

Conference Paper

Stroke Recurrence Based on Stroke Prognosis Instrument II (SPI-II) and the Attackumber of Stroke

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Abstract

Background: Stroke is increasing every year so the risk of recurrent stroke is also increasing, the more risk factors they have, the higher the likelihood of recurring strokes. if a recurring attack occurs, the condition can be more severe than the first attack, generally occurs in patients who lack self-control and low level of awareness.

Objectives: This study aimed to identify the risk factors of stroke recurrence base on SPI-II. **Methods:** This study was a cross-sectional descriptive study with 274 strokes patients as samples. The samples were recruited from one of general hospital specialize in neurology disorders in Jakarta, Indonesia. **Results:**The result of this study indicated a significant difference in risk factor score between primary attack group and recurrence stroke (p -value<0.05). Simple linear regression showed that incidence of stroke attack has a positive correlation to the risk of stroke recurrent events ($B=3.484$). **Conclusion:** The attacks number of strokes has a positive correlation with risk of recurrence stroke. Nurses must be aware when doing the discharge planning for recurrent stroke patient. Monitoring and controlling the risk factors on community setting is an important thing to have known by nurses.

Keywords: Stroke, recurrence stroke, SPI-II

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Received: 22 September 2019

Accepted: 4 October 2019

Published: 10 October 2019

Publishing services provided by
Knowledge E

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Selection and Peer-review under the responsibility of the ICHT 2019 Conference Committee.

1. Introduction

Stroke described as a neurological change caused by blood flow disturbance causing a decrease of blood supply in brain parts [1]. According to stated that stroke is a cerebrovascular disorder caused by decreased of blood supply to the parts of the brain by rupture of blood vessels or the blockage due to clots in blood vessels in the brain so oxygen and nutrient supply decreases and causes damage to brain tissue. Stroke can be divided into two, namely *stroke infarction* (non-hemorrhagic) and hemorrhagic stroke. [2] *Troke infarction* occurs because blood flow to the brain is stopped due to atherosclerotic or blood clots that have blocked a blood vessel through the process of atherosclerosis. In hemorrhagic stroke, the blood vessels burst so that blood flow

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becomes abnormal and the blood that comes out seeps into an area of the brain and damages it.

Stroke is a big problem that is faced by almost all over the world, both in developed and developing countries. According to [3] stroke is the second leading cause of death in the world, whereas, in the USA (*United States of America*), stroke is the third leading cause of death after cardiovascular disease and cancer. About 795,000 people in the USA experience strokes every year, 185,000 of them are *recurrent strokes*. In Asia, especially Indonesia, it is estimated that 500 thousand people experience strokes every year, 2.5% of them die and the rest experience mild to severe disability [4]. Based on the results of the Basic Health Research (Riskesdas) RI (Republic of Indonesia) in 2018, the prevalence of stroke in Indonesia has increased when compared with Riskesdas 2013 which is 7.0% based on diagnosis by health professionals and 12.1% based on diagnosis by health professionals and accompanied by symptoms). The data is in line with the prevalence of stroke in DKI Jakarta in 2018 showing an increase from 2013 as much as 9.7% diagnoses of health workers and 14.6% diagnoses of health workers with symptoms.

The stroke phenomenon still increasing every year, especially in developing countries like Indonesia. Stroke can have an impact on biological, psychological and economic problems. The impact on severe cases can result in death, while in cases that do not die can occur several impacts such as dementia, depression and recurrent stroke (*Recurrent Stroke*). Recurrent stroke is a functional brain disorder that occurs suddenly caused by circulatory disorders that occur after the first stroke, repeated stroke can occur if the risk factors are not addressed, and can occur in the same place or also in other places. Can occur many times and of course will increasingly leave damage to brain tissue every time a repeat stroke occurs [5]. Stroke replication depends on the type of initial stroke, age, related diseases, and risk factors, as well as the period of stroke occurrence within 6 to 12 months after a stroke, 1 in 10 people can have a second stroke [6].

