ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Online - 2455-3891
Print - 0974-2441

Special Issue (May)

Research Article

ADHERENCE TO SECONDARY STROKE PREVENTION THERAPIES IN ISCHEMIC STROKE PATIENTS AT TEACHING HOSPITAL IN CENTRAL JAVA INDONESIA

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Received: 9 November 2016 Revised and Accepted: 24 January 2017

ABSTRACT

Objective: Patients who survive from the first stroke have risk factors to be recurrent. Based on American Heart Association/American Stroke Association and PERDOSSI (Indonesian Neurologist Association), medications which are prescribed to reduce the risk of recurrent stroke as secondary stroke prevention therapies include antiplatelet/anticoagulant as well as antihypertensive and lipid-lowering agent. Patients' adherence to the secondary stroke prevention therapies is important to reduce the recurrent stroke.

Methods: This is a quantitative research and the data were collected retrospectively. The number of subjects of this study was 165 respondents. The participants were interviewed by researchers about their adherence to secondary stroke prevention by modified Morisky Adherence scale 8 (MMAS-8) questionnaire. Patients' adherence was stated as low (MMAS-8 score <6), moderate (MMAS-8 score =6-7), and high (MMAS-8 =8). This research was taken at a teaching hospital in Central Java Indonesia.

Results: Of 165 participants, 48 participants (29%) were categorized to have low adherence, 43 participants (26%) had moderate adherence, and 74 participants (45%) had high adherence to secondary stroke prevention therapies. The reasons for not adhering to the medications were felt better (34.1%), forgetfulness (18.7%), boredom (16.5%), lack of family support (8.8%), lack of time (6.6%), felt worse (5.5%), concern about side effects (3.3%), preference to complementary alternative medicines (3.3%), and cost (3.3%).

Conclusion: The number of patients who has high adherence to secondary stroke prevention was 45% and the most common reason why participants did not adhere to therapy was because they felt better (34.1%).

Keywords: Recurrent stroke, Secondary prevention therapy, Adherence.

 DOI: http://dx.doi.org/10.22159/ajpcr.2017.v10s2.19478

INTRODUCTION

Stroke is the second leading of death in the world. In the US, stroke is the third most common of mortality after cardiovascular disease and cancer [1]. Whereas in Indonesia, based on the data basis health research [2], number of patients who have diagnosed stroke are 2,137,941 patients (12.1%). Patients who survive from the first stroke have risk factor to be recurrent. 1 of 6 patients who recover from the first stroke will experience recurrent stroke and 25% of them were fatal within 28 days [3]. In Mayapada hospital, there were 52.8% patients who have recurrent stroke [4].

According to American Heart Association/American Stroke Association and PERDOSI (Indonesian Neurologist Association), recurrent stroke would be minimized using secondary stroke prevention therapy including antiplatelet therapy/anticoagulants, antihypertensive, and lipid-lowering agent [5-8]. Optimal secondary prevention therapy can prevent recurrent stroke by 80% [9].

Prescription of secondary stroke prevention therapy is only the first step. If patients are not willing or able to take that medications, then the prescription was meaningless [10]. The medication of secondary prevention therapy of stroke and adherence is important to reach goal therapy and it can reduce the recurrent stroke [11].

This research objective was to describe of adherence survivor from the first stroke to use secondary prevention as well as to reveal reason not to be adhere to the therapy.

METHODS

Research design

This is a qualitative research and the data were collected retrospectively. This study was conducted between October and November 2014. Population in this research was patients who have experience and survive for the first stroke. The primary data were an interview from the patients and the secondary data came from medical records. Medical record data were selected based on the diagnosed physician about the stroke. Sampling was conducted by consecutive sampling which participants met the inclusions and exclusion criteria. Inclusion criteria were patients who diagnosed stroke and the information of medical record was complete. The exclusion criteria were patients who have experience for hemorrhagic or transient ischemic attack.

Procedure of research

Approval of the study was obtained from health Research Ethics Committee of Dr. Moewardi General Hospital/School of Medicine Sebelas Maret University number 551/X/HREC/2014 before the commencement of the study. Informed concerned was done and participants' confidentiality was maintained during and after collecting data.

