



ORIGINAL ARTICLE

A stroke care management system prevents outcome differences related to time of stroke unit admission^{☆,☆☆}



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KEYWORDS

Outcome;
Weekend;
Stroke unit;
Thrombolysis;
Admission;
Acute stroke

Abstract

Introduction: Evidence supports that admitting patients with stroke during different hospital work periods is related to distinct outcomes. We aimed to analyse outcomes in patients according to the period and time of admission to the stroke unit.

Methods: Retrospective study. For purposes of data analysis, patients were grouped according to the following time periods: (a) day of the week, (b) period of the year, (c) shift. We analysed demographic characteristics, stroke type and severity, and the percentage undergoing thrombolysis in each group. The measures used to evaluate early outcomes were the National Institutes of Health Stroke Scale (NIHSS), neurological complications (NC), and in-hospital mortality. Functional outcome at 3 months was determined using the modified Rankin scale.

Results: The stroke unit admitted 1250 patients. We found NC to be slightly more frequent for weekend admissions than for weekday admissions, but this trend does not seem to have influenced in-hospital mortality. Regarding functional outcome at 3 months, 67.0% of weekday vs 60.7% of weekend admissions were independent ($P = .096$), as were 65.5% of patients admitted during the academic months vs 63.5% of those admitted during summer holidays ($P = .803$). We identified no significant differences in 3-month mortality linked to the day or period of admission; however, for the variable 'shift', 13.2% of the patients died during the morning

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shift, 11.5% during the afternoon shift, and 6.0% during the night shift ($P = .017$). We identified a trend towards higher rates of thrombolysis administration on weekdays, during the morning shift, and during the academic months.

Conclusions: Time of admission to the stroke unit did not affect early outcomes or functional independence at 3 months.

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PALABRAS CLAVE

Pronóstico;
Fin de semana;
Unidad de ictus;
Trombólisis;
Ingreso;
Ictus agudo

Un sistema organizado de atención al ictus evita diferencias en la evolución de los pacientes en relación con el momento de su ingreso en una unidad de ictus

Resumen

Introducción: Existe evidencia de que el ingreso de pacientes con ictus en diferentes periodos laborales influye en su evolución. Analizamos la evolución de los pacientes con relación al momento del ingreso en una unidad de ictus.

Métodos: Estudio retrospectivo. Se agrupó a los pacientes considerando los siguientes periodos: a) día de la semana, b) periodo del año y c) turno de trabajo. Analizamos características demográficas, tipo y gravedad del ictus y porcentaje de trombólisis. Determinamos la evolución precoz considerando: la National Institute of Health Stroke Scale (NIHSS), complicaciones neurológicas (CN) y mortalidad hospitalaria, y situación funcional (SF) a 3 meses mediante la escala modificada de Rankin.

Resultados: Se incluyó a 1.250 pacientes. Las CN fueron más frecuentes durante el fin de semana que en los días laborales, sin influir en la mortalidad hospitalaria. Respecto a la SF a 3 meses, el 67,0% de pacientes ingresados en días laborales vs. 60,7% durante el fin de semana ($p = 0,096$), el 65,5% de los pacientes ingresados durante los meses académicos vs. 63,5% durante las vacaciones de verano ($p = 0,803$) eran independientes. No identificamos diferencias significativas en la mortalidad a 3 meses según el día o periodo del año; sin embargo, para la variable turno de trabajo, el 13,2% de los pacientes ingresados durante la mañana, el 11,5% por la tarde y el 6,0% durante el turno de noche fallecieron ($p = 0,017$). Observamos una tendencia a realizar más fibrinólisis en días laborables, turno de la mañana y meses académicos.

Conclusiones: El momento del ingreso en la unidad de ictus no influyó en la evolución precoz ni en la situación de independencia a 3 meses.

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Introduction

The development of multidisciplinary teams and structures specifically focused on the care of acute stroke patients has meant a substantial change in the prognosis of these patients.¹ Several studies have shown that implementing organised systems for stroke care and specific treatment protocols is associated with lower mortality and dependence rates and significantly reduces the need for institutionalisation.²⁻⁴ However, hospital schedules may have an impact on patient prognosis: evidence shows that patients admitted during the weekend undergo fewer diagnostic tests and are less likely to receive reperfusion therapy (ischaemic stroke) or surgery (haemorrhagic stroke).⁵⁻⁸ According to the Canadian Stroke Network, stroke patients admitted during the weekend present higher mortality rates than those admitted during weekdays regardless of stroke severity.⁹ Other studies report that being admitted during the weekend increases the probability of death by 17%.¹⁰

There is controversy regarding whether implementing treatment protocols that standardise care to stroke patients in stroke units (SU) could prevent differences in quality regardless of time of admission, thereby minimising differences in mortality and functional outcomes.^{11,12} Some authors point out that fewer human and diagnostic resources are available during the weekend. In the context of the Spanish healthcare system, this situation may also take place at other moments of the day (work shifts) and the year. In fact, some studies have shown that resources are limited during the night shift, which is associated with higher mortality rates.^{13,14} In light of this situation, we analysed whether progression and functional outcomes of patients vary depending on the work shift or period of the year. To our knowledge, no studies have addressed the differences between admitting stroke patients during the summer holidays and the rest of the year.

We aimed to evaluate whether early outcomes and functional independence at 3 months varied depending on the time of admission to the SU.

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