According to [7] after the first attack, stroke can sometimes occur again with a more severe condition due to wider bleeding in the brain so that the condition can be more severe than the first attack, generally occurs in patients who lack self-control and level of consciousness low. According to [8] found that 25% of stroke patients have at least one episode of recurrent stroke. The incidence of recurrent strokes shows that 2-22% occur in the first year and 10-53% in the 5 years after the first stroke [9]. The phenomenon of stroke events in Indonesia is increasing every year, therefore the higher the risk of recurrent strokes because patients who have had a stroke have a risk of recurrent stroke. Patients with recurrent strokes have a more severe disability than the first and a

higher death rate, but until now there has been no effective and efficient treatment for the problem of stroke or recurrent stroke because of its multicausal nature due to many factors like age, access to health facilities, and any other factors. This study aimed to identify risk factors of recurrence stroke using SP-II as guidance.

2. Methods

2.1. Study design

This study was a cross-sectional descriptive study with 274 stroke patients at outpatients unit in National Brain Hospital as samples.

2.2. Sample

This study conducted at National Barin Center hospital with 274 strokes patients as samples. The inclusion criteria in this study were 1) strokepatients 2) didn't have cognitive disorder. Independent variables included age, sex, contraception, diagnosis, hypertension, cardiovascular disorders, arrhythmia, hypercholesterolemia, obesity, smoking, alcohol consumption, diabetes mellitus, physical activity, self-efficacy, NIHSS, and recurrent stroke as dependent variable.

2.3. Instrument

This study used questionnaires and checklist form to described the variables. The questionnaires used in this study was Stroke Prognosis Instrument II (SPI-II) and form to describe the characteristics of respondents. This study starts with making doing paperwork for permission and ethical clearance STIkep PPNI Jabar and National Brain Hospital. All of the variables got analyzed independently, bivariate analysis used Chi Square, and multifactorial analysis used binary regression test.

2.4. Data collection procedure

This study conducted in May-June 2019 at National Brain Center Hospital Jakarta-Indonesia.

2.5. Data analysis

The data analysis in this study used One Way ANOVA and Linear Regression Test.

3. Results

TABLE 1: Risk Factors of Recurrence Stroke Based on SPI-II.

Variable		n	%
Times of Attack	First	165	60.2
	Second	88	32.1
	Third / over	21	7.7
Cardio-vascular Disorders	No	235	85.2
	Yes	39	14.2
Diabetes Mellitus	No	148	54.0
	Yes	126	46.0
Recurrence Stroke/TIA	No	165	60.2
	Yes	109	39.8
Age	<70	248	90.5
	> 70	26	9.5
Diagnosis	No	43	15.7
	Yes	231	84.3
Hypertension	No	140	51.1
	Yes	134	48.9
ECG	No	242	88.3
	Yes	32	11.7
Hypercholesterolemia	Low	45	16.4
	Medium	134	48.9
	High	95	34.7
Total		274	100

Table 1 showed that the respondents who experienced the first attack were 165 (60.2%), the second was 88 (32.1%), the attacks were more than 2 times by 21 (7.7%), the respondent's cardiovascular disorders showed that most respondents did not have risk factors for recurrent strokes of 235 (85.2%), diabetes mellitus was found to be more than half 148 (54.0%) respondents had no factors. In line with the attack, it was found that more than half of the respondents did not have a risk factor of 165 (60.2%), the age of most was over 70 years, the diagnosis showed most of the risk factors were 231 (84.3%), hypertension was more than half does not have a risk factor of 140 (51.1%), ECG shows that there is a large majority of no risk factors for recurring stroke and the total

results for the risk of recurring stroke are mostly in the medium category (134) (134.9%), high 95 (34.7%) and low 45 (16.4%).

From analysis used one way ANOVA, found that there was a significant difference in risk factor score between primary attack group and recurrence stroke with p -value < 0.05 . Simple linear regression showed that incidence of stroke attack has a positive correlation to the risk of stroke recurrent events ($B=3.484$). It's mean that with a higher incidence of stroke attack will make that person will more risk getting a recurrence stroke.

