurred in 18.2% of patients (5,6). This clinical pattern is highly relevant for ED triage, as it reinforces that AMI—particularly in older patients—may present with hemodynamic instability or transient loss of consciousness rather than typical ischemic pain (9).

In routine practice, such symptoms may trigger alternative diagnostic pathways (neurological, metabolic, or vasovagal), increasing the risk of delayed ECG acquisition and delayed initiation of guideline-directed therapy (10).

Accordingly, regional ED protocols should explicitly classify syncope/presyncope and unexplained hypotension in high-risk patients as “AMI-equivalent” presentations, prompting immediate ECG, continuous monitoring, and early biomarker testing (11).

Most patients were managed locally in the Elbasan ED (86.4%), whereas a minority required transfer to the tertiary center (UHC) (9.1%).

This distribution highlights the ED's pivotal role as the first stabilization node within a regionalized cardiac care pathway. In non-PCI-capable settings, quality of AMI care depends not only on diagnostic accuracy and early medical treatment but also on clear criteria for escalation, rapid communication with the receiving center, and efficient transfer logistics when advanced cardiology support or reperfusion strategies are indicated (12).

Standardized referral triggers, structured handover, and predefined transport pathways may reduce avoidable delays and improve continuity of care (11,12).

The predominance of urban residence (92.4%) may reflect easier access to emergency services and potentially shorter pre-hospital delays. The low rural representation

(7.6%) raises the possibility of access barriers, delayed presentation, or alternative care-seeking behavior among rural populations—factors that could contribute to more advanced hemodynamic compromise at presentation (13).

Although time-to-ECG, symptom-to-door intervals, and outcomes were not captured, these findings support the need for improved pre-hospital integration, public awareness initiatives, and strengthened EMS-to-ED communication, particularly for peripheral areas (14).

Interpretation is limited by the retrospective, single-center design and the absence of standardized process metrics and outcome measures. Nonetheless, the data identify actionable priorities for regional EDs: systematic recognition of atypical AMI presentations, protocol-driven early ECG strategies, structured documentation of key time intervals, and streamlined inter-hospital transfer coordination (13,14).

CONCLUSION

The management of suspected acute myocardial infarction in the Emergency Department of Elbasan Hospital demonstrates that regional hospitals can achieve effective early recognition and stabilization of high-risk cardiac patients. The majority of patients were elderly, with classic cardiovascular presentations such as chest pain, hypotension, and syncope, consistent with international data. Prompt triage, vital sign monitoring, oxygen therapy when indicated, and immediate initiation of emergency protocols were applied to all patients.

Despite the lack of on-site catheterization facilities, the coordination with tertiary centers enabled timely transfers, ensuring patients received advanced diagnostic and interventional care. The study highlights that, even in resource-limited regional settings, adherence to standardized emergency care principles significantly contributes to patient safety and optimal outcomes.

Challenges remain, including potential delays in patient presentation, transfer logistics, and limitations in pre-hospital care integration. Continuous staff training, protocol refinement, and inter-institutional communication are crucial to overcoming these challenges and improving overall survival and morbidity outcomes for AMI patients.

RECOMMENDATIONS

Implementation of standardized AMI protocols in the ED: Establish clear, evidence-based guidelines for early recognition, initial stabilization, and referral of patients with suspected AMI. Protocols should be updated regularly in accordance with international recommendations.

Continuous professional training: Regular training programs for emergency physicians, nurses, and

paramedics focusing on AMI recognition, ECG interpretation, pharmacological management, and patient stabilization.

Strengthening pre-hospital emergency services: Improve coordination with ambulance services and local clinics to reduce response times, ensure timely triage, and enhance communication regarding high-risk patients.

Audit and quality improvement: Conduct periodic reviews of all AMI cases to assess adherence to protocols, identify delays or gaps in care, and implement corrective measures.

Data integration and research: Maintain comprehensive, anonymized databases to monitor outcomes, facilitate research, and inform future improvements in AMI management at regional hospitals.

Implications

The findings of this study provide important insights into the real-world management of acute myocardial infarction in a regional hospital setting. Early recognition and prompt initiation of treatment in the Emergency Department are critical determinants of patient outcomes, and even hospitals without on-site catheterization facilities can deliver high-quality initial care through standardized protocols and effective coordination with tertiary centers.

In clinical practice, this emphasizes the importance of rapid triage systems, continuous monitoring of vital signs, and early administration of guideline-recommended therapies, such as antiplatelet and anticoagulant agents, and oxygen when indicated. It also underscores the value of thorough documentation and registry maintenance, which can support quality improvement initiatives and future research.

From a broader perspective, these findings highlight the need for greater integration of pre-hospital care. Timely communication between local clinics, ambulance services, and the hospital ED can reduce delays, improve decision-making for high-risk patients, and potentially reduce morbidity and mortality.

Furthermore, regular audits and training programs ensure that emergency staff remain up to date on the latest evidence-based practices.

Finally, maintaining structured data collection in regional hospitals not only facilitates internal quality assessment but also contributes to national and international research collaborations. This can help build a more comprehensive understanding of AMI management in diverse healthcare settings and inform policy decisions to strengthen cardiovascular care across Albania and similar regional contexts.

Limitations

This study has several inherent limitations that should be considered when interpreting the results. **Firstly**, it is a retrospective study based on registry data from a single regional hospital, which may be subject to incomplete or inconsistent documentation. Some clinical details, timing of interventions, and long-term outcomes could not be fully verified for all patients.

Secondly, the sample size is relatively small (66 patients), which may limit the statistical power and generalizability of the findings. While the data provide valuable insights into the local management of AMI, the results may not fully represent practices in other regional hospitals or settings with different resources and patient demographics.

Thirdly, long-term outcomes after transfer to tertiary care centers were unavailable, preventing analysis of survival rates, complications, or functional recovery. This limits the ability to evaluate the full impact of ED management on patient prognosis.

Finally, there may be selection bias, as only patients presenting with clear acute coronary symptoms were included, potentially excluding atypical presentations or patients who did not seek care promptly. Despite these limitations, the study offers meaningful insights into emergency management and highlights areas for improvement in protocol implementation, pre-hospital coordination, and staff training.

Editorial Statements

Ethics Approval and Consent to Participate

This study involved the analysis of data from human participants. The research protocol was reviewed and approved by the Institutional Ethics Committee and was conducted in accordance with institutional regulations, the principles of the Declaration of Helsinki, and internationally accepted standards for biomedical research ethics.

Data Availability Statement

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Author Contributions (CRediT): Conceptualization & Methodology: EM; Data Curation, Investigation and Writing – Original Draft: EM; Formal Analysis: Writing – Review & Editing: ErM, EM; Supervision: EM. Both authors have read and approved the final version of the manuscript.

Artificial Intelligence (AI) Statement

The authors used a generative artificial intelligence tool solely for language editing and grammar improvement. All scientific content, data analysis, interpretation, and

conclusions were independently developed, verified, and approved by the authors.

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