



## Original Article

# Risk Factors Associated with Recurrent Strokes in Young and Elderly Patients: A Hospital-based Study<sup>☆,☆☆</sup>



Guang-Rong Fu<sup>1\*†</sup>, Wei-Qiang Yuan<sup>1†</sup>, Wan-Liang Du<sup>2</sup>, Zhong-Hua Yang<sup>2</sup>, Na Fu<sup>3</sup>, Hua-Guang Zheng<sup>2</sup>, Zi-Xiao Li<sup>2</sup>, Yu-Ming Huang<sup>4</sup>, Yu-Mmei Zhang<sup>2</sup>, Guang-Zheng Dai<sup>5</sup>, Hua-Bing Wang<sup>2</sup>, Jian-Mei Li<sup>1</sup>, Jing-Dong Yi<sup>1</sup>, Qing-Biao Yang<sup>1</sup>, Hong-Jun Tian<sup>1</sup>, Li-Nan He<sup>1</sup>, Geng-Yu Li<sup>1</sup>, Jia-Li Zhang<sup>1</sup>, Li-Mei Yang<sup>1</sup>, Yan Gao<sup>1</sup>, Zi-Wei Fu<sup>1</sup>

<sup>1</sup> Department of Neurology, People's of the Fifth Hospital of Hengshui City, Hengshui, <sup>2</sup> Department of Neurology, Beijing Tiantan Hospital, Beijing,

<sup>3</sup> Department of Digestion, The Third Hospital of Hebei Medical University, Shijiazhuang, <sup>4</sup> Department of Neurology, Beijing Ditan Hospital, Beijing,

<sup>5</sup> Fudan University, Shanghai, China

## ARTICLE INFO

## Article history:

Received 29 August 2014

Received in revised form

16 January 2015

Accepted 22 February 2015

Available online 30 May 2015

## Keywords:

myocardial infarction,  
recurrent stroke,  
risk factors of stroke

## SUMMARY

**Background:** Recurrent stroke is often devastating, and can cause severe disability or death. Risk factors associated with recurrent strokes unrelated to atrial fibrillation have been well identified; however, it remains to be further elucidated whether the risk factors for recurrent stroke are the same in young as in older patients.

**Methods:** Data from 1017 stroke patients unrelated to atrial fibrillation were retrospectively reviewed. Risk factors analyzed included sex, smoking history, previous history of ischemic stroke or transient ischemic attack, hypertension, diabetes mellitus, coronary atherosclerotic heart disease, and previous myocardial infarction. All patients were followed up via telephone 1 year after their initial strokes. Logistic regression was used to assess the associations between the various factors and risk of recurrent stroke events.

**Results:** Predictive independent risk factors of recurrent stroke in older men included previous history of myocardial infarction [odds ratio (OR), 6.761; 95% confidence interval (CI), 1.030–44.371], ischemic stroke or transient ischemic attack (OR, 2.496; 95% CI, 1.567–3.976), diabetes mellitus (OR, 1.986; 95% CI, 1.223–3.227), and coronary atherosclerotic disease (OR, 1.733; 95% CI, 1.010–2.974). In young men, hypertension (OR, 1.709; 95% CI, 1.104–2.645), coronary atherosclerotic heart disease (OR, 1.812; 95% CI, 1.129–2.911), and previous history of ischemic stroke or transient ischemic attack (OR, 2.317; 95% CI, 1.580–3.397) were independent risk factors of recurrent strokes.

**Conclusion:** The predictive independent risk factors of recurrent stroke differ between young and older stroke patients. Our findings may help guide the prevention of recurrent strokes.

Copyright © 2015, Taiwan Society of Geriatric Emergency & Critical Care Medicine. Published by Elsevier Taiwan LLC. All rights reserved.

\* All contributing authors come from China.

☆☆ Conflicts of interest: All contributing authors declare that they have no conflicts of interest.

