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DESCRIPTION OF THE OCCURRENCE OF GOUT IN THE ELDERLY IN NAMORIH VILLAGE

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Abstract

The second most prevalent illness is gout in Indonesia after osteoarthritis, with an estimated prevalence of 1,6 to 13,6 cases per 100.000 population, and its prevalence increases with age. Among the 12.333.978 residents of North Sumatra Province, there are 1.800.0000 people who suffer from gout. The aim of the research conducted in Namorih Village, Pancur Batu District, Deli Serdang Regency, North Sumatra was to find out how food intake and lifestyle can influence the incidence of gout in the elderly. This quantitative analytical the study's design was cross-sectional., meaning that data was collected simultaneously with a sample size of 40 people. The research results amounted to 40 respondents, with analysis of participants' uric acid levels being in the low category, namely 23 people (57,5%) and high as 17 people (42,5%). As many as 37,5% of male respondents had elevated amounts of uric acid, and 50% of women respondents had elevated amounts of uric acid. The outcomes of this investigation indicate that as many as 42,5% of respondents had elevated amounts of uric acid, and although uric acid levels were still classified as normal, they were greater in older males than in older females.

Keywords: Elderly, Gout, Uric Acid Levels

Introduction

Uric acid is produced by purine metabolism, which produces uric acid internally (genetically) through cell metabolism and exogenously (from food sources) through internal metabolism. And this is important for maintaining survival (Arnida et al., 2020). The human body can experience problems due to increased uric acid levels, for example, pain in the joint area, often accompanied by severe pain in the sufferer (Andry, 2019).

As people get older, they experience various compensations in the form of decreased function. The risk of degenerative diseases in older people is increasing (Dewi, 2016). Although complaints about health do not necessarily result in disruption in daily life, experiencing health problems and the nature of people's complaints can provide a general picture of health conditions. As physiological function declines with age, non-communicable diseases occur more frequently in the elderly. Degenerative diseases also reduce the body's resistance, making the elderly more susceptible to viral infections. One of the degenerative diseases is gout, which is most commonly suffered by the elderly (Zaenurrohmna et al., 2017).

Consuming foods and drinks with high amounts of purine, such as tea, cassava leaves, and offal (such as tripe, spleen, and intestines), can cause gout. Consumption of food and drinks Eating and drinking too much of these foods and drinks increases the level of uric acid in the body (Sueni, 2021). Nearly 90% of those suffering from gout experience sudden attacks of pain, usually affecting one

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joint, followed by fever and cramps. Then the symptoms decrease and improve, and there is also a period without complaints causing chronic joint pain (Faqih, 2023).

The results of the study showed that 40 adults aged 60 years and over who suffered from gout liked foods containing offal, cassava leaves, and nuts and rarely exercised. As explained previously, it is very important for parents to maintain their diet and exercise regularly. The research, entitled "Description Of The Occurrence Of Gout In The Elderly In Namorih Village" was interested in this topic because of its importance. This study aims to provide an overview of the results of examinations carried out in Namorih Village, including gender, age, lifestyle, food intake, and uric acid levels.

It is hoped that this research will increase public knowledge about gout and how to reduce uric acid. This will enable people to care more about the gout health of themselves, their families, and those closest to them.

Research Methods

This type of research is analytical quantitative research with a cross-sectional study research plan, which means the data is collected simultaneously or all at once. In the Namorih Village Community, we received 40 research samples. The aim of the research conducted in Namorih Village, Pancur Batu District, Deli Serdang Regency, North Sumatra was to find out how food intake and lifestyle can influence the incidence of gout in the elderly.

Results

Table 1. Distribution of Characteristics of Community Respondents in Namorih Village

Characteristics	Frequency	Percent (%)
Gender		
Male	24	60%
Female	16	40%
Age		
< 70 years	31	77,5%
≥70 years	9	22,5%
Food Supply		
High in Purines	30	75%
Low in Purines	10	25%
Lifestyle		
Alcohol		
Consumption	4	10%
Do Not Consume	36	90%
Physical Activity		
Light	26	65%
Moderate	13	32,5%
Heavy	1	2,5%

Source: 2024 research

Based on the information collected, Table 1 shows that in general, based on gender, the number of male sufferers is 24 people (60%) and there are 16 female sufferers (40%).

