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ORIGINAL ARTICLE

Factors associated with poor outcome for aneurysmal subarachnoid haemorrhage in a series of 334 patients☆

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KEYWORDS
Cerebrovascular disease;
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Complication;
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Outcome

Abstract
Objective: This study evaluates care-related sociodemographic, clinical, and imaging factors and influences associated with outcome at discharge in patients with aneurismal subarachnoid haemorrhage.
Patients and method: Retrospective cohort study in 334 patients treated at Hospital Hermanos Ameijeiras in Havana, Cuba between October 2005 and June 2014.
Results: Logistic regression analysis determined that the following factors were associated with higher risk of poor outcome: age older than 65 years (OR 3.51, 95% CI 1.79-5.7, *P* = .031), female sex (OR 2.17, 95% CI 1.22-3.84, *P* = .0067), systolic hypertension (OR 4.82, 95% CI 2.27-9.8, *P* = .0001), and hyperglycaemia at admission (OR 3.93, 95% CI 2.10-7.53, *P* = .0003). Certain complications were also associated with poor prognosis, including respiratory infection (OR 2.73, 95% CI 1.27-5.85, *P* = .0085), electrolyte disturbances (OR 3.33, 95% CI 1.33-8.28, *P* = .0073), hydrocephalus (OR 2.21, 95% CI 1.05-4.63, *P* = .0039), rebleeding (OR 16.50, 95% CI 8.24-41.24, *P* = .0000), symptomatic vasospasm (OR 19.00, 95% CI 8.86-41.24, *P* = .0000), cerebral ischaemia (OR 3.82, 95% CI 1.87-7.80, *P* = .000) and multiplex rebleeding (OR 6.69, 95% CI 1.35-36.39, *P* = .0019). Grades of III and IV on the World Federation of Neurological Surgeons (OR 2.09, 95% CI 1.12-3.91, *P* = .0021) and Fisher scales (OR 5.18, 95% CI 2.65-10.29, *P* = .0008) were also related to poor outcome.
Conclusions: Outcome of aneurysmal subarachnoid haemorrhage was related to age, sex, clinical status at admission to the stroke unit, imaging findings according to the Fisher scale,

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blood pressure, glycaemia and such complications as electrolyte disturbances, hydrocephalus, rebleeding, and multiplex rebleeding.

PALABRAS CLAVE
Enfermedad cerebrovascular;
Hemorragia subaracnoidea;
Aneurisma intracraneal;
Complicaciones;
Escala de Rankin;
Evolución

Factores asociados a una evolución desfavorable en la hemorragia subaracnoidea aneurismática. Serie de 334 pacientes

Resumen
Objetivo: Evaluar los factores sociodemográficos, clínicos, imagenológicos y relacionados con la atención médica que influyen sobre el pronóstico de los pacientes con hemorragia subaracnoidea aneurismática al alta hospitalaria.
Pacientes y método: Se realizó un estudio tipo cohorte, retrospectivo, con 334 pacientes atendidos en el Hospital Hermanos Ameijeiras en La Habana, Cuba, en el periodo comprendido entre octubre de 2005 y junio de 2014.
Resultados: En el análisis multivariado se encontró que los factores asociados a una evolución desfavorable fueron la edad mayor a 65 años (OR 3,51, IC 95% 1,79-5,7, p = 0,031), el sexo femenino (OR 2,17, IC 95% 1,22-3,84, p = 0,0067), la HTA sistólica (OR 4,82, IC 95% 2,27-9,8, p = 0,0001), la hiperglucemia al ingreso (OR 3,93, IC 95% 2,10-7,53, p = 0,0003), las complicaciones como la sepsis respiratoria (OR 2,73, IC 95% 1,27-5,85, p = 0,0085), los trastornos hidroelectrolíticos (OR 3,33, IC 95% 1,33-8,28, p = 0,0073), la hidrocefalia (OR 2,21, IC 95% 1,05-4,63, p = 0,0039), el resangrado (OR 16,50, IC 95% 8,24-41,24, p = 0,0000), el vasoespasmo sintomático (OR 19,00, IC 95% 8,86-41,24, p = 0,0000), el infarto cerebral (OR 3,82, IC 95% 1,87-7,80, p = 0,0000), el resangrado múltiple (OR 6,69, IC 95% 1,35-36,39, p = 0,0019), así como los grados III y IV de las escalas de la Federación Mundial de Neurocirujanos (OR 2,09, IC 95% 1,12-3,91, p = 0,0021) y de Fisher (OR 5,18, IC 95% 2,65-10,29, p = 0,0008).
Conclusiones: La evolución de la hemorragia subaracnoidea aneurismática está relacionada con la edad, el sexo, el estado clínico al arribo a la unidad de ictus, así como las características imagenológicas según la escala de Fisher, las cifras de tensión arterial y de glucemia, y las complicaciones como los trastornos hidroelectrolíticos, la hidrocefalia, el resangrado, el vasoespasmo y el resangrado múltiple.

Introduction

Cerebrovascular diseases have remained among the world's 3 leading causes of death for many years.[1] Although aneurysmal subarachnoid haemorrhage (ASAH) is not ranked among the most frequent cerebrovascular diseases, it has one of the highest morbidity and mortality rates (between 23% and 51%).[2]

Multiple sociodemographic, clinical, radiological, and healthcare-related factors have been associated with poor outcome in ASAH; however, data come mainly from studies conducted in developed countries and following treatment protocols which differ considerably from the ones proposed recently with the introduction of new drugs and technologies.[3,4] Identifying the variables associated with poor outcomes in our setting would help us develop and implement more effective treatment strategies focused on preventing and managing these factors. Furthermore, few studies have evaluated the factors associated with poor outcomes in our setting, or the mortality risk factors associated with the aetiopathogenic subtype of stroke.[1]

In light of the above, we decided to undertake a study to evaluate the sociodemographic, clinical, imaging, and healthcare-related factors linked to prognosis at discharge in patients with ASAH.

Patients and methods

We conducted a retrospective observational cohort study initially including 357 patients with ASAH treated at the stroke unit (SU) of Hospital Clínico-Quirúrgico Hermanos Ameijeiras in La Habana, Cuba, between 1 October 2005 and 31 June 2014. Patients had to meet the following inclusion criteria: (1) a diagnosis of subarachnoid haemorrhage (SAH) confirmed by either an initial CT scan showing signs of bleeding in the subarachnoid space or a CSF analysis displaying xanthochromia; (2) CT-angiography or brain angiography revealing an aneurysm with a bleeding pattern in the initial CT scan coinciding with the location of SAH; (3) ages 18 and older; (4) a Glasgow Coma Scale[5] score >8; and (5) grades IV or below on the World Federation of Neurosurgical Societies (WFNS) grading scale.[6] Exclusion criteria were presence of mycotic aneurysms and incomplete medical history.

We excluded 18 patients whose histories did not include all the data necessary for our study and an additional 5