DESCRIPTION OF ORGANIC SEDIMENTS IN THE URINE OF DIABETES MELLITUS PATIENTS AT THE KARO HEALTH CENTER 2019 INTERMEDIATE MATERIALS

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Abstract

Diabetes Mellitus (DM) is a metabolic disorder with a multifactorial etiology. This disease is characterized by chronic hyperglycemia and affects the metabolism of carbohydrates, proteins, and fats. Examination of the urine sediment is often referred to as microscopic examination. The purpose of this study was to obtain an overview of erythrocytes, leukocytes, bacteria in organic urine sediment in the urine of people with diabetes mellitus. This research is descriptive in nature which was conducted in July 2019 at the Karo Pematangsiantar Health Center. The research sample is 30 samples taken by total sampling method. Data obtained from primary data and secondary data. The results showed that the organic sediment of urine in patients with diabetes mellitus contained abnormal amounts of erythrocytes, leukocytes and bacteria. There were 21 samples of abnormal Erythrocytes (70%) and normal as many as 9 respondents (30%), in 21 samples the number of Leukocytes was above normal i.e. abnormal (70%), in 21 samples the number of Bacteria was abnormal (70%). The results of the study found that there were 9 samples of Normal Erythrocyte counts and 9 abnormal samples, in 9 samples the number of Normal Leukocytes and 9 abnormal samples, in 9 samples the number of Normal Bacteria and 21 samples the number of Bacteria was abnormal in people with diabetes mellitus at the Karo Pematangsiantar Health Center . From the research results are expected to be a scientific contribution and information in enriching knowledge. The results of the study found that there were 9 samples of Normal Erythrocyte counts and 9 abnormal samples, in 9 samples the number of Normal Leukocytes and 9 abnormal samples, in 9 samples the number of Normal Bacteria and 21 samples the number of Bacteria was abnormal in people with diabetes mellitus at the Karo Pematangsiantar Health Center . From the research results are expected to be a scientific contribution and information in enriching knowledge. The results of the study found that there were 9 samples of Normal Erythrocyte counts and 9 abnormal samples, in 9 samples the number of Normal Leukocytes and 9 abnormal samples, in 9 samples the number of Normal Bacteria and 21 samples the number of Bacteria was abnormal in people with diabetes mellitus at the Karo Pematangsiantar Health Center . From the research results are expected to be a scientific contribution and information in enriching knowledge.

Keywords:Organic Urine Sediment & Diabetes Mellitus (DM)

INTRODUCTION

Diabetes Mellitus (DM) is a metabolic disorder with a multifactorial etiology. This disease is characterized by chronic hyperglycemia and affects the metabolism of carbohydrates, proteins and fats. Pathophysiology of Diabetes Mellitus will be found with various symptoms, such as polyuria (excessive urine production), polydipsia (drinking a lot), and polyphagia (eating a lot) with weight loss. Hyperglycemia can go undetected

because Diabetes Mellitus does not cause symptoms (asymptomatic) and causes vascular damage before the disease is detected (Gibney, et al., 2018).

According to WHO DM cases in Indonesia in 2017 were 8.4 million people ranked 4th in the world after India (31.7 million), China (20.8 million) and the United States (17.7 million), and WHO estimates that there will be increase in 2030, India (79.4 million), China (42.3 million), United States (30.3 million) and Indonesia (21.3 million) (Wild, 2004). The number of people with diabetes (diabetes) in Indonesia reached 14 million people. Of that amount, only 50% of sufferers are aware that they have it, and around 30% of them take medication regularly. According to several epidemiological studies, the prevalence of diabetes in Indonesia ranges from 1.5% to 2.3%, except in Manado which tends to be higher, which is 6.1% (PERSI, 2017).

Diabetes Mellitus is commonly called the silent killer because this disease can affect all organs of the body and cause various kinds of complaints. Diseases that will be caused include visual impairment, cataracts, heart disease, kidney disease, sexual impotence, wounds that are difficult to heal and fester/gangrene, lung infections, blood vessel disorders, strokes and so on. Not infrequently, DM sufferers who are already severe undergo limb amputation due to decomposition (Depkes, 2017).

