



ORIGINAL

Predictors of mortality and poor functional outcome in severe spontaneous intracerebral hemorrhage: A prospective observational study[☆]



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Received 28 August 2014; accepted 17 October 2014

Available online 12 September 2015

KEYWORDS

Intracerebral hemorrhage;
Intensive Care Unit;
Outcome;
Mortality

Abstract

Objective: To analyze mortality and functional outcome in patients with severe spontaneous intracerebral hemorrhage (ICH), and identify the clinical characteristics, radiological findings and therapeutic procedures predictive of mortality in the Intensive Care Unit (ICU) and during hospitalization, as well as of poor functional results at 6 months.

Design: A prospective, observational study was carried out.

Setting: Neurocritical Care Unit of a university hospital.

Patients: Patients diagnosed with ICH were included over a period of 23 months.

Variables of interest: Demographic characteristics, cardiovascular risk factors, regular medication, laboratory test parameters, cranial CT findings, therapeutic procedures and outcome data.

Intervention: None.

Results: A total of 186 patients with ICH met the inclusion criteria. Surgery to evacuate ICH was performed in 25.8% of the patients. The mortality rate was 46.7%. The modified Rankin score at 6 months was 5 (RI: 4.6). Multivariate Cox regression analysis showed the presence of diabetes, prior anticoagulation, as well as APACHE II severity and the type of bleeding on the cranial CT scan to be predictors of mortality and poor functional outcomes. On the other hand, neurosurgical procedures and intracranial pressure (ICP) monitoring were associated with better outcomes.

[☆] Please cite this article as: Ferrete-Araujo AM, Egea-Guerrero JJ, Vilches-Arenas Á, Godoy DA, Murillo-Cabezas F. Predictores de mortalidad y mal resultado funcional en la hemorragia intraparenquimatosa espontánea grave: estudio prospectivo observacional. Med Intensiva. 2015;39:422–432.

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Conclusion: The presence of comorbidities such as diabetes, or previous anticoagulation, as well as the CT findings were associated to poorer outcomes. In contrast, ICP monitoring and early neurosurgery were predictive of longer survival and better functional outcomes.
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PALABRAS CLAVE

Hemorragia intraparenquimatosa; Unidad de Cuidados Intensivos; Pronóstico; Mortalidad

Predictores de mortalidad y mal resultado funcional en la hemorragia intraparenquimatosa espontánea grave: estudio prospectivo observacional

Resumen

Objetivo: Evaluar la mortalidad y el resultado funcional final de los pacientes con hemorragia intraparenquimatosa espontánea grave (HIP). Determinar las características clínicas, radiológicas y terapéuticas con mayor poder predictivo sobre la mortalidad en la Unidad de Cuidados Intensivos (UCI) y durante el ingreso hospitalario, así como sobre los malos resultados funcionales a los 6 meses.

Diseño: Estudio prospectivo, observacional.

Ámbito: UCI de un hospital universitario.

Pacientes: Durante 23 meses se incluyó a aquellos pacientes con diagnóstico de HIP.

Variables de interés: Datos demográficos, factores de riesgo cardiovascular, medicación habitual, datos de laboratorio, tomografía craneal (TC), neuromonitorización, manejo terapéutico y evaluación pronóstica.

Intervención: Ninguna.

Resultados: Se incluyó a un total de 186 pacientes. En el 25,8% se realizó evacuación quirúrgica de la HIP. La mortalidad fue del 46,7%. La mediana del Rankin modificado a los 6 meses fue de 5 (RI: 4; 6). El análisis multivariante de regresión de Cox mostró que la presencia de diabetes, tratamiento previo con anticoagulantes, la gravedad según APACHE II y el tipo de hemorragia en la TC de cráneo se comportaron como variables predictoras de mortalidad y malos resultados funcionales, mientras que la realización de procedimientos neuroquirúrgicos y la monitorización de la presión intracraneal (PIC) asociaron una mayor supervivencia y mejores resultados.

Conclusión: La presencia de comorbilidades, como la diabetes o el tratamiento previo con anticoagulantes, así como los hallazgos de la TC se asociaron a peores resultados. Por contra, el marcador de mayor supervivencia y mejor resultado funcional era la monitorización de la PIC, así como la cirugía precoz.

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Introduction

Cerebrovascular accident (CVA) or stroke is a common disorder. Specifically, spontaneous intracerebral hemorrhage (ICH) is the second leading cause of CVA, following ischemic stroke (10–15%).¹ The annual incidence of ICH is estimated to be between 16 and 33 cases/100,000 inhabitants, and its prevalence has increased in recent years in relation to aging of the general population and the increasingly widespread use of antithrombotic therapy in younger patients.^{2–7}

As a result of the increasing frequency of the disorder and the associated need for specialized treatment, affected patients often require admission to the Intensive Care Unit (ICU) for adequate management.^{1,6} This fact, and subsequent admission to the conventional hospital ward, imply an important use of social and economic resources.⁸ However, despite advances in specialized care in the ICU, the mortality rate associated to ICH is very high—one-half of all deaths occurring within the first 48 h—and the functional

outcomes remain very disappointing: only 12–39% of those patients who survive the episode are functionally independent. These considerations justify the different studies that have sought to establish predictive mortality and functional outcome models based on different demographic, clinical and biological variables, with the aim of optimizing the ultimate management of patients with ICH.^{8–13} However, many of these investigations only address short-term mortality in the ICU or in hospital. On the other hand, uncertainty remains regarding the influence of different invasive procedures such as immediate surgery or intracranial pressure (ICP) catheter monitoring and brain tissue oxygenation pressure (PtiO₂) upon the final outcome.^{11,14}

The main objective of this study is to determine mortality and functional outcome in patients with severe ICH. Likewise, an evaluation is made of the clinical, radiological and therapeutic variables with the strongest predictive capacity in relation to mortality in the ICU and during hospital admission, and to poor functional outcome after 6 months.

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