\* Correspondence to: Guang-Rong Fu, Department of Neurology, People's of the Fifth Hospital of Hengshui City, Number 1638, Sheng-Li West Road, Hengshui City 053000, China.

E-mail address: [ffggyy6002@sina.com](mailto:ffggyy6002@sina.com) (G.-R. Fu).

† Guang-Rong Fu and Wei-Qiang Yuan are co-first authors.

## 1. Introduction

The rate of recurrent ischemic stroke (IS) has been reported to be approximately 12% during the 1<sup>st</sup> year after the initial stroke<sup>1</sup>. However, this rate is higher in Chinese stroke patients than that in Western populations<sup>2</sup>, and the World Health Organization MONICA project reported that the rate of recurrent stroke was around 27%<sup>3</sup>. Identification of stroke patients at high risk of recurrent stroke is critically important when treating stroke patients in a hospital or clinic<sup>4</sup>. Although the predictors for stroke recurrence have been well studied, the risk factors of stroke recurrence in young patients

may not be the same as those in older patients and remain to be explored<sup>2,5–9</sup>. With this in mind, the aim of this study was to examine the risk factors for stroke recurrence in stroke patients unrelated to atrial fibrillation who were either younger or older than 65 years of age.

## 2. Patients and methods

This was a retrospective study approved by the ethics committee of People's of the Fifth Hospital of Hengshui, Hengshui, China. Data of all patients diagnosed with acute IS from January 2009 to January 2012 were reviewed. The following inclusion criteria were used to select the patients: acute IS within 7 days and patient age >18 years. Patients with atrial fibrillation, any intracranial hemorrhage, or venous infarctions were excluded. Subsequently, the patients were divided into two groups based on their age: < 65 years versus ≥ 65 years. Data on sex, smoking history, previous history of IS or transient ischemic attack (TIA), hypertension (HTN), diabetes mellitus (DM), coronary atherosclerotic heart disease (CHD), previous myocardial infarction (MI), and smoking habits of these patients were collected<sup>2,6–9</sup>.

In this study, stroke was defined according to the criteria established by the World Health Organization<sup>10</sup>. A recurrent stroke was defined as a stroke with clinical evidence of the sudden onset of a new focal neurological deficit with no apparent cause other than that of vascular origin (i.e., the deficit could not be ascribed to a concurrent acute illness, epileptic seizure, or toxic effect) occurring at any time after the index stroke<sup>1</sup>, or with clinical evidence of the sudden onset of an exacerbation of a previous focal neurological deficit with no apparent cause other than that of vascular origin occurring > 21 days after the index stroke<sup>2</sup>. All patients underwent noncontrast computed tomography on admission to exclude intracerebral hemorrhage. The data bank included demographic information (age at the time of stroke, sex, smoking history), medical history (history of HTN, DM, ischemic heart disease, stroke, or MI), and information from the physical examination on admission and follow-ups. In this study, HTN was defined as a systolic blood pressure of ≥ 140 mmHg or a diastolic blood pressure of ≥ 90 mmHg persisting over 7 days after the acute event, a self-reported history of HTN, or use of an antihypertensive medication<sup>11,12</sup>; DM was defined as a history of diabetes confirmed by a patient's medical records, or use of insulin or oral hypoglycemic agents<sup>13</sup>; previous stroke was defined as a history of symptomatic IS > 24 hours earlier; smoking history was defined as smoking at least 10 cigarettes per day for ≥ 20 years, or at least 20 cigarettes per day for ≥ 10 years; and ischemic heart disease was defined as a history of coronary

**Table 2**  
Significant risk factors for stroke recurrence in the younger age group.

Variable	Coefficient	Standard error	Hazard ratio (95% CI)	<i>p</i>
Hypertension	0.536	0.223	1.709 (1.104–2.645)	0.016
CHD	0.595	0.242	1.812 (1.129–2.911)	0.014
IS or TIA	0.840	0.195	2.317 (1.580–3.397)	<0.001

CHD = coronary atherosclerotic heart disease; CI = confidence interval; IS or TIA = previous history of ischemic stroke or transient ischemic attack.

artery disease, coronary artery bypass grafting, or percutaneous coronary intervention.

