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Risk Factor of Rheumatoid Arthritis among Elderly in UPT Panti Werdha Mojopahit Mojokerto District Indonesia

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ABSTRACT

Elderly is an event that will surely be experienced by all people who are blessed with longevity. Along with increasing age, physical and mental abilities are slowly decreased will cause many consequences so susceptible to a disease due to a decrease in the system of the usual complaints of the elderly due to the pain that is felt very disturbing rheumatic diseases. The purpose of this study was to identify risk factor of rheumatoid arthritis. This research used case-control design. The population in this study were all elderly in Mojopahit nursing home care. Divided into two groups, 21 cases and 21 control cases. Data collected by questionnaire to measure risk factors and to determine rheumatoid arthritis disease with observation sheet, data analyzed by logistic regression. The results obtained in the questionnaire of genetic risk factors showed an OR = 50 with CI 95% (5,486-484,783), meaning that elderly people with a family history of rheumatoid arthritis risk 50 times to experience rheumatoid arthritis. Risk factors for obesity show an OR value of 1.403 with 95% CI (0.129-15.291) which means obesity is not a risk factor for rheumatoid arthritis. Smoking risk factor showed the value of OR 1.177 with 95% CI (0,149-9,289) which means smoking history does not include risk factor for rheumatoid arthritis. Risk factors that affect rheumatoid arthritis were hereditary risk factors. The results of this study are expected to provide input to the nursing home care management in its efforts for the prevention and treatment of the disease.

Keywords: *Elderly, Nursing home care, rheumatoid arthritis, risk factor*

INTRODUCTION

Elderly is an event that will be experienced by everyone. Elderly are often considered powerless, sickly, unproductive so that its existence is often perceived negatively. They are often treated as a burden of responsibility by family, community, and country. Along with increasing age, the physical and mental abilities that have decreased will cause many consequences so susceptible to a disease due to a decrease in the system of the body that is usually complained of elderly due to the pain that is felt very disturbing is the rheumatic disease[1]. Rheumatoid arthritis is a chronic joint inflammation caused by an autoimmune disorder. In rheumatoid arthritis autoimmune reactions mainly occur in synovial tissue. In synovial tissue, this will lead to an inflammatory process that causes damage to joints through the process of phagocytosis that can produce enzymes in the joints. These enzymes will break down collagen resulting in edema, synovial membrane proliferation, and eventually form a pannus. The pannus will destroy the cartilage and cause erosion of the bone, resulting in the disappearance of the joint surface which will interfere with joint motion. Muscles will be affected because muscle fibers will experience generative changes with the disappearance of muscle elasticity and muscle contraction strength[1]. Several risk factors for rheumatoid arthritis include age, sex, level of knowledge, physical exercise, stress, environment, heredity or genetic factors, hormones, infections, obesity, salicylate and smoking exposure[2].

According to the World Health Organization, people with rheumatoid arthritis worldwide reach 355 million people, that means 1 in 6 people in the world have rheumatoid arthritis[3]. In Indonesia the prevalence of rheumatoid arthritis is 23.3% -31.6% of the total population of Indonesia and the prevalence of rheumatoid arthritis occurs at the age below 70 years, in

East Java is also quite high that is about 21.7% attack at the age of 49-60 years consists of 6, 2% of men and 15.5% of women[4]. In 2012, the number of patients with rheumatoid arthritis reaches 2 million people, with the ratio of female patients three times more than men. It is estimated that this figure will continue to increase until 2025 with an indication that more than 25% will experience paralysis[5]

Risk factors for rheumatoid arthritis disease in Indonesia, for example, the highest prevalence is in mountainous communities, because cold air can cause rheumatoid arthritis. It also occurs due to the age factor, the more age the higher the risk for arthritis, the gender of rheumatic disease is likely to be suffered by women (three times more often than men) and can also occur in children this can be caused by stress, smoking, environmental factors, and can also occur in children due to hereditary or genetic factors. Foods containing high purine and fatty substances will result in rheumatism and excessive weight (obesity) will put a burden on the cartilage tissue in the knee joint and perform physical exercises such as rheumatic gymnastics as a therapy to relieve rheumatic symptoms in the form of stiffness and perceived pain by rheumatic sufferers[5].

In the elderly group, the symptoms of rheumatism can be reduced by doing regular exercise and in accordance with how to walk as often as possible to optimize the stability of daily activities, adjusting the diet that does not contain excessive fat in order to prevent obesity in the elderly, avoid risk factors due to smoking, avoid stress, because the sustained stress causes environmental factors to be uncomfortable[5]

MATERIALS AND METHOD

Type of this research is observational analytic. Type of design used is Case-Control. This research was conducted at UPT Panti Werdha Mojopahit Mojokerto and implemented on 11 and 12 April 2017.

