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REVIEW

Medical training and clinical response in the management of STEMI from the first level of care

Formación médica y respuesta clínica en el manejo del IAMCEST desde el primer nivel de atención

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ABSTRACT

The limitations faced by primary care in addressing ST-segment elevation myocardial infarction (STEMI), one of the leading causes of death worldwide. Early diagnosis and treatment were highlighted as key to improving patient prognosis, but obstacles persisted, such as insufficient training of medical personnel, lack of resources, and the absence of standardised protocols. Various studies showed that many doctors were not adequately prepared to recognise and treat STEMI effectively, a situation exacerbated by deficiencies in practical medical education, especially during the pandemic. The need to strengthen clinical training, adequately equip health centres and establish integrated networks to ensure rapid access to reperfusion treatments was also highlighted. The study concluded that only a comprehensive approach would improve the healthcare response to this critical emergency.

Keywords: IAMCEST; Primary Care; Diagnosis; Medical Training; Reperfusion.

RESUMEN

Las limitaciones que enfrentó la atención primaria en el abordaje del infarto agudo de miocardio con elevación del segmento ST (IAMCEST), una de las principales causas de muerte a nivel mundial. Se destacó que el diagnóstico y tratamiento temprano fueron claves para mejorar el pronóstico del paciente, pero persistieron obstáculos como la formación insuficiente del personal médico, la falta de recursos y la carencia de protocolos estandarizados. Diversas investigaciones evidenciaron que muchos médicos no estuvieron adecuadamente preparados para reconocer y tratar el IAMCEST de forma efectiva, situación agravada por deficiencias en la educación médica práctica, especialmente durante la pandemia. Asimismo, se subrayó la necesidad de reforzar la capacitación clínica, dotar adecuadamente a los centros de salud y establecer redes integradas que garantizaran el acceso rápido a tratamientos de reperfusión. El trabajo concluyó que solo un enfoque integral permitiría mejorar la respuesta sanitaria ante esta emergencia crítica.

Palabras clave: IAMCEST; Atención Primaria; Diagnóstico; Formación Médica; Reperfusión.

INTRODUCTION

ST-segment elevation myocardial infarction (STEMI) is one of the leading causes of death worldwide, and its immediate care is a priority challenge for health systems. Rapid diagnosis and treatment are key determinants of patient survival and recovery, placing primary care strategically within the medical response chain. However, multiple barriers persist that hinder effective care, such as insufficient training of medical personnel,

lack of resources in health centers, and the absence of well-established protocols. This paper explores the main limitations in managing STEMI in primary care, analyzing recent evidence on training, structural, and organizational deficiencies, and possible strategies to improve clinical response in emergency settings.

DEVELOPMENT

ST-segment elevation myocardial infarction (STEMI) is one of the most critical medical emergencies in current clinical practice and one of the leading causes of morbidity and mortality worldwide.[1,2] Timely and efficient management, especially from the first medical contact, is essential to reduce complications and improve patient prognosis.[3,4]

Several studies agree that primary care plays a crucial role in the early detection and management of STEMI. The ability of general practitioners to recognize symptoms, interpret an electrocardiogram (ECG), and make rapid therapeutic decisions can determine patient survival.[5,6] However, multiple studies have revealed significant gaps in these professionals' training, practical knowledge, and access to resources.[7,8,9]

One of the significant limitations in the care of STEMI is the delay in diagnosis and administration of reperfusion therapy, which is related to a lack of clinical skills, limited familiarity with updated guidelines, and structural deficiencies in health centers.[10,11] The Argentine Consensus on Reperfusion,[4] emphasizes that an ECG should be performed within 10 minutes of the patient's arrival and that antiplatelet therapy and early reperfusion with tPA or fibrinolysis should be initiated, depending on availability.

On the other hand, studies by Stocco Aimoli and Miranda[12] showed that many newly graduated physicians lack adequate skills to diagnose and treat STEMI appropriately, even in simulated settings. This finding reinforces the findings of Bridgwood et al.[13] and Pourmand et al.[14], who argue that the remote education modalities adopted during the COVID-19 pandemic may have compromised the practical training of medical students, especially in critical areas such as emergency cardiology.

A significant deficit in access to continuing educational resources has also been identified, limiting physicians' ability to update their knowledge.[7,15] In this regard, the role of public policy is vital to ensure equity in professional training and the equipment of primary care centers.[16,17]

Likewise, several authors have highlighted the need to strengthen the practical component of undergraduate programs, [18,19] they recommend incorporating training in simulated clinical settings, prioritizing ECG interpretation, using essential medications (aspirin, statins, beta-blockers), and recognizing urgent referral criteria.

The position paper by Costabel et al.[11] emphasizes the implementation of cardiovascular care networks that ensure timely access to reperfusion treatments, including prehospital fibrinolysis, as a valid strategy in contexts where angioplasty is not available within the 120 minutes stipulated by international guidelines (American Heart Association; European Society of Cardiology).

Finally, research studies such as those by Custodio-Sánchez et al.[20] and Adaro et al.[21] underscore that current shortcomings in STEMI care are not only linked to theoretical knowledge but also to the lack of protocols, systemic organization, and practical training of healthcare teams, which compromises rapid response in emergencies.[22]

CONCLUSIONS

The care of STEMI from the first level of health contact faces significant challenges that directly affect patient morbidity and mortality. The lack of practical training, limited familiarity with clinical guidelines, and structural deficiencies compromise the ability of general practitioners to act quickly and effectively. Given this situation, it is essential to strengthen medical training programs with a practical and continuous focus, promote the availability of essential resources in primary care centers, and implement integrated cardiovascular care networks that ensure a timely response. Only through a comprehensive approach that involves medical education, public policy, and health system organization will it be possible to improve outcomes in AMI care and reduce its fatal consequences.

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CONFLICT OF INTEREST

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