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EFFECT OF SENSORY STIMULATION OF GCS VALUES IN STROKE PATIENTS IN LOCAL GENERAL HOSPITAL OF Dr. MOEWARDI

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ABSTRACT:

Stroke or cerebrovascular injury is the loss of brain function caused by the cessation of blood supply to the brain. An easy and objective and credible way to measure patients' awareness is Glasgow Coma Scale (GCS), it assesses many aspects included: eye opening, verbal and motor responses. This study is aimed to identify the effect of sensory stimulation towards GCS among stroke disease patients in dr. Moewardi hospital. This is quasi experiment with pretest-posttest control group design. Sampling technique used in was non-probability sampling with purposive sampling. The results of the analysis showed significant effect of sensory stimulation towards GCS score among stroke disease patients (p=0.048). This study expected that sensory stimulation measures can be applied as complementary therapies in the treatment of stroke patients who had consciousness decline.

I. BACKGROUND

Stroke or Cerebral Vascular Accident (CVA) is a sudden loss of brain function due to impaired blood supply to the brain[1]. Stroke is defined as symptoms of deficit function of the nervous system caused by brain blood vessel disease and not by others[2]. Stroke can occur due to rupture of blood vessels or blocked blood intake to the brain by clots. Delayed supply of oxygen and nutrients to the brain creates serious health problems because it can lead to physical and mental disability even death[3].

United States, Stroke leads in fourth place as the cause of death and becomes a primary cerebrovascular disorder[1]. Stroke is usually haemorrhagic (15%) or ischemic / non hemorgic (85%). Ischemic stroke according to the cause is categorized into: large arterial thrombosis stroke (20%), stroke small penetration thrombosis (25%), cardiogenic embolism stroke (20%), cryptogenic stroke (30%), and others (5%). Approximately 28.5% of stroke patients in Indonesia died[4].

In ischemic stroke patients there is a decrease in oxygen and glucose in the brain tissue according to the blocked blood vessels. This causes the ion pump in the cell membrane to interfere with the K + ions escaping from the cell. Ca2 + and Na + enter the cells with water. This disorder results in brain cells experiencing necrosis. If necrosis occurs in the corticospinal pathway there will be motor disturbance in stroke patients or commonly known as Upper Motor Neuron (UMN) lesions. In the lesion UMN is followed by the presence of hypertoni, hiperefleksia, clonus, pathological reflexes that cause decreased neurotransmitters[5].

The quantitative assessment of the degree of awareness that is still used today is the Glasgow Coma Scale (GCS). GCS is a neurologic scale used to assess objectively the degree of consciousness. GCS has clearer and systematic criteria.

Based on the results of research conducted by Nugrahanti et al[6], it is known that the degree of awareness is significant as an indicator of the prognosis of death for neurological disease, this is in accordance with the results of previous studies that said the level of awareness (GCS) when admitted to hospital proved to affect the prognosis of death the first week, even from the results of a multivariate analysis it appears that the initial GCS had the strongest influence. It was also reported that in bleeding strokes there is often a decrease in consciousness that affects the speed of arriving at the Hospital. In principle, the degree of consciousness is in line with the degree of neurological deficits, because the neurological score used involves consciousness as one of the important things examined. Decreased consciousness can be used as a benchmark for brain edema bleeding.

Data report Dr. Moewardi General Hospital in 2015, the number of stroke cases as many as 3,527 cases, with the number of inpatients as many as 820 cases and outpatient as many as 2707 cases, in 2016 the number of stroke cases as many as 4211 cases, with the number of inpatients as many as 566 cases and 3,551 outpatients cases and by 2017 from January to March the number of inpatient and outpatient stroke patients reached 1,115 cases. From these data it can be seen that Dr. Moewardi General Hospital has an increasing number of patients who suffer from stroke every year (Medical Record Data Dr. Moewardi General Hospital, 2017).

Based on the description of the above background researchers wanted to know the effect of sensory stimulation on the value of Glasgow Coma Scale in stroke patients in Dr. Moewardi General Hospital.

II. METHODS

This type of research is Quasi Experimental Design with Pretest-Posttest Control Group Design approach. Sampling was done using non probability sampling type of sampling quota. The number of samples in this study were 30 respondents divided into two groups, namely control group (15 respondents) and intervention group (15 respondents). The purpose of this study was to determine the effect of sensory stimulation on the value of Glasgow Coma Scale (GCS) in stroke patients in Dr. Moewardi General Hospital.

