

Decision-Making Challenges of Paramedics in Prehospital Emergency Care

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Abstract

Cardiovascular emergencies have a high prevalence and are important among other pre-hospital emergencies. In such emergency situations, making decisions to provide the best care and transport to the hospital are brought with many challenges. The current study reports paramedics' on-scene decision-making challenges in relation to a patient with the acute coronary syndrome. The case was an old woman who complained of sudden dizziness and weakness. The patient's vital signs included a blood pressure of 100/70 mm Hg, heart rate of 58 beats per minute, respiratory rate of 17 breaths per minute, O₂ sat of 96%, and blood sugar of 145 mg/dL. The past medical history of the patient indicated that she had no previous disease or use of medications. In the hospital emergency unit, electrocardiography was recorded and ST-segment elevation myocardial infarction was observed.

Paramedics face many challenges in on-scene decision making, which affect the time, process, and consequences of their decisions. In low and middle-income countries, due to resource limitations, all ambulances are not equipped with diagnostic equipment including portable sonograph and electrocardiogram. In such contexts, decision-making protocols need to be designed and used at the emergency scenes to guide the paramedic and ensure their optimal performance.

Keywords: Decision making, Paramedics, Prehospital, Emergency.

Introduction

Paramedics need to make right and on-time decisions in pre-hospital emergencies.¹ They encounter various problems including lack of authority and organizational support, lack of decision-making protocols, and bystanders', patients' and laypeople's interruptions.² Since wrong decisions threaten the patient's life and are followed by legal consequences and persecution,³ making right and on-time decisions is vital, especially in an emergency situation like cardiac emergencies.⁴

Cardiovascular emergencies have a high prevalence and importance among other pre-hospital emergencies. Despite many attempts to reduce the death caused by heart diseases, the mortality rate is still high in acute myocardial infarction.^{5,6} The time of first intervention and transfer is very important for these patients.⁷ Furthermore, any pre-hospital measure or hospital delay can result in the patient's death.⁸ A previous study showed that the time of appearance

of the symptoms in cardiovascular disease, commonness of its' symptoms with the symptoms of other diseases, and spending time by paramedics to assess and evaluate the patient's symptoms/signs are the main reasons for the pre-hospital delay in cardiac-respiratory emergencies.⁹

In cardiovascular emergencies that the patient needs basic or advanced on scene emergency care, reduction in on-scene time is harmful. In these cases, in order to provide the best care and transfer patients to the hospital, making decisions faces many challenges.⁸ Identifying these challenges and promoting resolutions can be useful in reducing morbidity and mortality. The current study reports decision-making challenges that paramedics face at the scene in relation to a patient with Acute Coronary Syndrome (ACS).

Case report

After receiving a call at the dispatch center of a town that requested aid for an elderly woman who fainted suddenly, an

ambulance was immediately sent to the scene. After arriving at the scene, paramedics observed an old woman lying on the floor with some symptoms including paleness, sweating, dizziness and confusion. Bystanders were repeatedly asking them to “immediately take the patient to the hospital”. In the primary assessment, the patient was complaining about sudden dizziness, dyspnea, chest pain and weakness. The patient’s past medical history indicated that she had no previous disease or taking medicine and did not feel any pain before the incident. The patient explained her wet face, head, neck and chest to be caused by the bystanders who had spilled water on her to make her conscious.

The patient’s vital signs included a blood pressure of 100/70 mm Hg, heart rate of 58 beats per minute, respiratory rate of 17 breaths per minute, O₂ sat of 96%, and blood sugar of 145 mg/dL. Later, the patient expressed that she had no dizziness and weakness and so, refused to be transferred to the hospital. Insisted by paramedic 1(P1), the patient sat on the

ambulance stretcher in a semi-fowler position and 5 liters of oxygen were set up for her using a face mask. With the request of the patient’s daughter for not transferring her to the hospital, paramedic 2(P2), besides approving this request, asked her to sign the consent form. P1 insisted on the necessity of transferring the patient to the hospital and tried to persuade P2 and the patient.