4. Discussion

In Indonesia, the incidence of stroke is increasing every year as well as the incidence of recurrent strokes. Recurrent stroke is defined as a new cerebrovascular event that has one of the different neurological deficit criteria than the first stroke, events that include anatomic areas or areas of blood vessels that are different from the first stroke, recurrent stroke events have different stroke types with the first stroke, Criteria this is intended to ensure that regular causes of clinical deterioration after the first stroke or worse symptoms because the progress of a stroke is not incorrectly classified as a recurrent cerebrovascular event [10] According to [7] after an attack the first, a stroke can sometimes happen with a more severe condition due to bleeding in the brain wider so that the condition can be more severe than the first attack, generally occurs in patients who lack self-control and a low level of consciousness.

stroke recurrence depends on the initial stroke type, age, related diseases, and risk factors, and the period of stroke occurrence in the 6 to 12 months after a stroke, 1 in 10 people can have a second stroke [6]. According to the study of [11] reported recurrence of strokes varies greatly from 3% to 22% in 1 year to 10% to 53% in 5 years. In Australia and the UK The cumulative risk of stroke recurrence in 5 was reported at 16.6% and 16.2%, respectively. The Akita study in Japan reports a 10-year cumulative recurrence rate of 21% for ischemic stroke. Of all stroke patients, 17% are for a second stroke within the next 5 years, and stroke recurrence rates are similar for all stroke subtypes. The incidence of recurrent strokes from research conducted at Dr.Sutomo Surabaya Hospital, 180 stroke patients including 38 of them were recurrent strokes (21.11%), while research conducted at Hasan Sadikin Hospital Bandung, the incidence of recurrent strokes 13.2% of 1210 stroke patients [10].

In the research of [12] the total number of stroke cases which were a combination of primary and secondary stroke data in 2011-2012 totaled 770 cases. Thus, the

prevalence of recurrent strokes obtained at Arifin Achmad Regional Hospital in Riau Province Indonesia was 8.05%. The results of research conducted in Bekasi City Hospital obtained the results of the frequency distribution known that from 30 respondents, 13 respondents (43.3%) had recurrent strokes 1-2 times and as many as 17 respondents (56.7%) had a repeat stroke > 2 times. Makmur et al found that the incidence of recurrent strokes was 29.52%, which most often occurred at the age of 60-69 years (36.5%), over a period of 1-5 years (78.37%), with the main risk factor being hypertension (92.7%) and dyslipidemia (34.2%). Someone who has a stroke is estimated to have a risk of recurrence about 6 times greater for recurrent strokes [13].

According to Siswanto the high risk of recurrent stroke is associated with high blood pressure, valvular heart disease, and congestive heart failure, atrial fibrillation, abnormal CT scan results, and a history of diabetes mellitus. Research [14] showed that the risk of recurrent stroke has been reported to be about 4% in the first month after a stroke and about 12% in the first year after a stroke, incidence of recurrent stroke during the first year the majority of cases are caused by atherosclerosis with concomitant diseases such as cardiovascular risk factors and concomitant diseases such as diabetes mellitus, atrial fibrillation, hypertension, and hypercholesterolemia seem to be the most important risk factors for recurring stroke. The occurrence of recurrent stroke is associated with risk factors that are owned by patients, the more risk factors they have, the higher the likelihood for recurrent strokes.

5. Conclusion

The higher attacks number will make a person has a higher risk of recurrence stroke event. Nurses must be aware of the patient who already got a sequel stroke will discharge from hospital. Monitoring and controlling the risk factors on community setting is one of way to reduce the incidence of recurrent strokes. Add recommendation for future research.

Acknowledgments

We would like to thank the Muhammadiyah Pekajangan Health Science Higher School that has supported us to this scientific journal publication.

Conflict of Interest

The authors have no conflict of interest to declare.

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