Patients with diabetes mellitus are at risk for infections which are generally localized to the urinary tract. The mechanisms associated with the susceptibility of DM patients to urinary tract infections are immune factors, physiological changes, and attachment of bacteria to uroepithelial cells. Immunity factors include polymorphonuclear leukocyte disturbances in migration, phagocytosis, intracellular destruction and chemotaxis. Changes in urinary tract physiology due to autonomic neuropathy (neurogenic bladder) cause incomplete emptying of the bladder, thus facilitating the colonization of microorganisms. High sugar concentration in the urine (glucosauria)) can also inhibit the activity of polymorphonuclear leukocytes and growth media of pathogenic microorganisms.

Based on data from the International Diabetes Foundation (2015) Indonesia ranks 7th in terms of the number of people with diabetes mellitus in the world with a total of 8.5 million sufferers. In 2015, there were around 5.6 million Indonesians who had diabetes. The number of people with diabetes mellitus in Indonesia continues to increase where it is currently estimated that 1 in 40 Indonesians suffers from diabetes (PAPDI, 2015).

According to the report from the North Sumatra Provincial Health Office, it was recorded that DM sufferers from 2013 to 2018 were 74,278 cases, 62,126 cases and 72,537 cases respectively. Meanwhile, in Pematangsiantar City, according to a Health Service report, the number of DM sufferers from 2013 to 20137 was 6,136 cases, 5,567 cases and 7,315 cases respectively. Thus there was an increase in cases of DM sufferers in the city of Pematangsiantar in 2018.

In diabetes mellitus, it is necessary to carry out an examination by examining the urine sediment which consists of organic and inorganic elements. The organic elements include epithelium, leukocytes, erythrocytes, cylinders, bacteria, parasites, spores and hyphae. Inorganic elements include normal crystals such as urate crystals, calcium oxalate,

triple phosphate and calcium carbonate, while abnormal crystals such as crystals of leucine, cystine, tyrosine, cholesterol and bilirubin crystals (Priyana, 2017).

Based on data obtained at the Karo Pematangsiantar Health Center in 2018 the number of Diabetes Mellitus patients was 138 patients, while in January - April 2019 the number of Diabetes Mellitus patients was 64 control patients.

Based on the description above, the writer wants to know the description of organic urine sediment in diabetes mellitus sufferers at the Karo Pematangsiantar Health Center.

Research purposes

a. To get the results of Erythrocytes in Organic Sediments in the Urine of Diabetes Mellitus sufferers
b. To obtain results of Leukocytes in Organic Urine Sediments in Diabetes Mellitus sufferers
c. To get the results of Bacteria in Organic Urine Sediments in Diabetes Mellitus sufferers

LITERATURE REVIEWS

Diabetes mellitus

Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both. Chronic hyperglycemia in diabetes is associated with long-term damage, dysfunction or failure of several organs, especially the eyes (retinopathy), kidneys (nephropathy), nerves (neuropathy), heart and blood vessels. The World Health Organization (WHO) has previously formulated that diabetes mellitus is something that cannot be stated in a clear and concise answer, but in general it can be said to be a chronic disease caused by pancreatic disorders in producing insulin or conditions in which the body cannot use insulin. efficiently produced by the pancreas.

urinalysis

Urinalysis is an important laboratory examination because the results of the examination can provide a high diagnostic value. Urine is a product of the urinary tract system (urinary tract) which consists of the kidneys, ureters, bladder (vesika urinary) and urethra. Examination of this urine not only describes the state of the urinary tract system but also describes other conditions such as the pancreas (urine glucose), liver, ducts and gallbladder (urobilinogen, urobilin and bilirubin) (Sachar, 2014).

Sediment Inspection

Examination of urine sediment is meant as a routine examination. The urine used for this is fresh urine or urine collected with preservatives, preferably formalin and the best for examining sediments is concentrated urine, which has a specific gravity of 1023 or higher, concentrated urine is easier to obtain when using morning urine as an examination material.

