

MANAGEMENT OF HYPERURICEMIA WITH ERGONOMIC EXERCISE

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ABSTRACT

Hyperuricemia has been increased because of the lifestyle change. Hyperuricemic metabolism will produce highly purine rate called uric acid. Exercise will reduce that highly purine rate. Ergonomic gym exercise will also reduce blood pressure, heart rate, respiratory rate, and will give comfortable of sleep.

The purpose of this research was to learn the significance between ergonomic exercise and uric acid rate on client with hyperuricemic.

The study was pre experiment with One Group Pretest Posttest design. The sample was hyperuricemia elderly client in posyandu lansia which fulfill the inclusion criteria. The respondents ergonomic exercise in every day for two weeks and uric acid rate was measured before and after research. The data was served in the frequency-distribution table and analysed with normality test using Kolmogorov-Smirnov and Paired Sample T-test with significance $\alpha \leq 0,05$.

The results shown that the uric acid level was decrease (uric acid mean and standart deviation for pretest $7,06 \pm 0,85$ and post test $3,94 \pm 1,84$). Paired sample T-test analysis found different significant value ($p=0,000$). Ergonomic exercise can be one of intervention to decrease uric acid rate for hiperuricemia.

Key word: hyperuricemia, ergonomic excecise, urid acid level, elderly

Introduction

Uric acid had been known since two-thousand years ago and be well known as one of the oldest disease. In order to human time life improvement, the incidence of the disease is getting increased because of bad life style, include uncontrolled eating pattern. Uric acid is a crystal-shaped that become the end of purine metabolism (derivative from nukleoprotein), so uric acid is the latest product of purine metabolism which usually cannot tolerate highly. Everyone have uric acid in their body because in every normal metabolism process always produce uric acid. In the other hand, highly uric acid rate coming from many triggers like food or everything in which contain purine. Fortunately, our body contribute about eighty-five percent purine derivatives for daily need. It means that purine demand from food only about fifteenth percent (Hesen, 2009).

Hyperuricemic incident all over the world is nominally vary, estimated between 2,3%-17,6% while gout

incident between 0,16%-1,36%. In USA the prevalence number of client with asymptomatic hyperuricemic from general population is about 2%-13%. In the hyperuricemic study on the hospital there are higher prevalence between 17%-28% because of disease and drug influent. In Indonesia, hyperuricemic prevalence is about 24,3% on male and about 11,7% on female (Indriawan, 2009).

Many people in Indonesia that life with hyperuricemia doesn't aware their condition except their symptoms lead to be severe. Uric acid could be relieved in the way to make the rate normally with control of the consumption of meal and prevent the food with higher purine rate. In addition, neither drinking water nor exercise could be useful to increase the circulation so that can excrete excessive purine in our body. One of the exercises that useful for hyperuricemic client is the ergonomic gym exercise. In some places there are many ergonomic gym exercise groups, e.g. MASUSEI

(Yayasan Masyarakat Suka Senam Ergonomik), East Bekasi Gym Groups, and many more, which a large number of their member had given the testimony that stated if the gym exercise could be useful to control many diseases like migraine, vertigo, gout, and diabetes mellitus. Ergonomic gym exercise is not the same as yoga or other fitness that are more complex. Actually, the exercise movement use general movement from our daily activities and every person would be able to do this exercise. Even this exercise is used by everyone, there is no pain either during exercise activity or after exercise is finished. Because hyperurisemic client is susceptible with pain on their joint so the exercise must have simple and no tiring movement. The important thing is continuity and consistency on doing this exercise (Khairumi, 2012).

General purpose in this research was to learn the effectiveness of ergonomic exercise toward uric acid rate on hyperurisemic client and the specific purpose was to measure uric acid rate on hyperurisemic client before ergonomic exercise, to measure uric acid rate on hyperurisemic client after ergonomic exercise and to analyse the effectiveness of ergonomic exercise toward uric acid rate on hyperurisemic client.

RESULT

Tabel 1 The Frequency Distribution of responden based on age, sex, job, education, purine dietary and BMI

No	description	frequency	percentage
1.	Age : 45 - 59 years old	1	6,2
	60 - 74 years old	14	87,6
	75 - 90 years old	1	6,2
2.	Sex: Male	7	43,7
	Female	9	56,3
3.	Job: Housewife	3	18,8
	Had rest	11	68,7
	private	2	12,5
4.	Educational: Junior High School	10	62,5
	Senior High School	4	25,0
	University	2	12,5
5.	Purine Dietary: Intermediate	9	56,3

Method

The study was pre experiment with One Group Pretest Posttest design. The sample was hyperuricemia elderly client in posyandu lansia which fulfil the inclusion criteria. Respondents act in every day ergonomic exercise for two weeks and uric acid rate was measured before and after research with easy-touch GCU. The sample were taken based on inclusion criteria: first stage hyperurisemia (hyperurisemia client which was not followed with symptom like continues severe pain, arthritis, tofi/tofus and able to do ergonomic exercise. Exclusion criteria was respondents who did not do routine ergonomic exercise.