All medical records were studied by one physician, who reviewed each patient's presenting symptoms, clinical course, laboratory results, and results of other diagnostic tests. All follow-up visits were conducted by a trained physician via telephone interviews. The same questionnaires were used for every patient. The patients were asked regarding the following three items: (1) occurrence of another stroke or TIA; (2) medication compliance; and (3) current functional level of daily living.

Statistical analysis was performed using SPSS version 15.5 software (SPSS Inc., Chicago, IL, USA). Data are presented as mean ± standard deviation. Univariate analysis was conducted by using the Chi-square test for categorical data and the *t* test for measurement data. Two-tailed *p* values < 0.05 were considered statistically significant. Multivariate analysis was conducted by using stepwise logistic regression and included all predictors found to be significantly associated with stroke recurrence.

## 3. Results

From January 2009 to January 2012, 1062 patients with IS were admitted to our hospital. A total of 1017 patients (mean age, 63.26 ± 0.61 years; range, 31–87 years) were included in this study based on the inclusion and exclusion criteria. The demographic characteristics of all patients are summarized in Table 1. Of the 1017 patients, 601 were aged < 65 years (mean age, 55.83 ± 0.51 years; range, 20–64 years) and 416 were aged ≥ 65 years (mean age, 75.8 ± 7.1 years; range, 66–92 years). Table 1 summarizes the risk factors for all enrolled patients.

After being admitted to the hospital, 915 (90%) patients were given aspirin, five (0.5%) received clopidogrel, two (0.2%) were on dual antiplatelet therapy, 95 (9%) took Chinese traditional medicine, 157 (15%) were given antihypertensive therapy, 474 (47%) took statins, 132 (13%) were on oral hypoglycemic medications, and two (0.2%) were regularly administered subcutaneous insulin injections.

**Table 1**  
Risk factors for stroke recurrence in the two age groups.

	Young patients (< 65 y)				Older patients (≥ 65 y)			
	Recurrent ( <i>n</i> = 143)	Nonrecurrent ( <i>n</i> = 458)	$\chi^2$	<i>p</i>	Recurrent ( <i>n</i> = 115)	Nonrecurrent ( <i>n</i> = 301)	$\chi^2$	<i>p</i>
Sex, male	85 (59.44)	303 (66.16)	2.149	0.143	66 (57.39)	150 (49.83)	1.904	0.168
DM	38 (26.57)	104 (22.71)	0.903	0.342	31 (26.96)	60 (19.93)	2.401	0.121
HTN	111 (77.62)	301 (65.72)	7.161	0.007	87 (75.65)	195 (64.78)	4.501	0.034*
MI	3 (2.10)	3 (0.66)	2.295	0.130	3 (2.61)	1 (0.33)	4.528	0.033*
CHD	35 (24.48)	60 (13.10)	10.595	0.001	28 (24.35)	65 (21.60)	0.363	0.547
Smoking history	34 (23.78)	121 (26.42)	0.398	0.528	21 (18.26)	50 (16.21)	0.160	0.689
IS or TIA	77 (53.85)	132 (28.82)	30.008	0.001	58 (50.43)	116 (38.54)	4.840	0.028*

Data are presented as *n* (%).

\*Significant difference, *p* < 0.05.

CHD = coronary atherosclerotic heart disease; DM = diabetes mellitus; HTN = hypertension; IS or TIA = previous history of ischemic stroke or transient ischemic attack; MI = previous history of myocardial infarction.

Download English Version:

<https://daneshyari.com/en/article/3325055>

Download Persian Version:

<https://daneshyari.com/article/3325055>

[Daneshyari.com](https://daneshyari.com)