METHODS

In this study the research design used is descriptive design. By doing a laboratory examination to find out the description of organic urine sediment in people with Diabetes Mellitus at the Karo Pematangsiantar Health Center. The population in this study was all urine of patients diagnosed with Diabetes Mellitus who were treated at the Karo Pematangsiantar Health Center. In May-June 2019 there were 64 visiting patients diagnosed with Diabetes Mellitus. The sampling technique used in this study is purposive sampling, which is a method of determining a particular sample that is assessed according to the objectives or research problems in a population (Nursalam, 2008). The sample in this study is the entire population used as a research sample.

RESULTS AND DISCUSSION

Contents Results and Discussion

A research on the description of organic sediments in people with diabetes mellitus at the Karo Pematangsiantar Health Center in July 2019 at the Karo Pemtangsiantar Health Center Laboratory is as follows:

Table of Urine Sediment Description of DM Sufferers at the Karo Pematangsiantar Health Center

Characteristics of Respondents	Urine Sediment											
	Erythrocyte				Leukocytes				sediment			
	Normal (0-3/LPK)		Positive + (4/LPK)		Normal (0-4/LPK)		Positive + (5/LPK)		Normal (<2/LPB)		Positive + (Little/LPK)	
	n	%	n	%	n	%	n	%	n	%	n	%
Age												
40-49 Years	8	26.7	0	0	8	26.7	0	0	8	26.7	0	0
50-59 Years	0	0	15	50	0	0	15	50	0	0	15	50
>60 Years	0	0	7	23.3	0	0	7	23.3	0	0	7	23.3
Total	**8**	**26.7**	**22**	**73.3**	**8**	**26.7**	**22**	**73.3**	**8**	**26.7**	**22**	**73.3**
Gender												
Woman	0	0	17	56.7	0	0	17	56.7	0	0	17	56.7
Man	9	30	4	13.3	9	30	4	13.3	9	30	4	13.3
Total	**9**	**30**	**21**	**70**	**9**	**30**	**21**	**70**	**9**	**30**	**21**	**70**

In the table above, the results of examining erythrocytes in the urine sediment of DM sufferers were observed microscopically with 30 samples, some of which showed normal conditions for respondents aged 40-49 as many as 8 respondents (26.7%), aged 50-59 years positive + (4/LPK) as many as 15 respondents (50%) and with age> 60 years positive + (4/LPK) as many as 7 respondents (23.3%).

In the table above the results of leukocyte examination in the urine sediment of DM sufferers were observed microscopically with 30 samples, some of which showed normal

conditions for respondents aged 40-49 as many as 8 respondents (26.7%), aged 50-59 years positive + (5/LPK) as many as 15 respondents (50%) and with age> 60 years positive + (5/LPK) as many as 7 respondents (23.3%).

In the table above the results of examining bacteria in the urine sediment of DM sufferers which were observed microscopically with 30 samples, there were several of them showing the normal condition of respondents aged 40-49 as many as 8 respondents (26.7%), aged 50-59 years positive + (little bacteria/LPK) as many as 15 respondents (50%) and with age> 60 years positive + (slight bacteria/LPK) as many as 7 respondents (23.3%).

In the table above the results of Erythrocyte examination in the urine sediment of DM sufferers which were observed microscopically with 30 samples, there were several of them showing the normal condition of respondents with male sex as many as 9 respondents (30%), and positive women + (4/LPK) as many as 21 respondents (70%).

In the table above the results of leukocyte examination in the urine sediment of DM sufferers which were observed microscopically with 30 samples, there were several of them showing the normal condition of respondents with male sex as many as 9 respondents (30%), and positive women + (5/LPK) as many as 21 respondents (70%).

In the table above the results of bacterial examination in the urine sediment of DM sufferers which were observed microscopically with 30 samples, there were several of them showing the normal condition of respondents with male sex as many as 9 respondents (30%), and positive women + (slight bacteria/LPK) as many as 21 respondents (70%).

Contents of Discussion Results

Based on the results of the research that has been carried out, namely looking at the description of organic sediment in the urine of people with diabetes mellitus, in 30 samples found abnormal amounts of erythrocytes, leukocytes, bacteria.

