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ORIGINAL ARTICLE

Implementation of a regional system for the emergency care of acute ischemic stroke: Initial results☆

Miguel Soares-Oliveira[a,b,*], **Fernando Araújo**[c,d], **Grupo de AVC da Administração Regional de Saúde do Norte**

[a] *Delegação Regional Sul, Instituto Nacional de Emergência Médica IP, Lisboa, Portugal*
[b] *Escola Superior de Enfermagem de Lisboa, Lisboa, Portugal*
[c] *Serviço de Imuno-hemoterapia, Centro Hospitalar de São João, EPE, Porto, Portugal*
[d] *Faculdade de Medicina, Universidade do Porto, Porto, Portugal*

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KEYWORDS
Stroke;
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Abstract
Introduction and Aim: Implementing integrated systems for emergency care of patients with acute ischemic stroke helps reduce morbidity and mortality. We describe the process of organizing and implementing a regional system to cover around 3.7 million people and its main initial results.
Methods: We performed a descriptive analysis of the implementation process and a retrospective analysis of the following parameters: number of patients prenotified by the pre-hospital system; number of times thrombolysis was performed; door-to-needle time; and functional assessment three months after stroke.
Results: The implementation process started in November 2005 and ended in December 2009, and included 11 health centers. There were 3574 prenotifications from the prehospital system. Thrombolysis was performed in 1142 patients. The percentage of patients receiving thrombolysis rose during the study period, with a maximum of 16%. Median door-to-needle time was 62 min in 2009. Functional recovery three months after stroke was total or near total in 50% of patients.
Conclusions: The regional system implemented for emergency care of patients with acute ischemic stroke has led to health gains, with progressive improvements in patients' access to thrombolysis, and to greater equity in the health care system, thus helping to reduce mortality from cerebrovascular disease in Portugal. Our results, which are comparable with those of international studies, support the strategy adopted for implementation of this system.

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* Corresponding author.
E-mail address: miguel.soares.oliveira@gmail.com (M. Soares-Oliveira).

PALAVRAS-CHAVE
Acidente vascular cerebral;
Emergência;
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Sistema

Implementação de um sistema regional de resposta emergente ao acidente vascular cerebral: primeiros resultados

Resumo
Introdução e objetivos: A implementação de sistemas integrados de resposta emergente ao doente com acidente vascular cerebral agudo contribuem para a redução da sua morbimortalidade. Descreve-se o processo de implementação de um sistema regional que assegura resposta a cerca de 3,7 milhões de cidadãos e os seus principais resultados iniciais.
Métodos: Realiza-se uma análise descritiva do processo de implementação do sistema regional e uma análise retrospetiva dos parâmetros avaliados. Os parâmetros analisados foram: evolução do número de doentes com suspeita de acidente vascular cerebral orientados pelo sistema de emergência médica pré-hospitalar; número de trombólises realizadas; evolução anual do número de trombólises realizadas; tempo porta-agulha; avaliação funcional aos três meses pós-acidente vascular cerebral.
Resultados: A implementação do sistema regional integrado de resposta emergente ao doente com acidente vascular cerebral agudo iniciou-se a 1 de novembro de 2005 e ficou concluído em dezembro de 2009, com 11 unidades de saúde. Foram orientados pelo sistema de emergência médica pré-hospitalar 3.574 doentes. A trombólise endovenosa foi realizada em 1.142 doentes. A percentagem de doentes submetidos a trombólise aumentou durante o período, com um valor máximo de 16%. A mediana do tempo porta-agulha foi de 62 minutos em 2009. A recuperação funcional aos três meses foi total ou quase total em 50% dos casos.
Conclusões: O sistema regional de resposta emergente ao doente com acidente vascular cerebral agudo implementado na região Norte traduziu-se em ganhos em saúde, com progressivo maior acesso dos doentes a técnicas eficazes de tratamento e uma melhoria progressiva da equidade do sistema, contribuindo para a redução da mortalidade por doença cerebrovascular verificada no país no período em apreço. Os resultados alcançados, que podem ser favoravelmente comparados com outros internacionais, corroboram a estratégia adotada.

Introduction

Morbidity and mortality from stroke continue to be very high.[1–3] The development and implementation of integrated local, regional or national systems to provide emergency care for acute ischemic stroke is essential to improve the prognosis of these patients and is the best way to achieve overall improvements in clinical outcomes. Such systems should include campaigns to raise public awareness of the signs of stroke, emergency triage by telephone, emergency pre-hospital services for rapid initial stabilization and transport, a policy of bypassing health centers without specific facilities for treatment of acute stroke victims, the implementation of protocols for rapid identification of patients with acute stroke during hospital triage, the formation of emergency hospital teams for assessment and treatment of stroke victims, and the establishment of clinical assessment and treatment protocols, and priority routing for access to imaging facilities, laboratory testing, and procedures to restore vascular patency.[2–11]

We describe the process of implementing a regional system to cover around 3.7 million people and the main results of its initial period of operation.

Methods

The authors present a descriptive analysis of the process of implementing a fast-track regional system to provide emergency care for stroke patients (''*Via Verde do AVC*'') both outside and inside the hospital, which began operating in November 2005. We also present a retrospective analysis of the following parameters, assessed up to 31 December 2009: number of patients prenotified by the prehospital system; total number of patients with stroke and number with ischemic stroke treated in each health center; the number of times thrombolysis was performed each year; door-to-needle time; and functional assessment three months after stroke, using the Rankin scale.

Health centers that fulfilled all of the following requirements were included in the system: the pre-hospital emergency system was aware that the center was able to receive and treat acute ischemic stroke patients, and had a direct telephone link to the emergency medical team of the *Via Verde* fast-track system; members of the pre-hospital emergency response team had had specific training, including in recognizing the signs of stroke, deciding whether the patient should be handled by the *Via Verde*, and awareness of the association between time since stroke onset and