The population of this study is the elderly present in theorphanage, where it is divided into a case population and control population with a total of 49 people. The number of samples was 21 people who had rheumatoid arthritis and 21 elderly people who did not have rheumatoid arthritis. In this study, questionnaires data collection instrument to measure risk factors for rheumatoid arthritis and data collection to determine the occurrence of rheumatoid arthritis disease in elderly with observation sheet from data obtained from medical record of health officer at UPT Panti Werdha Majapahit Mojokerto.

RESULTS

While the second risk factor is obesity, the results showed that the p-value = 0.1904; OR = 0.416 with 95% CI: (0.1108 - 1.567) which means there is no relationship between obesity risk factors with the incidence of rheumatoid arthritis and obesity not including risk factors rheumatoid arthritis.

The third risk factor was smoking, the results showed that the value of value = 0.726 with the value OR = 0.781 with 95% CI (0.197-3106), which means there is no relationship between smoking risk factors with the incidence of rheumatoid arthritis and smoking is not included risk factors rheumatoid arthritis.

Table 1 Rheumatoid Arthritis Risk Factors in the elderly at UPT Panti Werdha Mojopahit Mojokerto

Risk factors of rheumatoid arthritis		Elder		*pvalue*	Odd Ratio (OR)
		Case	Control		
		n	n		
Obesity	Obese	5	9	0.1904;	**0.416**
	Not Obese	16	12		CI 95% (0.1108 – 1.567)
Heredity	Positive	20	6	0.000	**50,00**
	Negative	1	15		95% CI (5.429 - 460.519)
Smoking	Smoking	5	6	0.1904	**0.416**
	Not Smoking	16	15		CI 95% (0.1108 – 1.567)

DISCUSSION

a. Hereditary Risk FactorsOn Rheumatoid Arthritis Disease

The results showed that of 42 elderly, 20 elderly people suffering from rheumatoid arthritis had a family history of rheumatoid arthritis. The value of p-value = 0.000 with OR = 50 with 95% CI (5.429 - 460.519), which means there is a relationship between hereditary risk factors with the incidence of rheumatoid arthritis and the elderly who have rheumatoid arthritis offspring 50 times greater risk for experiencing rheumatoid than the elderly who do not has a history of hereditary rheumatoid arthritis..

Rheumatoid Arthritis is a chronic, destructive inflammatory disease, in which the immune system attacks the lining of joints and other parts of the body, including the tendons, ligaments, and bones. This disease tends to recur, usually for no apparent reason, and then heal itself occasionally for a month or even a year. Ailments exposed to rheumatoid arthritis can be damaged during each relapse, eventually leading to paralysis[6].

According to Karlson and Diane[7], one of the factors that can affect the disease of rheumatoid arthritis is a history of heredity. Some of the genes involved in the immune system are associated with an increased risk of developing rheumatoid arthritis conditions. If one of the identical twins is exposed to rheumatoid arthritis, the twin will be 20 times at risk for the disease compared to members of the general population. However, genes are not the cause of rheumatoid arthritis. Genes only provide a tendency for a person to develop the condition. Generally the incidence of disease caused by other external factors. In some people exposed to one of these other factors can trigger rheumatoid arthritis, wherein most people the effect is very slow until the individual has reached the threshold for developing rheumatoid arthritis[8].

Rheumatoid arthritis disease is caused by heredity which can develop continuously will result in the next generation also experience it. As we get older it will increase the risk of joint damage that is very influential in body function. Therefore one of the things that can handle it is by maintaining a healthy diet, maintaining a healthy body, regular exercise to prevent younger generation at the time of marriage in order not to have a history of rheumatoid arthritis.

b. Obesity Risk Factors On Rheumatoid Arthritis Disease

The second risk factor was obesity, the results showed that the value of value = 0.1904 with OR = 0.416

with 95% CI: (0.1108 - 1.567) which means there is no relationship between risk factors of obesity with the incidence of rheumatoid arthritis and obesity not including risk factors rheumatoid arthritis.

