

Maximum walking speed at discharge could be a prognostic factor for vascular events in patients with mild stroke: A cohort study

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Abstract

Background: A previous study reported that daily physical activity is one of the independent predictors of vascular events after mild ischemic stroke. This study aimed to identify the prognostic value of physical activity-related factors as well as known vascular risk factors for vascular events in mild ischemic stroke.

Methods: This was a single-center prospective cohort study. Patients with acute ischemic stroke and transient ischemic attack with modified Rankin scale scores ranging from 0 to 2 were consecutively enrolled in this study. Enrolled patients were followed up for composite vascular events as primary outcomes up to three years post discharge. Primary outcomes included stroke and cardiovascular death, hospitalization due to stroke or transient ischemic attack recurrence, cardiovascular disease, and peripheral artery disease. During hospitalization, known vascular risk factors such as age, sex, previous history of vascular events, body mass index,

non-dominant mid-upper arm circumference, modified Rankin scale at discharge, stroke subtype, white matter lesions, blood pressure, abnormal ankle-brachial index, comorbidities, laboratory data, prehospital lifestyles and medications. Moreover, at the time of discharge, physical activity-related factors such as maximum walking speed, handgrip strength, knee extensor isometric muscle strength, anxiety, and depression were assessed as potential predictors. Univariate and multivariate Cox proportional hazards analyses were used to identify independent risk factors for composite vascular events. The cumulative events rate of the patients was evaluated using the Kaplan-Meier method.

Results: A total of 255 patients (175 men, median age 70.0 years) were enrolled in this study. The Kaplan-Meier estimates of cumulative risk of composite vascular events at one-, two-, and three-years were 9.6%, 14.4%, and 15.2%, respectively. After multivariate analysis, cerebral white matter lesions of periventricular hyperintensity (grade=3; hazard ratio: 2.904; 95% confidence interval: 1.160 to 7.266; p=0.023) and maximum walking speed (<1.45m/s; hazard ratio: 2.232; 95% confidence interval: 1.010 to 4.933; p=0.047) were identified as significant independent predictors of composite vascular events.

Conclusions: The results of this study indicate that walking speed could be an

independent prognostic factor for composite vascular events in mild ischemic stroke.

Walking speed at discharge may stratify the target group for intensive risk reduction after discharge.

退院時最大歩行速度は軽症脳梗塞後の血管イベント予測因子となる：コホート研究

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要旨

【背景】軽症脳梗塞において身体活動量は血管イベントの独立した予測因子となることが報告されている。本研究では身体活動量関連因子と血管イベントとの関連を明らかにすることを目的とした。

【方法】研究デザインは、単一施設、前向きコホート研究を用いた。対象は急性期病院入院の脳梗塞、一過性脳虚血発作患者、退院時 modified Rankin Scale 0～2 のものとした。入院中に既存の再発予測因子（年齢、性別、血管疾患既往、Body Mass Index、上腕中央周囲長、退院時 modified Rankin Scale、脳梗塞病型、大脳白質病変、血圧、足関節／上腕血圧比、合併症、血液生化学検査、入院前生活習慣、投薬状況）と、退院時に身体活動量関連因子（最大歩行速度、握力、膝伸展筋力、不安・抑うつ）の調査を行い、その後最大3年間血管イベント（脳血管疾患、心血管疾患、末梢動脈疾患による死亡、再入院）の発生を追跡調査し、予測因子との関連を解析した。

【結果】255名（男性175名、年齢中央値70歳）を対象とした。Kaplan-Meier法による血管イベント発生率は1年9.6%、2年14.4%、3年15.2%であった。コックス比例ハザード解析の結果、側脳室周囲白質病変（grade=3; hazard ratio: 2.904; 95%

confidence interval: 1.160 to 7.266; p=0.023)、最大歩行速度 (<1.45m/s; hazard ratio: 2.232; 95% confidence interval: 1.010 to 4.933; p=0.047) が独立した血管イベント予測因子として抽出された。

【結論】 本研究結果より、軽症脳梗塞において退院時の最大歩行速度が独立した血管イベント予測因子となることが示された。歩行速度がリスク症例の同定に寄与し、リスク軽減を目的とした介入に重要な評価指標になることが示唆された。