

Simple Indicator to Judge the Independence Level Required in Dressing in a Hospital Ward for Patients with Stroke

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Background: This study aimed to create a simple and objective indicator for use by inexperienced nurses and family members of patients to judge the assistance level required for dressing in a hospital, while encouraging independence in activities of daily living among inpatients with stroke using the Berg balance scale. *Methods:* We retrospectively analyzed the data of 108 hospitalized patients with first stroke in a rehabilitation hospital ward. Receiver operating characteristic curves were used to identify the Berg balance scale item with the highest discriminatory power against independence level in dressing. *Results:* For comparisons between the independence and supervision or less level groups, the area under the curve of the sum score of “Retrieving object from floor” and “Standing with one foot in front” was .954, and the calculated cutoff value was 6/5 (sensitivity, 86%; specificity, 94%). For comparisons between the supervision or higher level and dependence groups, the area under the curve of the score of “Retrieving object from floor” was .930, and the calculated cutoff value was 2/1 (sensitivity, 93%; specificity, 81%). *Conclusions:* Our results suggested that Berg balance scale items are individually and in combination simple and useful indicators to judge independence level in dressing in a hospital ward for patients with stroke. These indices appear to be appropriate for individuals who are unfamiliar with Berg balance scale, such as inexperienced nurses and family members of patients. **Key Words:** Stroke—balance function—dressing—cutoff values.

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Introduction

Independence in dressing is considered necessary for maintaining dignity, self-esteem, and a sense of accomplishment.¹ However, dressing is a difficult item among the activities of daily living (ADL) for stroke patients.^{2,3} In addition, previous reports⁴ have indicated that dressing is an ADL in which a gap between the level of potential capacity, such as during rehabilitation training, and actual performance, such as in a hospital ward, often occurs. In other words, stroke patients may often be provided excessive care in dressing on a day-to-day basis in a hospital ward. Because this excessive care induces dependency on nurses and the subsequent development of disuse syndrome in patients, it may become a factor that inhibits early independence and discharge from the hospital. Therefore, to achieve independence to resume dressing in patients with stroke, it is important to determine an appropriate ADL assistance level that

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Received February 8, 2016; revision received March 11, 2016; accepted April 3, 2016.

Grant support: The Japan Society for the Promotion of Science Grants-in-Aid for Scientific Research (Grant No. 26893250).

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1052-3057/\$ - see front matter

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<http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2016.04.003>

is not excessive but ensures patient safety in a hospital ward.

It is assumed that the level of dressing care is often judged by nurses and rehabilitation therapists according to ADL observation and clinical experience. Nonetheless, in recent years, some objective and quantitative indices have been reported to appropriately judge the level of care in the hospital ward. For example, Fujita et al.⁵ reported that when a patient with stroke had more than 44 and 32 points on the Berg balance scale (BBS),⁶ which is balance assessment, while judging whether supervision or setup and assistance is required in dressing in a hospital ward, respectively, it is a judgment index. Although this study is useful for inexperienced nurses, therapists, and family to judge the level of care necessary for ADL dressing, BBS is intended for use by experienced therapists and is easy for use by inexperienced individuals because it has 14 tasks and requires approximately 20 minutes to complete. Therefore, a simplified objective quantitative indicator, with the attributes described above, is required for use by inexperienced individuals. Hence, this study aimed to create a simple indicator to judge the independence level required in dressing in a hospital ward among patients with stroke. In particular, the indices of this study were correlated to appropriate BBS items because it has been reported that BBS total score has a very high discrimination power to judge the independence level in dressing among patients with stroke.⁵ Because the previous study⁵ had analyzed only the total BBS score, we focused on each item of the BBS.

Methods

Participants

Participants were 108 inpatients with stroke who were admitted and discharged from a rehabilitation hospital ward (Table 1). The inclusion criteria were first episode of cerebral hemorrhage or infarction, unilateral supratentorial hemispheric lesion, and no missing records of BBS and FIM[®] instrument data⁷ (mentioned below). All patients underwent a standard stroke rehabilitation program conducted by occupational, physical, and speech therapists, as required. The therapies were customized and included ADL, arm activities, balance and gait, and speech and cognitive training. Patients received therapy for 7 days/week, 2-3 hours/day on weekdays and Saturdays, and for 1 hour on Sundays and national holidays. The ethical review boards of the Northern Fukushima Medical Center (No. 56) and Tohoku Fukushi University (RS141201) approved this study.

Data Collection and Procedures

This study was a retrospective secondary analysis of an existing database. We collected and analyzed data from medical records of BBS and FIM[®] instrument at dis-

Table 1. Stroke-related characteristics of study subjects

	Mean ± SD or %
Age (years)	71.9 ± 13.6
Women (%)	40.7
Stroke type (%)	Hemorrhage: 25.0 Infarction: 75.0
Right side hemiparesis (%)	46.3
Time post stroke at discharge (days)	96.0 ± 37.5
Length of stay in hospital (days)	60.5 ± 32.2
Motor function of affected side limbs	
SIAS knee-mouth test (points)	2.9 ± 1.8
SIAS finger function test (points)	2.6 ± 1.8
SIAS hip-flexion test (points)	3.6 ± 1.6
SIAS knee-extension test (points)	3.5 ± 1.6
SIAS foot-pat test (points)	3.1 ± 2.0
Sensory function of affected side limbs	
SIAS upper limb light touch (points)	2.3 ± .9*
SIAS lower limb light touch (points)	2.2 ± .9*
SIAS upper limb position sense (points)	2.2 ± 1.0†
SIAS lower limb position sense (points)	2.1 ± 1.1†
Activities of daily living	
FIM (points)	86.4 ± 31.8
FIM motor item (points)	59.6 ± 24.9
FIM cognitive item (points)	26.8 ± 8.3

Abbreviations: SD, standard deviation; SIAS, stroke impairment assessment set.

*Except 4 patients who could not conduct detailed examination.

†Except 6 patients who could not conduct detailed examination.

charge. BBS (score range, 0-56) was developed as a measure of the balance that is appropriate for elderly individuals according to a scale of 14 movements that are common in everyday life.⁶ Each of the 14 items was scored on a 5-point scale ranging from 0 (unable to perform the task) to 4 (easily able to perform the task). This test has been demonstrated to have strong internal consistency and high inter- and intrarater reliability in patients with stroke.^{8,9} In this study, BBS was determined by physical therapists in charge of each patient. The FIM[®] instrument assesses the independence level in ADL. The FIM[®] instrument evaluates 18 activities in the motor and cognitive domains, and each item is scored using a 7-point scale, where 1 indicates complete dependence, 5 indicates supervision, and 7 indicates complete independence. The FIM[®] instrument's reliability has been confirmed in patients with stroke.^{10,11} FIM[®] instrument's score was determined by 2 nurses in charge of each patient after consultation. In this study, the lower score on the FIM[®] instrument for dressing the upper and lower bodies was used to assess the independence level in dressing.

A total of 108 patients with stroke were divided into 2 groups according to the FIM[®] instrument score for dressing: an independence group with a score of greater than

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