III. RESULT AND DISCUSSION

Based on the results of the study, data on GCS conditions change in stroke patients before and after in the control group and in the treatment group.

Table 1. The mean differences of GCS Pre-Test and Post-Test group in stroke patients from September to November 2017 (n = 15).

Pre-Test		Post-Test		P
x	sd	x	Sd	0,02
6,73	2,052	8,53	2,669	

The table shows the mean difference of GCS pre test and post test in the intervention group. It was found that there was an increase in GCS value after treatment was done in the form of stimulation at th intervention group. The increase of mean value in the intervention group from 6.73 to 8.53, and by using paired t test obtained P value <0,05 (P value = 0,02) so Ha accepted and can be concluded there is influence of sensory stimulation to value GCS in intervention group patients.

Table 2. Mean difference in GCS pre-test values and Post-Test control group in stroke patients in HCU room September-November 2017 (n = 15).Pre-TestPost-TestPXsdxsd0,2438,002,8547,203,629

The table above shows that there is no difference of mean value of GCS pre test and post test in the control group, where the mean value in the control group from 8.00 to 7.20 using paired t test results obtained P value> 0,05 (P value = 0,243 so Ha is rejected and it can be concluded that there is no effect of sensory stimulation on GCS value in control patient.

Table 3. Mean difference in GCS scores of intervention and control groups in stroke patients September-November 2017 (n = 15).

	Intervension		Control groups		P value
	Mean	SD	Mean	SD	
Pre Test	6,73	2,052	8,00	2,854	0,048
Post Test	8,53	2,669	7,40	3,269	

In the independent test of t test obtained P value <0,05 (Pvalue = 0,048) so that Ha accepted, indicating that there is influence of sensory stimulation to GCS value in stroke patient at Dr. Moewardi General Hospital.

Based on the result of research of GCS value between intervention group and control group showed that GCS value in the intervention group experienced an increase in treatment settings given sensory stimulation while in the control group did not change and some respondents decreased. Based on the independent test result t test shows that the average value of GCS in the intervention group is 8.53 while the mean value of GCS control group is 7.40. This shows that the average GCS score in the intervention group is greater than the average GCS score in the control group.

The significance value obtained in the intervention group was 0.048. This shows the significance value is less than 0.05 (0.048 <0.05), so the hypothesis in this study can be interpreted that there are differences in post test between the intervention group and the control group.

The high increase in mean GCS values in the intervention group, apart from medical treatment effects such as physician treatment and physiotherapy is also supported by sensory stimulation effects. Sensory stimulation given to the patient in the form of auditory stimulation, skin sensation and olfaction given simultaneously for 3 days become a factor that can increase the value of GCS in the patient. Sensory stimulation as soon as symptoms of stroke are detected suspected to prevent widespread damage to the brain area. The stimulation of olfactory sensory through aroma therapy can stimulate G-protein expenditure in order to increase antibody, this study is in accordance with previous research that by stimulating through olfactory against 13 adults can relax the body, secretion immunoglobulin increases, blood circulation. Sensory stimulation can inhibit the prevalence of hyperemia and glutamate removal, thus preventing damage to ischemic nerve cells[7].

Now has started to develop alternative interventions which is complementary therapy to improve health status, one of them is sound therapy or music therapy. Music therapy that is currently being developed is murotal therapy Al Quran. Thus, listening to recitations of the Qur'an can be considered and developed to be one of the sound therapy in the treatment of head injured patients. As with music therapy, musical stimulation can open of the emotional component to the awareness of patients who can not communicate verbally and fall into a coma[8].

IV. CONCLUTION

Based on the results of research and discussion concluded that:

1. Increased GCS value after treatment in the form of stimulation in the intervention group. The increase of mean value in the intervention group from 6.73 to 8.53, and by using paired t test obtained P value <0,05 (P value = 0,02 so that stimulation action can influence value of GCS in stroke patient in Dr. Moewardi General Hospital.

2. There is a decrease in mean values in the control group from 8.00 to 7.20 using paired t test results obtained P value> 0.05 (P value = 0.243 so there is no significant difference between level awareness / value of GCS first day (pre test) and the third day of treatment (post test) in the control group.

3. There was a significant difference between the level of awareness / value of GCS on the first day (pre test) and the third day of treatment (post test) in the treatment group with the value of Pvalue on the independent t test obtained P value <0,05 (Pvalue = 0,048) . From the results of the research is expected to further strengthen the researchers stimulation by providing stimulus more than 1 time per day or with a longer period and conducted research on patients with a single diagnosis either hemorrhagic or non hemorrhagic stroke.

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