Based on age characteristics, there were 31 respondents aged <70 years (77,5%) and 9 respondents aged ≥70 years (22,5%). Uric acid is oxidized to allantoin by the enzyme urokinase,

making it easier to excrete, and is known to decrease with age. When the production of this enzyme is inhibited, uric acid levels in the blood will increase (Arjani, 2018).

Based on the characteristics of food intake, there are 30 people (75%) who consume high-purine foods and 10 people (25%) who consume low-purine foods. Based on lifestyle characteristics consisting of alcohol consumption and physical activity, 4 people (10%) consumed alcohol, 36 people (90%) did not consume alcohol, 26 people (65%) had light activities, 13 people (32,5%) moderated, and 1 person (2,5%) had heavy activities.

Table 2. Description of Uric Acid Levels Based on Gender, Age, Food Intake and Lifestyle in the Community in Namorih Village

Characteristics	Gout		Amount
	High	Low	
Gender			
Male	9	15	40
Female	8	8	
Age			
< 70 years	14	17	40
≥70 years	3	6	
Food Supply			
High in Purines	13	17	40
Low in Purines	4	6	
Lifestyle			
Alcohol			
Consumption	4	0	40
Do Not Consume	13	23	
Physical Activity			
Light	11	15	40
Moderate	6	7	
Heavy	0	1	

Source: 2024 research

From the data in Table 2 based on gender, 9 people had high uric acid levels in men and 8 women, while 15 men had low uric acid levels and 8 women. Taking into account the age characteristics of respondents, 14 people had higher uric acid levels aged <70 years and 3 people aged ≥70 years. Meanwhile, 17 people aged <70 years had higher uric acid levels, and 6 people aged ≥70 years.

Based on the characteristics of food intake, 13 people with high uric acid levels consumed foods high in purine and 4 people consumed foods low in purine, while 17 people with low uric acid levels consumed foods high in purine and 6 people consumed foods low in purine.

Based on lifestyle characteristics consisting of alcohol consumption and physical activity, 4 respondents with high uric acid levels consumed alcohol, 13 respondents did not consume alcohol, and 23 respondents with low uric acid levels did not consume alcoholic drinks. Based on the physical activity characteristics of respondents, 11 people with high uric acid levels did light activities and 6 people did moderate activities, while 15 people with low uric acid levels did light activities, 7 people did moderate activities, and 1 person did heavy activities.

Discussion

Gout in the Elderly

Purine is a compound that is difficult for uric acid, which is produced from purine metabolism and is soluble in water. a group of chemical structures that make up DNA. When DNA is destroyed, it forms purine catabolism. Adenosine and guanosine are part of the purine group. Normal metabolism produces uric acid as an additional product of the digestion of purine proteins, such as offal and a number of vegetables, beans, and legumes, or the breakdown of purines, which are a type of damaged body cells that must be excreted through the kidneys, feces, or sweat. Joint swelling is the effect of uric acid on several parts of the body (Widiyanto et al., 2020).

For adult men, normal uric acid levels are 3,5–7,2 mg/dl (210–420 μmol/L) and in women, 2,6–6,0 mg/dl (150–350 μmol/L). If this compound is collected in amounts that exceed normal limits, it will cause a crystal structure that resembles a needle. These crystals are often located in joint areas such as the fingers, knees, elbows, and feet, causing inflammation (Budi, 2015).

The respondents' main complaint was pain, and previously they had often contacted the medical team, even though their joints were stiff and deformed. Joint pain usually increases with exercise and decreases slightly with rest. As the pain increases, resistance to movement of the leg joints gradually increases (Bangun, 2008).