Then, P1 reported the suspected case of MI to the town’s dispatch to receive a consult from the dispatch consultant physician at the province’s dispatch center, and waiting for the call to be connected. Meanwhile, the patient vomited, got restless and became agitated. This persuaded P2 and the patient’s daughter to immediately transfer the patient to the hospital. ASA 325 mg was given to the patient and Complete Bed Rest (CBR) was considered. In the hospital’s emergency unit, after the physician’s visit, Electrocardiography (ECG) was recorded and ST-segment Elevation Myocardial Infarction (STEMI) was observed in her ECG (Figure-1).

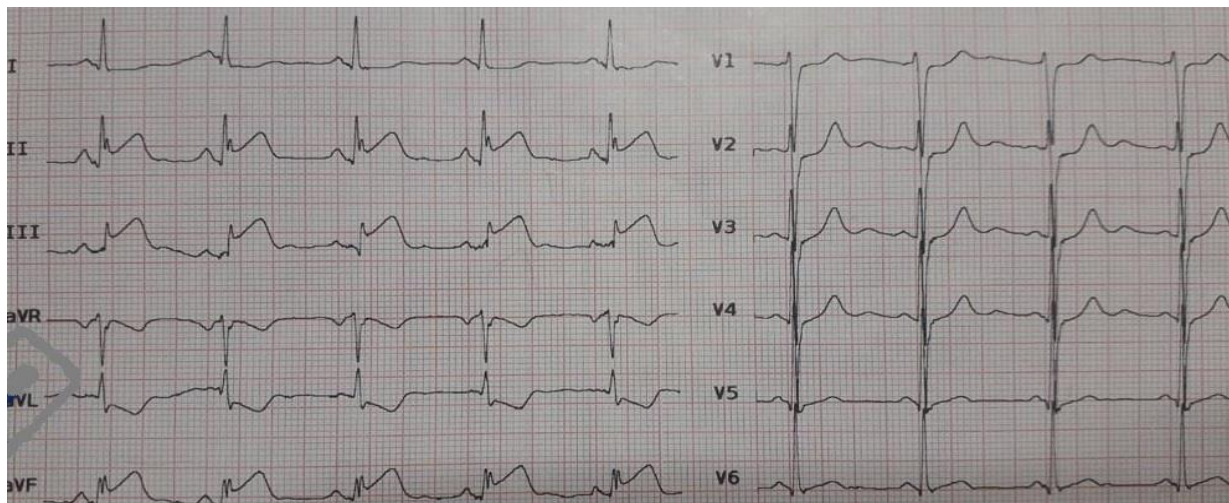


Figure-1. ECG of the patient with STEMI

Discussion

Paramedics face many challenges in on-scene decision making, which might impact the time, process, and consequences of their decisions.

According to the current report, the patient’s vital signs were stable at the scene. Based on the studies, ACS has typical symptoms such as chest pain, and atypical symptoms such as weakness, fatigue, and dyspnea. Other symptoms included nausea and vomiting, sweating, pain in the lower jaw, pain in the arms, syncope, and dizziness.¹⁰ This patient only had a weakness and was pale without any chest pain. Therefore, in the initial assessment, the paramedics ignored the

possibility of a heart problem. Since paramedics are the first connection line with the patients, they have a vital role in prompting treatment of patients with STEMI and preventing their death by taking an ECG and transporting the patient to the hospital^{11,12} Thus, having diagnostic equipment in the ambulance is helpful.

Although medical interventions are delayed as a result of the delay in the appearance of ACS symptoms,¹³ the interaction between the patient and bystanders plays an important role in the paramedics’ decision-making.² Based on this report, the paramedics’ confusion and ambiguity in the process of decision making were due to bystanders’

interferences, transferring conveyance, lack of paramedics' agreement on a single decision, and spending time to get advice from the physician in the dispatch center. Previous studies indicated that clinical decision-making is a dynamic and multi-factorial process and is affected by various factors including spending time to assess the patient, identifying the symptoms, and be aware of the patient's history, and therefore, paramedics' agreement on a single decision is vital.^{2,6}

Lack of a direct connection among the paramedics, dispatch center physicians and hospitals might result in extending the time of first intervention and transfer. Even though such patients require fast recognition and reperfusion through fibrinolysis, and the analysis of ECG, bypass, and hospital interventions.^{13,14}

Conclusions

The paramedics did not have access to advanced medical equipment such as tele-cardiogram. Therefore, they must have high skill and competency to diagnose the patient's critical condition based on the symptoms and signs. Designing decision-making protocols and regular training can promote their knowledge and skills.