According to De Hair et al[9] more recent studies have consistently shown that obesity is not a predisposing factor of rheumatoid arthritis. In addition to the proportion of rheumatoid arthritis patients who tested negative for anti-PKC Antibodies. Although the reasons for these discrepancies are not usually discussed, it seems that strict methodological and standardization differences for the potential confounders of recent studies eliminate previous positive findings for obesity associations with the development of rheumatoid arthritis. A combination of an inactive lifestyle, this often leads to reduced muscle mass in the presence of increased accumulation of body fat and a stable or slightly increased body effect on weight gain glycolysis in the body will be broken down enzymatically if fatty changes become ketonic bodies increases, it will cause ketosis the accumulation of ketones in the blood. Usually, this happens to people starving or hunger strike for too long. If the inclusion of acetyl Co-A into the Krebs cycle decreases as the decreased supply of glucose metabolism products or Co-A acetyl supply increases, acetyl Co-A accumulates to cause the ketone to increase in the liver, circulation, and then ketosis occurs. The three conditions that cause reduced intracellular glucose supply are fasting, diabetes, and a diet low in carbohydrates but high in fat. Glucose is called an antigenic factor because the administration of glucose inhibits the formation of ketones. In various tissues of acetyl Co-A changes to become acetoacetyl Co-A. In the liver for having the deacetylase enzyme, the acetoacetyl Co-A is converted to acetoacetate. The β-ketone acid is then converted to β-OH butyric acid and acetone, entering circulation because it is difficult to metabolize then excreted through urine and breathing[10].

In the orphanage, elderly behavior about irregular eating habits and lifestyle changes that alone cause the elderly uncontrolled health.Weight loss that causes the joints cannot support the activities of the elderly, walking

using aids and in front of the room and bathroom hand grip so as not to fall. How to handle maximum body condition that is balanced with regular exercise and good sleep patterns, this is proven because by exercising regularly it will improve the condition of strength and flexibility of the joints and minimize the risk of joint damage caused by arthritis. In UPT Panti Werdha Mojopahit Mojokerto only 6 elderly from 42 elderly has rheumatoid arthritis which has a body not included in obesity category because condition at orphanage does not keep the healthy diet and elderly often difficult to sleep at night because burden thinking about family.

c. Smoking Risk Factors on Rhematoid Arthritis Disease

Based on the above table shows 42 elderly almost all 11 elderly (73,8%) are elderly who ever smoked at a young age especially in elderly men. Smoking risk factor shows the value of p-value = 0.726. Rheumatoid arthritis is not influenced by smoking risk factors based on the odds ratio of 0.781 with 95% CI (0,197-3,106) meaning that elderly who have the history of smoking does not include risk factor of rheumatoid arthritis.

According to the Journal of Vesperini reported that smoking status has no significant effect on rheumatoid arthritis, but reduces the progression of one-year radiographic disease in patients with early rheumatoid arthritis. In addition, the study suggests that the role of nicotine anti-inflammatory drugs may explain the lower systemic inflammation and structural disease progression in current smokers with patients with early rheumatoid arthritis. In a Swedish epidemiological study Reported that an increased risk of rheumatoid arthritis associated with smoking is quite possibly not due to nicotine, given the use of moist tobacco - smokeless tobacco containing nicotine is associated with a risk of ACPA-positive or ACPA-negative rheumatoid arthritis[11-13].

Rheumatic patients who smoke is mostly in the elderly who never smoked, especially in the elderly men, this happens because the elderly who has a history of smoking at a young age. But now men rarely do not consume cigarettes in the orphanage because the provisions in the orphanage are not allowed to consume and finances are limited to buy. Basically, many students who practice in the orphanage provide counseling on the importance of maintaining health, especially in men about the dangers of smoking that can affect muscle strength of the joints so that paralysis due to unbalanced body balance. The way to handle it, though in youth is often consumed cigarettes are expected now not to consume as age gets older as age gets older the disease will be easy to come to the body. Research conducted at UPT Panti Werdha Mojopahit Mojokerto only 11 elderly from 42 elderly who smoke experienced rheumatoid arthritis of male gender. So there is a small sex male in the orphanage in the youth to consume cigarettes and most of the elderly female sex in the orphanage never consume cigarettes at a young age because that is in the orphanage mostly elderly women meaning that although most elderly men who have ever consumed cigarettes in youth will be outdone by the elderly gender who never smoked in youth[14,15]

CONCLUSION

Rheumatoid arthritis disease in elderly at UPT Panti Werdha Mojopahit Mojokerto showed from 42 respondents who had rheumatoid arthritis as many as 21 elderly and who did not experience rheumatoid arthritis as many as 21 elderly. There is an influence of hereditary risk factors on Rheumatoid Arthritis In Elderly, there is no influence of risk factors of obesity on Rheumatoid Arthritis disease in Elderly, and no influence of risk factor of smoking against Rheumatoid Arthritis disease In Elderly.

The results of this study are expected to add knowledge and knowledge about risk factors that affect the incidence of rheumatoid arthritis disease. For nursing staff, the results of this study are expected to provide inputs for nursing education institutions, especially in improving the learning process of gerontic nursing practice, especially information about the problem of rheumatoid arthritis disease, so as professional nurses can be better prepared for doing promotional and preventive actions about facing elderly in society with more good.

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