

Does Perceiving Stroke as Severe Equals Better Prognosis?

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Abstract

Background: Stroke is a leading cause of death and disability worldwide and it is increasing in developing countries. Treatment for stroke is applied in the first 4.5 hours after the initiation of symptoms. Perceiving stroke as a severe illness could be implied in the early arrival and prognosis of stroke patients.

Objective: The aim of our study was to assess the perception of stroke and to evaluate their prognosis.

Methods: We applied 109 standardized questionnaires by phone call to patients who were admitted to our Stroke Care Unit with a diagnosis of acute ischemic stroke during the period January 2014 - January 2015.

Results: Mean age was 60 ± 13 , 60 were men and 58 cursed only primary school. Prevalent stroke risk factors were sedentarism (71.4%), hypertension (67.9%) and diabetes (44%). We compared the results between severe and non-severe perception and found a statistical difference in hospital arrival ($p=0.04$) and hospital stay days ($p=0.04$). Our study demonstrates the importance of recognizing stroke symptoms as a severe illness.

Conclusion: Perception of stroke arises as an additional point to emphasize during educational campaigns, leading this to a better timing in stroke patients and, therefore, an increased possibility to receive thrombolysis.

Introduction

Stroke is characterized by a sudden interruption of blood flow in the brain, either of a hemorrhagic or ischemic origin. It represents a leading cause of death and disability worldwide, where more than 80% of ischemic stroke occur in developing countries, becoming a serious public health and economic problem [1,2]. In Mexico, stroke incidence is growing due to the aging of general population and the increase in cardiovascular risk factors [3,4]. When stroke is diagnosed, there is a reduce time to apply thrombolytic therapy which consists of 4.5 hours [5]. The principal reason for non-use of the thrombolytic therapy is a delayed hospital arrival and several factors have been associated with this, such as stroke knowledge and perception of stroke symptoms [6,7]. There are few reports the describe the characteristics and the prognosis of subjects who perceived stroke as a severe illness [8].

The aim of our study was to assess the perception of stroke symptoms and to evaluate the prognosis of these patients.

Methods

A retrospective study with standardized questionnaires by phone calls was applied to patients who were hospitalized with the diagnosis of acute ischemic stroke confirmed by neuroimaging (Computed Tomography or Magnetic Resonance Imaging) during the period of January 2014 to January 2015 in our Stroke Care Unit at the University Hospital of the Universidad Autónoma de Nuevo León. The standardized questionnaire included sociodemographic variables, such as age, education, work status, number of persons living with the subject; history of stroke risk factors (diabetes, hypertension, dyslipidemia, auricular fibrillation and previous stroke). We also interrogated the perception of severity of the stroke symptoms with a yes/no question asking if the symptoms were perceived as life threatening, as used in previous studies [9,10]. Stroke symptoms were also registered.

Questionnaires that were completely and correctly filled out and whose respondents were ≥ 18 years old were included. A descriptive analysis of the collected variables was done to obtain an overview of our study population. Characteristics of subjects who perceived stroke as severe *versus* those who perceived it as non-severe were compared.

Categorical variables were analyzed using X2 and Fisher's exact test; continuous non-parametric variables using the Mann-Whitney U Test. Results are presented as percentages, means \pm Standard Deviation (SD) or as medians with their corresponding range as indicated. All percentages were rounded up to 1 decimal. P values $< .05$ were considered statistically significant.

Table 1: Characteristics of severe and non-severe perception groups.

Characteristics	Severe perception (n=60) No. (%)	Non-severe perception (n=48) No. (%)	OR, 95% CI	P
Age (mean±SD)	63.4±13.4	57.2±13.6	-	0.017 *
Male	34 (56.7)	25 (52.1)	-	0.63
Living alone	5 (8.3)	9 (18.8)	-	0.1
Sedentarism	42 (70)	35 (72.9)	-	0.739
Hypertension	38 (63.3)	35 (72.9)	-	0.42
Diabetes mellitus	29 (48.3)	18 (37.5)	-	0.259
Previous stroke	8 (13)	4 (8.3)	-	0.411
Use of EMS	19 (31.7)	10 (38.5)	-	0.963
Arrival <3h	43 (71.1)	24 (50)	2.5 (1.3 – 5.6)	0.021 *
NIHSS ER	10.1±7.1	10±5.2	-	0.688
Hospital Stay Days (mean±SD)	7.75±6.2	5.2±5.7	-	0.010 *

SD: Standard Deviation, NIHSS: National Institute of Health Stroke Scale, ER: Emergency Room.

