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Research Article

EFFECTIVENESS OF GABAPENTIN USAGE TOWARD REDUCING PAIN INTENSITY LEVEL AND QUALITY OF LIFE OF POST-STROKE NEUROPATHIC PATIENTS IN REGIONAL GENERAL HOSPITAL, WEST NUSA TENGGARA PROVINCE YEAR 2018

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ABSTRACT

Objective: Stroke is defined as a sudden loss of brain function due to blockade/rupture of the brain's blood vessels. Data collected by the Indonesian Stroke Foundation show that Indonesia ranks first in Asia as the country with the highest number of stroke sufferers. The purpose of this study was to determine the effectiveness of the use of gabapentin to reduce pain intensity and improve the quality of life of post-stroke neuropathic pain in NTB Province hospital patients.

Methods: This study was carried out in the period of June–July 2018. The population was all post-stroke neuropathic patients who received gabapentin therapy in regional general hospital, West Nusa Tenggara Province.

Results: The results of the study using questionnaire EQ-5D-3L after using gabapentin for 2 weeks. Patients experienced an improvement in the quality of life in each dimension items, namely the ability to walk/move from 6.7%, no problem to 60%, no self-care, 26.7% no problem to be 80% without problems, usual activities carried out from 13.3% had no problems to 46.7% had no problems, feeling of pain/discomfort from 60% having moderate problems to 60% had no problems, and anxiety/depression of 60% had no problem being 100% has no problem. While the measurement of the quality of life using the EQ-VAS questionnaire, there was a significant improvement in the quality of life between before and after using gabapentin at 32.66.

Conclusion: The use of gabapentin has effectiveness on reduction of pain intensity and the quality of life of post-stroke neuropathic patients in regional general hospital, West Nusa Tenggara Province year 2018.

Keywords: Neuropathy, Post-stroke, Gabapentin, Pain intensity, Quality of life.

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INTRODUCTION

Stroke is defined as a sudden loss of brain function caused by the blockage or the rupture of blood vessels of the brain [1,2]. Pathological classification stroke is ischemic stroke and hemorrhagic stroke [3]. Based on the data from the American Heart Association, stroke is the world's second-leading cause of death in the age group of over 60 years and the fifth-leading cause of death in the age group of 15–59 years [4]. In the United States, it is recorded that almost every 45 s someone has a case of stroke, and every 4 s experienced a death due to stroke [5]. Medical treatment for post-stroke pain in Indonesia had already begun using tricyclic antidepressant groups such as amitriptyline and anticonvulsants groups such as gabapentin [6]. The response of patients using these two drugs is good but since 2013, both of them are no longer included in the list and price ceiling for the treatment of injury pain because of weak scientific evidence on the use of post-stroke pain so that the management of pain therapy post-stroke becomes less effective [7].

Several studies conducted a study comparing the therapeutic effects of gabapentin and amitriptyline in post-stroke with neuropathic pain. Both gabapentin and amitriptyline provided effective pain control in peripheral neuropathic pain. In addition, gabapentin was more effective, especially in paroxysmal shooting pain than other pain qualities [8]. The comparison between gabapentin and amitriptyline stated that there is no difference in the therapeutic effect of herniated nucleus pulposus [9]. This study aims to know the effectiveness of the usage of gabapentin to decrease pain intensity and improve the patients' quality of life with neuropathic post-stroke in Poly Neurosurgery of Regional General Hospital, NTB.

METHODS

This study uses quasi-experimental, before the patient is given informed consent to retrieve patient data prospectively using the Wong-Baker Faces Pain Rating Scale (WBFPRC) to measure the reduction in pain intensity [10], and a questionnaire Euroqol 5 Dimension (EQ-5D) is used to measure the quality of life [11], analysis of variance and *t*-test were performed to analyze the mean difference in visual analog scale (VAS) and EQ-5D scores between subgroups of patients [12] and assess the health condition of the patient, comprising from EQ-5D-3L to measure improve the patient's quality of life [13,14]. The research was conducted in Poly Neurosurgery of Regional General Hospital, NTB, in June–July 2018.