The number of erythrocytes in 9 normal samples (30%) was mostly abnormal, namely as many as 21 people (70%). Theoretically, there should not be found a large number of erythrocytes. The presence of erythrocytes obtained according to Gandasoebrata (2006) needs to be aware of the possibility of inflammation , trauma, bleeding that makes high red blood cells in the urine sediment. Hematuria is an increase in the number of erythrocytes in the urine due to: glomerular damage, tumors that erode the urinary tract, trauma to the kidneys, urinary tract stones, infection, inflammation, kidney infarction, acute tubular necrosis, upper and lower urinary tract infections, nephrotoxins. This can also be seen by the patient's physical condition such as the skin feeling itchy, pale, and experiencing rapid body loss.

The number of leukocytes in 9 samples was normal (30%) and in 21 samples the number of leukocytes was abnormal (70%). According to Gandasoebrata (2006), the presence of leukocytes in urine samples showed that the number of leukocytes increased as a manifestation of inflammation in the patient's urinary tract which was possibly caused by bacterial attack, the number of which also increased. A condition where there are leukocytes in the urine that exceed normal values is called leukocyturia. Leukocyturia is a

sign of inflammation in the urinary tract (including the kidneys, ureters, bladder and urethra). Leukocyturia can occur in urinary tract infections and inflammation, such as glomerulonephritis, pyelonephritis, cystitis, urethritis, nephrolithiasis, urolithiasis.

The number of bacteria in 9 normal samples (30) and in 21 samples the number of abnormal bacteria (70%). Bacteria usually appear with leukocytes. According to Gandasoebrata, the presence of bacteria with high blood glucose levels indicates an abnormality in the form of urinary tract infection. Urine with a high glucose content is a good medium for bacterial growth and can also arise from infections in blood vessels (Gandasoebrata, 2001).

On examination of organic urine sediment in the urine of people with diabetes mellitus, it showed that most of them were abnormal, including: erythrocytes, leukocytes, bacteria. This situation shows an indication of diabetes mellitus.

This research is relevant to research conducted by Purwaning 2012 which was conducted on 25 samples at Purwodadi General Hospital regarding the appearance of urine sediment in diabetes mellitus patients by proving the presence of mostly abnormal erythrocytes, namely 16 people (54%), leukocytes showing mostly abnormal, namely 22 people (88%), and bacteria showed that the majority were abnormal as many as 16 people (64%).

CLOSING

Conclusion

1. Respondents with normal erythrocyte sedimentation conditions aged 40-49 were 8 respondents (26.7%), aged 50-59 years were positive + (4/LPK) were 15 respondents (50%) and aged >60 years were positive + (4/LPK) as many as 7 respondents (23.3%).
2. Respondents with a normal leukocyte sediment state, respondents aged 40-49 were 8 respondents (26.7%), aged 50-59 years positive + (5/LPK) as many as 15 respondents (50%) and aged> 60 years positive + (5/ LPK) as many as 7 respondents (23.3%).
3. Respondents with normal bacterial sediment, respondents aged 40-49 were 8 respondents (26.7%), aged 50-59 years were positive + (Slight bacteria/LPK) were 15 respondents (50%) and aged >60 years were positive + (Slight bacteria /LPK) as many as 7 respondents (23.3%).
4. Respondents with normal erythrocyte sediment, respondents with male sex were 9 respondents (30%), and positive + (4/LPK) women were 21 respondents (70%).
5. Respondents with normal leukocyte sediment, respondents with male sex were 9 respondents (30%), and positive + (5/LPK) women were 21 respondents (70%).
6. Respondents with normal bacterial sediment, respondents with male sex were 9 respondents (30%), and positive + women (slight bacteria/LPK) were 21 respondents (70%).

Suggestions

Health Agency

It is hoped that the health analyst will be able to immediately confirm to the doctor who appoints that if abnormal erythrocyte, leukocyte and bacterial sediment values are found in DM sufferers, so that treatment is carried out immediately.

Health Institution

As a study material about the organic sediment value of urine of DM sufferers and provide counseling about the value of urine sediment of DM sufferers.

Further Researcher

It is hoped that future researchers can use this scientific paper as a reference for developing material on the value of organic sediments in DM sufferers.

Public

Communities can prevent an increase in organic sediment in DM sufferers.

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