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Review

Trauma severity scores. Review article☆

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ABSTRACT

Introduction: Throughout the years, several methods have been developed to help determine injury severity and obtain accurate prognoses in trauma patients. Trauma scores that have been used for more than 40 years are extremely useful in clinical practice as well as in research.

Objective: To conduct a review of the most relevant literature on trauma and to make a description of each of the scoring tools, focusing on their limitations and their application in clinical trials.

Materials and methods: Narrative review conducted in different databases such as PubMed, ScienceDirect and OVID. A manual search was also conducted of articles on the subject in both English and Spanish.

Results: The review articles provided an adequate description of each of the scores, the way they are calculated, the main limitations in their application, and the most relevant findings in the literature.

Conclusion: There is a wide range of severity scores used in trauma patients for anticipating clinically significant outcomes with varying degrees of accuracy. Creating and validating a single, universally valid score is a huge challenge; consequently, the selection of the scoring tool is based, to a large extent, on experience, the context and the available evidence.

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Puntajes de gravedad en trauma. Artículo de revisión

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RESUMEN

Introducción: a lo largo de la historia se han creado varios métodos para evaluar la gravedad de las lesiones y brindar un pronóstico exacto en pacientes con trauma. Los puntajes en trauma que se han utilizado por más de 40 años son una herramienta de gran utilidad tanto para el contexto clínico como investigativo.
Objetivo: elaborar una revisión de la literatura más relevante sobre los puntajes en trauma y hacer una descripción de cada una de estas herramientas, haciendo énfasis en sus limitaciones y en la aplicación en estudios clínicos.
Materiales y Métodos: revisión narrativa, se consultaron diferentes bases de datos como PubMed, ScienceDirect y OVID; además, se hizo búsqueda manual de artículos en inglés y en español sobre el tema.
Resultados: los artículos revisados permitieron hacer una descripción adecuada de cada uno de los puntajes, de la forma en que se calculan, sus principales limitaciones al momento de aplicarlos y los hallazgos más notables en la literatura.
Conclusión: existe una gran variedad de puntajes de gravedad para pacientes con trauma que permiten anticipar con diferente exactitud los desenlaces clínicamente significativos. La creación y validación de un único puntaje universalmente válido es todo un reto; por ello la selección de esta herramienta está basada en gran parte en la experiencia, el contexto y la evidencia disponible.

Introduction

In trauma, scores are used to obtain a numerical description of the severity of an individual's injuries and clinical condition, which in turn is associated with prognosis.[1,2] Scores have been used for more than 40 years since the initial *Injury Severity Score* (ISS) was proposed[3] and they are still used for different purposes: as a common language for the healthcare community, as a means to compare mortality rates based on severity, as a basis for clinical decision-making, and for research, among others.[1]

Mortality becomes the indicator used to evaluate the accuracy of trauma scores, taking into consideration two characteristics:

Discrimination: the ability of the score to make a distinction between survivors and non-survivors, usually determined on the basis of the area under the curve of the receiving operating characteristics (AUC-ROC).
Calibration: the ability of the score to predict mortality and the concordance between prediction and actual observation. It is usually measured with the Hosmer–Lemeshow (HL) test for goodness of fit.[1,4]
The purpose of this review is to make a detailed description of the scores in order to help with their knowledge and understanding, based on the most important findings in the literature.

Materials and methods

Narrative review of the medical literature on trauma. A search was conducted in several databases including PubMed, ScienceDirect and OVID; an additional manual search of articles on the subject in English and Spanish was also conducted. The final sources reviewed included 48 articles related to the assessment of trauma patients, published since 1974; of these, 9 were prospective and the rest were databases of trauma registries. All the original articles had been published in English and dealt with emergency or pre-hospital care cases.

Results

Depending on the variables assessed, scores may be classified into anatomical, physiological and combined. Results are presented in chronological order and four aspects are developed for each score: general description, calculation, limitations, and relevant findings in the literature.

Anatomical scores

AIS (Abbreviated Injury Scale)

General description: Developed by the U.S Association for the Advancement of Automotive Medicine (AAAM), this score is used as a basis for other scores, including the ISS.[3] This tool has been updated 7 times since its introduction in 1971, the most recent being the 2008 update.[2]

Calculation: This score includes more than 2000 diagnoses in which each injury is assigned a number from 1 to 6, where 1 is a minor injury, 5 is a critical injury and 6 is an intractable, fatal injury.[5]

Limitations: There are performance drawbacks in penetrating injuries, hypothermia, burns, electric injuries and smoke