The samples in this study were all the stroke outpatients who undergo neuropathic pain in Provincial General Hospital, NTB, including inclusion and exclusion criteria. The effectiveness of therapy using Wong-Backer Faces Pain Rating Scale used to measure the reduction in pain intensity, EQ-5D-3L questionnaire, and EQ-VAS which is used to measure the patient's quality of life.

EQ-5D-3L questionnaire consists of five dimensions: Mobility, self-care, activities, pain/discomfort, and anxiety/depression and in every dimension have a level such as no problem, moderate problems, and extreme problems. Levels of perceived problems are marked with (√) in each dimension and coded 1 in column 1, column 2 is coded 2, and

column 3 coded 3. Description: Column 1 = No problem in mobility, self-care, activities, pain/discomfort, and anxiety/depression. Column 2 = Moderate problems in mobility, self-care, activities, pain/discomfort, and anxiety/depression. Column 3 = Extreme problems in mobility, self-care, activities, pain/discomfort, and anxiety/depression. EQ-VAS questionnaire (visual analog scale) is used to assess the health condition of the patient. A score of 100 is given for the best health conditions imaginable and a score of 0 for the worst health conditions that can be imagined. Questionnaires were given to patients before therapy and after 4 weeks of therapy.

RESULTS

In total, we recruited 15 study patients with post-stroke neuropathic. Demographic characteristics are summarized in Table 1. Patients age ranged from 20 to 83 years. Male accounted for 8 (53%) and education level up to senior high school 12 (80%).

Analysis of differences in pain intensity before and after gabapentin therapy to decrease pain intensity by the help of SPSS 16.0 for Windows, where the analysis uses paired sample *t*-test. Results of research conducted using the WBFPRC can be seen in Table 2.

Quality of life can be seen from the questionnaire respondents EQ-5D-3L. Questionnaire EQ-5D-3L has five dimensions: Mobility, self-care, activities, pain/discomfort, and anxiety/depression and has three levels of problems faced by patients: No problems, moderate problems, and extreme problems. Results of research conducted using the EQ-5D-3L questionnaire can be seen in Table 3.

EQ-VAS questionnaire is used to assess the imaginable health condition. In this questionnaire, the best health condition imaginable is rated 100 and the worst health conditions are rated 0. The results of the research conducted using the EQ-VAS questionnaire can be seen in Table 4.

DISCUSSION

Based on Table 2, it showed a mean ± standard deviation result for the before data which is 8.06±1.38, after data 3.80±1.20, and both the data have difference in results which is 4.26±0.18 means that there is a decrease in pain as much as 4.26 in the treatment of gabapentin 2 × 300 medication for 2 weeks also strengthened by the results of a $p<0.05$ so that there are significant differences in before and after treatment. This research may indicate that the use of gabapentin 300 mg 2 times daily for 2 weeks has effectiveness in reducing pain intensity, results from this study also strengthened with a previous study conducted where gabapentin is effective in reducing the intensity of the neuropathic post-stroke pain [6].

This is consistent with the theory that gabapentin may take effect after 1–2 weeks of usage and help reduce pain when used for at least 2–3 months [6]. Gabapentin also has the effect of which can reduce pain in patients with painful diabetic neuropathy, it is supported by the previous studies that have been done using gabapentin to patients with painful diabetic neuropathy [15]. The previous studies conducted compared gabapentin with amitriptyline, where it was obtained that gabapentin amitriptyline is superior in terms of reducing pain [16].

Based on the results of the EQ-5D-3L questionnaire in Table 3 on the quality of life with five dimensions and three levels of problems that are checked by the patient showed patients with post-stroke neuropathic pain who used gabapentin experienced a perceived problem before using gabapentin, whether it be no problem, moderate problems, and extreme problems. The highest perceived problem is mobility which holds 73,3% from 11 of 15 total patients, three patients experience extreme problems, and one patient experiences no problem. Self-care is as much as 66.7% in experiencing moderate problems and no problem is experienced at a percentage of 26.7%, and one patient experiences extreme problems. Patients also experienced problems in daily activities, 60% in moderate problems, 26.7% in extreme problems, and 13.3% in no problem. Pain/discomfort is experienced at a percentage of 60% in moderate problems and 40% in extreme problems. The least perceived problem is anxiety or depression where 40% of patients experience moderate problems and no problem is at 60%. Even though the patient felt pain, most patients do not experience feelings of depression or anxiety with pain being felt.