During the research period, 165 participants met the inclusion and exclusion criteria. After completing inform sheet that prepared before from the medical records about the characteristic of respondents or respondents' demographic, history of illness, social history, history of using secondary prevention including antiplatelet/anticoagulant as well as antihypertensive and lipid-lowering agent; then, the participants were interviewed by researcher about adherence of taking secondary

stroke prevention therapies with modified Morisky adherence scale (MMAS-8) questionnaire and also participants have been given the open-ended question regarding the reason why participants not to be adhere to the therapy.

The scores of MMAS-8 questionnaire range from 0 to 8. There are three categories of adherent patients: high adherence patients with a score of 8 on the scale, moderate adherers with a score of 6 to < 8, and low adherers with a score of <6.

RESULTS

Before MMAS-8 was used, it has been validated and this questionnaire was valid and reliable to use as a tool to know the adherence of patients.

Of the 179 patients enrolled, 14 patients were excluded because 10 patients diagnosed hemorrhagic and the data of 2 patients were not complete. A total of 165 patients were included in this analysis which consists of 84 men (51%) and 81 women (49%). Table 1 shows the baseline characteristic of the analysis. The mean age was 59.56 (range 37-85) and Table 2 shows the medical history of patients.

From the Table 2, it revealed that most people has hypertension disease. It was about 82%. 50% of participants have experience of recurrent stroke, 27% of participants have diabetes mellitus, and 25% have hypercholesterolemia.

Tables 3 and 4 show the stage of adherence and the reason why patients do not adhere to the secondary prevention therapies. Of 165 participants, 48 participants (29%) were categorized to have low adherence, 43 participants (26%) had moderate adherence, and 74 participants (45%) had high adherence to secondary stroke prevention therapies. The reasons for not adhering to the medications were felt better (34.1%), forgetfulness (18.7%), boredom (16.5%), lack of family support (8.8%), lack of time (6.6%), felt worse (5.5%), concern about side effect (3.3%), preference to complementary alternative medicines (3.3%), and cost (3.3%).

DISCUSSION

This study described the adherent to secondary stroke prevention therapies of survivor patients from the first stroke and to reveal the reason not to adhere to the therapy.

The study found that patient's compliance in high stage was 45%. When compared with the prior investigations by 6 months, therapy had been discontinued in 8% (aspirin), 20% (angiotensin-converting enzyme inhibitors), and 13% (statin) [12]. Based on Bengaluru *et al.,* research in 2014, of 858,835 survivors from the first stroke, shows that their adherence to take secondary prevention therapy of stroke was low [13]. For the first prescription, all of patients or 100% of patients took the medication, but for the next prescription, only around 88% took the medicines and the next, only approximately 47% patient continued to take their medication. A study in United States reported that 22% of patients take less of their medication than is prescribed [14].

Among the participants, more than half of participants were male. It was about 51%. This study is in accordance with another study showed that of 543 recruited patients, 51% were males with a mean age of 74.7 years (range 22-29) [15].

82% of survivors have experience of hypertension. High blood pressure is a major risk factor for stroke. Hypertension was the most frequent risk factor (63.3% in men and 70.1% in women), followed by diabetes and smoking [16]. Hypertension is one of the modifiable risk factors for stroke. The other risk factors are diabetes mellitus, heart disease, cigarette smoking, dyslipidemia, and alcohol abuse [17].

The heart and soul study shows that coronary artery disease patients who only takes 75% medicines or less has risk factor to be recurrent stroke four times than patients who is 100% adherence [18]. On the other hand, if patients adherence to take secondary prevention medications, recurrent stroke event can be reduced by 57% [18]. The impact of non-adherence related to the mortality, morbidity, the raising hospitalization, and unnecessary cost [19,20]. Around 125,000 deaths per year in the United States are linked to non-adherent to medication. Between 33% and 69% of hospital admission is regarding to the poor of adherence to their medication, with total cost estimates ranging from $100 to 300 billion each year including costs for additional doctor visits, emergency room visits, hospital admission, and additional medicines [19].