Uric Acid Levels in the Elderly Based on Gender

The results of the distribution of gender characteristics show that 9 people (37,5%) of 24 male respondents showed high uric acid levels, and 8 people (50%) of 16 female respondents had high uric acid levels. Because the number of respondents is different, this data cannot be compared between men and women. This is in accordance with the findings of Widianto (2019), which show that men's uric acid levels are higher than women's. and that uric acid levels in men grow as they age. Therefore, there may be a relationship between gender and increased uric acid. The hormone estrogen, which is responsible for excreting uric acid from the body through urine, is the reason why attacks caused by gout are less common in women than men, apart from differences in uric acid levels (Abiyoga, 2017).

It is estimated that 840 out of 100.000 people have a history of gout. In Indonesia, the prevalence of gout occurs in 32% of people under 34 years and 68% of people over 34 years (Irot, 2022). Because men do not have strong levels of the hormone estrogen, it is less likely that uric acid will be excreted in the urine, increasing the risk of uric acid flare-ups. Gout occurs more often in women than men and will increase during menopause (Sueni, 2021).

Uric Acid Levels in the Elderly Based on Age Group

Of the 40 respondents, there were 31 people (77,5%) aged <70 years and 9 people (22,5%) aged ≥70 years. Of the 31 people aged <70 years, 17 people (54,8%) had low uric acid levels, and 14 people (45,2%) had high uric acid levels. Of the 9 people aged ≥70 years, 6 people (66,7%) had low uric acid levels, and 3 people (33,3%) had high uric acid levels. In Japan, uric acid levels increased in 50.000 men and 30.000 nonhyperuricemic women undergoing annual examinations at health institutions between 1989 and 1998. However, uric acid levels are higher in men born later (younger) than in elderly men (Andry, 2009). This research also shows that elderly people are not necessarily susceptible to experiencing high uric acid levels.

However, in elderly people, uric acid levels increase with age because older people experience physical changes such as water loss and fragility. This factor can increase uric acid levels in the elderly (Efendi, 2022). During the aging process, the production of the enzyme Hypoxanthine Guanine Phosphoribosyl Transferase (HGRT) is hampered because the quality of the hormone decreases. This enzyme is responsible for producing purine nucleotides from purines. Deficiency of this enzyme can cause an increase in purines in the body. The HGRT enzyme processes purines that

cannot be metabolized by the enzyme. The xanthine oxidase enzyme converts it into uric acid. Finally, levels of hyperuricemia, or increased uric acid in the body (Muhajir, 2012).

Uric Acid Levels in the Elderly Based on Food Supply

Based on the results of the distribution of behavioral characteristics of consuming purine food intake, it shows that the number of respondents who consumed high-purine foods was 30 people (75%), and 10 respondents consumed low-purine foods (25%). Then, of the 30 people who consumed foods high in purine, 17 people (56.7%) had low uric acid levels and 13 people (43.3%) had high uric acid levels. Of the 10 respondents who consumed low-purine foods, 6 people (60%) had low uric acid levels, and 4 people (40%) had high uric acid levels.

One of the organic base compounds known as purine forms nucleic acids, or nuclei. It also includes a group of amino acids, which are the components that make up proteins. Nucleic acids released in the intestinal tract are broken down by ribonuclease, deoxyribonuclease, and polynucleotide enzymes. Mononucleotides are hydrolyzed by nucleotidase and phosphatase enzymes, then the nucleotides are absorbed by the phosphorylase enzyme in the intestine or further broken down into purine and pyrimidine bases. The endogenous purine nucleotides inosine monophosphate (IMP), adenosine monophosphate (AMP), and guanosine monophosphate (GMP) are all metabolized. is part of the process of uric acid formation. Hypoxanthine and guanine are oxidized by the xanthine oxidase enzyme as the final products of uric acid. Because humans do not have the uricase enzyme, uric acid is the end result of the purine catabolism process (Diantari, 2013).