After the usage of gabapentin for 2 weeks, the percentage of patients who experience pain/discomfort decreased from 60% in experiencing extreme problems to 40% in experiencing moderate problems. The percentage of mobility decreased from 73.3% to 40% in experiencing moderate problems and an increase in experiencing little to no problem from 6.7% to 60%. Percentage of experiencing moderate problems in daily activities fell from 60% to 53.3%. Self-care percentage of experiencing little to no problems increased from 66.7% to 80%. This proves the effectiveness of gabapentin as a treatment of post-stroke neuropathic pain [17].

Table 1: Baseline characteristics of participants (n=15)

Characteristics	n (%)
Gender	
Male	8 (53)
Female	7 (47)
Education level	
Up to senior high school	12 (80)
Undergraduate	3 (20)
Age (years)	
<60	5 (33)
≥60	10 (67)

Table 2: Pain intensity difference before and after the use of gabapentin

Group	Mean±SD	Δ	p
Before	8.06±1.38	4.26±0.18	0.029*
After	3.80±1.20		

SD: Standard deviation. *p<0.05, Δ: Increase adherence, p value of paired sample t-test, SD: Standard deviation

CONCLUSION

From the results of research conducted in NTB Regional General Hospital, it can be concluded that the measurement of pain intensity using the WBFPRC to measure the pain patients feel experienced a significant reduction in pain intensity between before and after the use of gabapentin as big as 4.26±0.18. Measurement of quality of life using the EQ-5D-3L questionnaire to increase the quality of life in all its dimensions, namely mobility from 6.7% to 60% in experiencing no problem, self-care from 26.7% to 80% in experiencing no problem, daily activities from 13.3% to 46.7% in experiencing no problem, pain/discomfort from 60% of experiencing moderate problems to 60% of experiencing no problems, and anxiety/depression of 60% in experiencing no problem to 100% of experiencing no problem. Measurement of the quality of life using the EQ-VAS questionnaire to assess health conditions that can be imagined by the patient showed a significant increase in quality of life between before and after the usage of gabapentin in the amount of 32.66.

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AUTHOR'S CONTRIBUTIONS

Nurul Q., Dr. Tri Murti A., Wirawan A., BQ Leni N., and Aulia A. contributed to the design of the case report and to the writing of the manuscript and have reviewed the article.

Table 3: Patient response to every dimension of the EQ-5D-3L questionnaire

Dimension	Before treatment			After treatment		
	NP, n (%)	MP, n (%)	EP, n (%)	NP, n (%)	MP, n (%)	EP, n (%)
Mobility	1 (6.7)	11 (73.3)	3 (20)	9 (60)	6 (40)	0 (0)
Self-care	4 (26.7)	10 (66.7)	1 (6.7)	12 (80)	3 (20)	0 (0)
Daily activities	2 (13.3)	9 (60)	4 (26.7)	7 (46.7)	8 (53.3)	0 (0)
Pain/discomfort	0 (0)	9 (60)	6 (40)	9 (60)	6 (40)	0 (0)
Anxiety/depression	9 (60)	6 (40)	0 (0)	15 (100)	0 (0)	0 (0)

n: Number of patients, NB: No problem, MP: Moderate problems, EP: Extreme problems

Table 4: Euroqol-visual analog scale value before and after the use of gabapentin

Group	Mean±SD	p
Before	36.00±12.98	0.028*
After	68.66±9.90	

*p<0.05, Δ: Increase adherence, the p value of a paired sample t-test, SD: Standard deviation

CONFLICTS OF INTEREST

All authors have none to declare.

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