Table 2: Stroke symptoms of severe and non-severe perception groups.

Stroke symptom	Severe perception (n=60) No. (%)	Non-severe perception (n=48) No. (%)	P
Upper limb weakness	53 (88.3)	44 (91.7)	0.56
Lower limb weakness	52 (86.7)	40 (83.3)	0.62
Facial palsy	34 (56.7)	31 (64.6)	0.4
Aphasia	22 (36.7)	15 (31.3)	0.55
Dysarthria	21 (35)	620 (41.7)	0.47
Altered mental status	17 (28.3)	14 (29.2)	0.92

Results

109 subjects were included. Mean age in our study population was 60.4 ± 13.9, 60 (55%) were men, 61 (56%) were married, 64 (58.7%) had coursed only primary school, 39 (35.8%) worked before being hospitalized and 14 (12.8%) lived alone. Most prevalent stroke risk factors were sedentarism (71.4%), hypertension (67.9%) and diabetes (44%), only 12 (11%) had a previous stroke. 104 (95.4%) had a previous Rankin Scale of 0 and 67 (61.5%) arrived within the first 3 hours after the onset of symptoms. The most prevalent stroke symptoms in both groups were upper (89%) and lower (84%) limb weakness, facial palsy (60%) and dysarthria (38.5%).

From our study population, 60 (55%) subjects perceived stroke as severe and 48 (45%) as non-severe. Sociodemographic variables and intrahospital information of each group are described in table 1.

After comparing the characteristics of severe *versus* non-severe perception we found a statistical difference in hospital time arrival ($p=0.04$) and hospital stay days ($p=0.04$). The clinical presentation of both groups was similar and had no statistical difference, most common stroke symptoms are shown in table 2.

Discussion

Our study demonstrated that perceiving stroke as a severe illness is related to an earlier hospital arrival. This is important because perception of stroke has been previously related to stroke knowledge,

and thus, a better decision-making when detecting stroke symptoms [11]. Even though, age had a statistical significant value, this is most likely because of the large interval of the variable.

A previous study showed that stroke symptoms are perceived as something severe and related with death [9], this finding was associated with the early hospital arrival in our study. Also, Serem we et al [10] found similar results as in our study, with a 50% of their study population perceiving stroke as severe and related with a shorter hospital arrival time, agreeing that perceiving stroke as a severe illness plays an important role in arriving within the first 3 hours.

Activating Emergency Medical Services (EMS) is an important factor when detecting a stroke. In our population almost one third of those who perceived stroke as severe activated at first instance the EMS, agreeing with previous studies [8,12]. Hospital arrival was shorter in the patients who perceived stroke as severe, we did not ask if previous knowledge of stroke had been received but there was no difference in those patients who had a family history of stroke. Even though, hospital stay was longer in the severe group, it could be explained because of the stroke severity.

A previous study performed in 2009 showed that knowledge in our city is poor [13], this motivated us to participate in World Stroke Campaign during the World Stroke Day (WSD). Since 2010, annually educational campaigns during the WSD are realized in our Neurology Department. In these campaigns recognition of stroke risk factors and warning signs are promoted but the importance of perceiving stroke as a life-threatening illness has not been mentioned. Therefore, perceiving stroke as a severe illness should be included in any awareness and educational stroke campaign.

Our study had some limitations. Questionnaires were applied by phone call one to six months after egression and this could lead to a different perception of stroke.

In conclusion, recognizing and perceiving stroke as a severe illness arises as an additional point to emphasize during educational campaigns, leading this to a better timing in stroke patients and, therefore, an increased possibility to receive thrombolysis.

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