Ergonomic exercise process in this research base on instrument SOP (Standar Operasional Prosedur) had created by researcher base on ergonomic exercise by Wratsongko (2009). While in ergonomic exercise process, the researcher was helped by two enumerator for observed respondent exercise movement by observational sheet. The data was served in the frequency-distribution table and has analysed with normality test using Kolmogorov-Smirnov and Paired Sample T-test with significancy $\alpha \leq 0,05$.

		High	
6.	BMI Thin		7
	Normal		43,7
	Fat		1
			6,2
			12
			75,0
			3
			18,8
Total			16
			100

Tabel.2 The average level of uric acid in Hyperuricemia client before and after Ergonomic Exercise

	Uric acid level	
	Mean	Std. Deviation
Before exercise	7,06	0,85
After 2 week exercise	3,94	1,84
paired sample T-test	0,000	

DISCUSSION

Uric Acid Level on Hyperuricemia Client Before Ergonomic Exercise

The mean of uric acid level for Respondent before had done ergonomic exercise 7,06 mg/dl. The majority of respondent had intermediate purine dietary (56,3 %). This condition was the same as experimental result which had done by Setyoningsih and Darmono (2009) in RSUP Dr.Kariadi Semarang that shown if purine intake was the predominant risk factor for hyperuricemia.

In this research Male more susceptible than female, but in female hyperuricemia incident would be higher after menopause because estrogen help uric acid to be excreted before menopause. Uric acid disease more frequent in erderly and less in people before 60 year age (Kertia, 2009). Sex distribution of hyperuricemia client in experimental group slightly increase on female and majority of them have uric acid level higher than male respondent. The effect of elderly age and menopause was considered as the cause of why uric acid level on female respondent relatively higher than male. There were correlation between uric acid level with menopause and water consumption (Fajarina, 2011)

Body mass index (BMI) was one of the measurement of nutrition status. The result of BMI respondent in this

research majority found on normal BMI. Based on the research done by Choi et al., in Pramudya (2009) found that between dietary factor and gout risk factor were not depend on Body Mass Index (BMI). This was strengthen by research in Sokaraja, Banyumas where found if there were no correlation between uric acid level and BMI (Kumalasari, 2009).

Uric Acid Level on Hyperuricemia Client After Ergonomic Exercise

After sixteenth respondent had done ergonomic exercise routinely for two weeks, uric acid level decrease from 7,06 mg/dl to 3,94 mg/dl. Hyperuricemia was a condition where uric acid level in the blood higher more than normal (male about 3,5 - 7 mg/dL, female about 2,6 - 6 mg/dL) so uric acid would be accumulated in body tissues formed crystal on joint (Sari, 2010).

Almost all of the experimental group respondent who are firstly hiperuricemia then to be normal after ergonomic exercise routinely for two weeks but there were one of experimental group respondent have increase in uric acid level. From the process ergonomic exercise observation, this respondent always stopped her movement while in sit movement because unable to retain pain and heat. In hyperuricemia client or

food intoxication will feel like burnout (Sagiran, 2009).

Influence Ergonomic Exercise Toward Uric Acid Level on Hyperuricemia Client

Based on *paired sample t-test* $p=0,000$ shown that there were significant different uric acid level between before and after ergonomic exercise. According to Wratsongko from Indonesian Ergonomic Gym& Health Care, purpose of doing ergonomic exercise was a part of prevention and rehabilitation from every disease.

There are five principal movements in this ergonomic exercise that had benefit in each of the movement. In first movement, stand upright with straight vision make the body relax, two arms twist backwards maximally to optimize nerve function on plexus brachialis in stimulate nervous system on lungs, hearts, liver, stomach, and intestines so that metabolism would be optimal too. Those movements were followed by stand on tiptoes to increase stimuli sensory nervous system and to increase uric acid excretion flow in where that uric acid accumulated more on tiptoes joint. The second movements were bend our body forward with our hand hold on foot ankle to our back joint, elbow, thigh and knee until feeling drawled or pulled. This step could bent ligament and muscle on the joint and increase blood circulation so the uric acid flow that accumulated on joint could fast too. The third movements were to help the optimally from renal function in uric acid excretion. In the fourth movements two hands grasp foot ankle to give relaxation effect on sympathetic nerve system so that relaxation of the circulation wall would be happening. The fifth movements were the most important movement in reduce uric acid level because those could burn uric acid, fat, and toxin in our body, strengthen low back area and renal function (Isran, 2012).

Conclusion

1. The average uric acid level hyperuricemia client before ergonomic exercise was 7,06 mg/dl.
2. The average uric acid level hyperuricemia client after ergonomic exercise was 3,94 mg/dl,
3. There were an effect of ergonomic exercise toward uric acid level hyperuricemia client. Based on *paired sample t-test* shown p value $p=0,000$

Acknowledgement

This study had no control group and so can not be clear whether the reduction in the level of uric acid caused by ergonomic exercise or by other factors. Various confounding factors that may reduce the uric acid level was not investigated in this study.

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