EDITORIAL

Importance of metabolic parameters as prognostic markers in prehospital care

Parámetros metabólicos como marcadores pronóstico en la atención prehospitalaria

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Traumatic pathology is a worldwide dilemma. From a health, social and economic point of view. Fatal and non-fatal trauma is associated with an annual financial cost of approximately ≥ 670 billion in direct medical care and lost productivity.[1] Approaching acute injury and trauma as a comprehensive, inclusive, and undivided entity has significantly reduced mortality and disability.[2]

Considering acute traumatic injury as a disease has ensured that health professionals and health care providers approach and treat patients exposed to different and specific traumatic risks as other disease groups. Out-of-hospital care for cardiac arrest in Spain and industrialized countries, considered worldwide as a serious public health problem, is an example of awareness and research into this important cause of mortality and morbidity.[3-5] The Spanish out-of-hospital emergency care model differs from many countries where paramedics provide first care. In Spain, the service is public, universally accessible, and dependent on the different health administrations, and the emergency teams include medical and nursing personnel.[6] The emergency care system also has coordination centers, staffed by specialized and well-trained medical and nursing personnel, where emergency calls are received and managed. Over the years, these centers have evolved positively to meet the demands and challenges posed by social needs[6].

Traumatic disease, which for more than 50 years has been "the neglected disease of modern society",[1] has not been alien to the transformation that out-of-hospital emergency care has undergone. Awareness of trauma as a disease has been crucial in designing and implementing strategic interventions related to trauma, both preventive and curative, specifically training care teams and coordinating prehospital and hospital care. This transformation has succeeded in reducing the critical time interval of care at a specific site, providing adequate care, mitigating the severity of injuries, and reducing mortality and morbidity.

Recognizing the importance of preventing and controlling traumatic injuries emphasizes the need to improve our grasp on this matter and its transfer and promote research on diagnostic and therapeutic strategies. Research is the key to improving scientific knowledge and healthcare because every healthcare discipline needs research to mature its body of doctrine with scientific evidence. Basing studies on the scientific method makes it possible to innovate and improve both diagnostic and therapeutic measures.[7]

For many years now, the main focus has been on the search for severity assessment factors and scales to detect critical or potentially critical patients to anticipate pathological changes and optimize treatment.[8] Most scientific production implemented in prehospital emergencies comes from the hospital setting.[7] These include anatomical scales, useful for measuring the severity of injuries and predicting their outcome; physiological scales that study the hemodynamic behaviour of trauma and its relationship with the prognosis of the trauma patient; metabolic scales based primarily on lactate and base deficit as a reflection of hypovolemia and tissue hypoperfusion, and combined scales used for prediction and comparison of estimated outcomes. Among the anatomical scales, the Injury Severity Score (ISS), created by Baker et al. in 1974 and the New Injury Severity Score (NISS) developed by Osler et al. in 1997 stand out. The latter has shown better predictive ability than the ISS for predicting mortality, admission to intensive care and length of stay in intensive care.[9]

This issue of EMERGENCIAS publishes a study by Corral et al.[10] on the initial prognostic value that each metabolic parameter analyzed has on the severity of injury or mortality in trauma patients susceptible to hemorrhagic shock due to trauma. After 24 hours of hospital admission, injury assessment was performed using the NISS scale. This observational and multicenter study was performed on a prospectively elaborated database called "Trauma Code", which includes patients transferred by the SAMU-Protección Civil de Madrid, excluding isolated cranioencephalic trauma, during 2016-2019. The total number of patients included was 709.

Vital efforts in trauma patient care have focused on shortening the critical interval.[11,12] The study by Corral et al.[10] has three important strengths related to this shortening. The first is hypovolemia and tissue hypoperfusion (microhemodynamics) rapid detection. We

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performed Microhemodynamics care with a quick venous blood draw (in the first 90 seconds of care and before any drug or fluid administration); in less than 4 minutes, they had the results of biochemical, blo od gas and hematological values. The analytical parameters measured at the accident site were correlated with the NISS scale, divided into four levels of severity according to the resulting score (34-41, 42-49, 50-59 and > 60) and with 30-day mortality. Patients with greater severity presented lower pH and higher concentrations of pCO_2, lactate and base excess. Results were similar to other publications,[13] the values with the highest predictive capacity for severity were pH, pCO_2 and glycemia. The predictive capacity of metabolic values was superior to that of conventional hemodynamic values, systolic blood pressure or heart rate, as has been amply demonstrated.[14] Further investigation of metabolic parameters could become a tool to aid decision-making.

The second strength lies in the time for on-site care. The mean response time in the study (alert-arrival on the scene) was 9 minutes and 2 seconds. The third was coordination between the SAMU-Protección Civil out-of-hospital care and hospital care (four different hospitals). But these last two strengths become an utmost limitation. Guaranteeing on-site, for most severe cases, a second doctor and a second nurse, average response times as fast and planning and coordination such as that achieved with the "Trauma Code" is not always possible. Response times when comparing initial prehospital care between urban and non-urban areas increase significantly.[15]

In conclusion, encouraging and supporting a study of this kind is the key to improving response time and out-of-hospital care for severe trauma. In addition, it contributes to research and the construction of tools to facilitate decision-making, usually complex, from on-site care to hospital reception.

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