Seafood, offal, and nuts are examples of foods high in purine. The majority of respondents were at the research location. consuming foods that contain purines, effectively from plants and animals, such as meat and milk. This can result in the analysis results being insignificant. Purine content and bioavailability vary from food to food. The relative cellularity and transcriptional activity of food also influence the conversion of purines to uric acid. According to Krisnatuti (2008), foods that contain a lot of purine, from 0,5 to 0,75 g/ml, can increase urate levels in the blood.

Elderly Uric Acid Levels Based on Lifestyle

- **Elderly Uric Acid Levels Based on Alcohol Consumption**

Of the 40 respondents, the number of respondents who consumed alcohol was 4 (10%), and the number of respondents who did not consume alcohol was 36 (90%). Then, of the 4 people who consumed alcohol, 4 people (100%) had high uric acid levels. Of the 36 respondents who did not consume alcohol, 23 people (63,9%) had low uric acid levels, and 13 people (36,1%) had high uric acid levels. Other unexamined factors may account for these nonsignificant results. For example, complex carbohydrate intake and high fluid intake, especially through drinks, can also contribute to uric acid excretion and reduce blood uric acid levels (Vitahealth, 2004).

One source of purines is alcohol. Uric acid production is increased by the ethanol contained in alcohol by increasing the movement of adenine nucleotides. Studies in Japan showed that changes in ATP led to increased production of uric acid and nucleotides after ethanol injection. As a result, adenosine triphosphate is further degraded to adenosine monophosphate, a precursor of uric acid. Transformation process The mechanism that competitively inhibits uric acid excretion by the proximal tubule will result in a reduction in uric acid excretion. This occurs because lactate blocks urate transport (Manampiring, 2011). In the case of men, consumption of alcoholic drinks such as tape, beer, and palm wine can increase uric acid levels (Damayanti, 2012).

- **Elderly Uric Acid Levels Based on Physical Activity**

Based on the results of this research, light movement was carried out by 26 respondents (65%), with low uric acid levels in 15 respondents (57,7%) and high uric acid levels in 11 respondents

(42,3%). Even though the level of physical activity was the same, 13 respondents (32,5%) had low uric acid levels in 7 respondents (53,8%) and high uric acid levels in 6 respondents (46,2%). and a significant amount of physical activity in 1 respondent (2,5%) with low uric acid levels in 1 respondent (100%). The body will produce more lactic acid and reduce uric acid excretion after physical activity, such as exercising (Andry, Saryono, and Upoyo, 2009).

Activities carried out by humans coincide with the level of uric acid in the blood. Strenuous activity can worsen gout, which is characterized by increased acid concentrations in the blood. The majority of people in Namorih Village work as entrepreneurs. They work every day from morning to evening, but their physical activity is still in the light-moderate category.

Exercise and physical exercise increase lactic acid levels. The increase in lactic acid found in the blood reduces the excretion of uric acid from the kidneys. Increased levels There is no precise way to measure lactate levels. Because it is impossible to determine When the body's muscles contract, they are anaerobic. Therefore, intense physical action can affect uric acid levels. Intense ones can cause fatigue and dehydration. This condition reduces uric acid excretion, which can affect urine output.

One component of the risk factors for developing gout is physical activity. If you already suffer from gout, you should limit high-intensity activities to avoid increasing lactic acid in the body and reducing the amount of uric acid excreted by the kidneys.

Conclusions

Based on the results of the discussion on the description of uric acid in the elderly in Namorih Village, it is possible that uric acid levels are influenced by food intake and age. Most of the elderly in Namorih Village are <70 years old. In addition, the results of this study show that uric acid levels in elderly men are higher than in women, although these levels are still considered normal. This is caused by the variable estrogen hormone, which is not present in men. In addition, due to the decline in kidney function associated with age, the risk of suffering from gout increases. Therefore, preventive and promotional efforts must be carried out through increasing understanding of the elderly and their families. These efforts are carried out in the form of education and routine uric acid checks so that early detection can be achieved to prevent complications. These initiatives will not directly contribute to improving the level of social health if they are implemented perfectly for all stakeholders, including Posyandu cadres, health workers at related health centers, as well as the elderly and their families.

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