In low and middle-income countries, due to resource limitations, ambulances are not equipped with diagnostic equipment such as portable ultrasound and electrocardiogram. In such contexts, decision-making protocols need to be designed and used at the emergency scenes to guide the paramedic and ensure their optimal performance.

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Authors' Contribution

All authors pass the four criteria for authorship contribution based on the International Committee of Medical Journal Editors (ICMJE) recommendations.

Conflict of Interests

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References

- Harenčárová H. Managing uncertainty in paramedics' decision making. *Journal of Cognitive Engineering and Decision Making*. 2017;11(1):42-62. doi:10.1177/1555343416674814
- Safi-Keykaleh M, Khorasani-Zavareh D, Bohm K. Factors Affecting Emergency Medical Technicians' On-Scene Decision-Making in Emergency Situations: A Qualitative Study. *Advanced Journal of Emergency Medicine*. 2020.
- Perona M, Rahman MA, O'Meara P. Paramedic judgement, decision-making and cognitive processing: a review of the literature. *Australasian Journal of Paramedicine*. 2019;16. doi:10.33151/ajp.16.586
- Peacock WF. Time to treatment and acute coronary syndromes: bridging the gap in rapid decision making. *Reviews in cardiovascular medicine*. 2019;11(S2):45-50. doi:10.1002/9781119547808.ch4
- <http://ec.europa.eu/eurostat/statistics-explained/index.php/Cardiovascular2018>.
- Golden AP. Emergency medical services transport delays for suspected stroke and myocardial infarction patients. *BMC emergency medicine*. 2015;15(1):34. doi:10.1186/s12873-015-0060-3
- Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, et al. 2018 guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *stroke*. 2018;49(3):e46-99. doi:10.1161/STR.0000000000000163
- Saberi F, Adib-Hajbaghery M, Zohreha J. Predictors of prehospital delay in patients with acute myocardial infarction in kashan city. *Nursing and Midwifery Studies*. 2014;3(4). doi:10.17795/nmsjournal24238
- Holmberg M, Andersson H, Winge K, et al. Association between the reported intensity of an acute symptom at first prehospital assessment and the subsequent outcome: a study on patients with acute chest pain and presumed acute coronary syndrome. *BMC Cardiovascular Disorders*. 2018;18(1):216. doi:10.1186/s12872-018-0957-3
- Bruins Slot MH, Rutten FH, van der Heijden GJ, et al. Gender differences in pre-hospital time delay and symptom presentation in patients suspected of acute coronary syndrome in primary care. *Family practice*. 2012;29(3):332-337. doi:10.1093/fampra/cm089
- Janbazloufar KM, Pazokian M, Safari M, Saberian P, Nasiri M. The impact of telecardiology on the outcome of patients with myocardial infarction transported by Tehran's emergency medical services to selected hospitals of Tehran city. *Nursing Practice Today*. 2020.
- Patel M, Dunford JV, Aguilar S, Castillo E, Patel E, Fisher R, et al. Pre-hospital electrocardiography by emergency medical personnel: effects on scene and transport times for chest pain and ST-segment elevation myocardial infarction patients. *Journal of the American College of Cardiology*. 2012;60(9):806-11. doi:10.1016/j.jacc.2012.03.071
- Faseleh M, Zeinijahromi M, Sabzavari S. The Impact of Continuous Care Model on Main Symptoms of Myocardial Infarction. *AMBIENT SCIENCE*. 2018;5:122-126. doi:10.21276/ambi.2018.05.sp1.ra16
- Ong M, Chan K, Anantharaman V, et al. Nationwide study to improve door-to-balloon times in patients with acute ST elevation myocardial infarction requiring primary percutaneous coronary intervention using prehospital ECG transmission. *Journal of Emergency Medicine*. 2011;41(2):217-218. doi:10.1016/j.jemermed.2011.06.107