There are many barriers that influence of adherence. First, it is about prescriber-related barriers such as limited time with the patients, lack of incentive to spend additional time counseling on adherence,

Table 1: Baseline characteristic patients

Demographics	Minimum	Maximum	Mean±SD
Age, years	37	85	59.56±10.753
Clinical presentation			
SBP (mmHg)	100	230	147.58±28.245
DBP (mmHg)	50	180	90.77±16.37
At time plasma glucose	33	513	161.59±79.459
Fasting plasma glucose	24	308	115.41±46.604
2 hrs postprandial plasma glucose	69	412	157.97±56.537
Total cholesterol (mg/dl)	83	385	191.57±48.153
HDL-cholesterol (mg/dl)	17	72	38.61±10.758
LDL-cholesterol (mg/dl)	36	270	124.67±42.236
Triglyceride (mg/dl)	38	410	138.54±70.027

SBP: Systolic blood pressure , DBP: Diastolic blood pressure, LDL: Low-density lipoprotein, HDL: High-density lipoproteins

Table 2: Medical history of patients

Medical history	n (%)
Hypertension	135 (82)
Diabetes mellitus	45 (27)
Hypercholesterolemia	42 (25)
Recurrent stroke	82 (50)
Congestive heart failure	36 (22)
Smoking	24 (15)
Alcohol abuse	1 (1)
Vertigo	4 (2)
Asthma	4 (2)
CKD	7 (4)

Table 3: Stage of adherence

Stage of adherence	n=165 (%)
Low	48 (29)
Moderate	43 (26)
High	74 (45)

Table 4: Reason not to adhere

Reasons not to adhere	n=91 (%)
Felt better	31 (34.1)
Forgetfulness	17 (18.7)
Boredom	15 (16.5)
Lack of family support	8 (8.8)
Lack of time	6 (6.6)
Felt worse	5 (5.5)
Concert about side effect	3 (3.3)
Prefer to complementary alternative medicine	3 (3.3)
Cost	3 (3.3)

and uncomfortable speaking to patients about adherence. Second, it is pharmacist-related barriers for instance limited time to review medication refill patient histories, face difficulty to communicate with prescribers, and has limited access on patient medical record especially ambulatory patients. The last barrier is patient-related barriers such as complexity of medication regimen, high cost, concern about side effects, or adverse effects, receives contradictory information from health-care providers, a lack of knowledge about the medications, forgetfulness, and the other unexplained factors [14].

The most common reasons given by patients for not taking their medication are because they felt better (34.1%). They think that their condition has been well, so they do not take the medicines. The other causes of not taking medicine are forgetfulness (18.7%), boredom (16.5%), lack of family support (8.8%), lack of time (6.6%), felt worse (5.5%), concern about side effect (3.3%), preference to complementary alternative medicines (3.3%), and cost (3.3%). The reasons could be divided two groups that are intentional non-adherence and unintentional non-adherence. Intentional non-adherence can be considered as active process which the patients not follow the treatment recommendations because of their belief, or lack of knowledge, or lack of motivation regarding the medication. For example, people become skeptical about their medication because of side effect and other disadvantages such as drug dependency and reduce long-term efficacy. Counseling and providing education may improve the adherence [21].

On the other hand, unintentional non-adherence refers to unplanned behavior or passive process that it is not related to the beliefs and level of cognition. Patients may be careless or forgetful about adhering to the treatment regimen that they should take. Intervention for this type of non-adherence may need to focus on reminding patients and supporting patient to take their medications in their daily routine [21].

Limitations of the study

We acknowledge that this study had limitation. It was based mainly on the information obtained from medical records and patient information. We did not assess the health-care system that may influence of adherence to the patient adherence.

CONCLUSION

The study revealed that patient's compliance in high stage was 45%. Prescription of secondary stroke prevention is important, but adherent is as important as the prescription. Health-care staffs not only physician but also pharmacist could take the responsibility to improve patient's adherence to achieve the goal outcome of therapy by giving more attention to the secondary prevention and providing stroke patients with detailed instructions for medication usage. The goal therapy using secondary stroke prevention is not only to reduce mortality and morbidity but also to improve patient's quality of life and prevent the recurrent stroke as well. Pharmacist counseling may effect to improve the patients adherence.

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