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Description of the Results of Urine Sediment Examination in Diabetes Mellitus Patients at the Tourism General Hospital, University of East Indonesia, Makassar City

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A. Conception and design of the study;
B. Acquisition of data;
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ABSTRACT
A urine sediment examination is an examination to determine any abnormalities in the urine sample. Urine sediment examination is related to various health problems, one of which is diabetes mellitus where there are abnormal levels in the urine sediment results which will disrupt the health of the body. This study aims to determine the description of the results of urine sediment examination in diabetes mellitus sufferers at the Tourism General Hospital, University of East Indonesia, Makassar City using microscopic methods. This type of research is laboratory observation research with a descriptive approach. This research was conducted at RSUW, University of East Indonesia. The population in this study was 15 samples using the Accidental Sampling technique so 5 samples were found in the study. Based on the results of the research that has been carried out, it can be concluded that the 5 samples were declared abnormal and were examined at the Tourism General Hospital, University of East Indonesia, Makassar City.

INTRODUCTION

Diabetes mellitus is a disease caused by abnormalities related to insufficient insulin harmony due to the inability of one of the organs, namely the pancreas to produce it or the body's cells being unable to properly use the insulin produced by the pancreas, which can result from this abnormality is the level of Sugar in the blood will increase and be out of control. High glucose levels that occur continuously will cause the body's organs to become poisoned (Rista 2020).

Diabetes mellitus ranks 6th as a cause of death in developing countries. This disease is included in the class of chronic diseases that will remain in the patient's body because this disease cannot be treated completely. You need to be careful about diabetes mellitus because this disease can cause complications that will arise if the disease is not controlled. High glucose levels will cause damage to blood vessels, nerves, and arteries leading to the heart. This condition can cause this disease to increase the risk of heart attack, kidney failure, stroke, peripheral vascular disease, and various other complications. The severe consequences of diabetes mellitus can also cause sufferers to experience blindness and even death. Therefore, the treatment of this disease requires quite serious treatment (Student et al. 2021).

The World Health Organization (WHO) has predicted that the increase in the number of diabetes mellitus sufferers will be one of the causes of global health. The number of sufferers of

this disease increases every year. WHO predicts that the number of diabetes mellitus sufferers in Indonesia from 8.4 million in 2002 will increase in 2030 to around 21.3 million (Yuni 2020).

The prevalence of Diabetes Mellitus sufferers in South Sulawesi according to Riskesdas in 2018 who were diagnosed by a doctor or based on existing symptoms was 3.6%. The highest increase in DM was in Pinrang Regency (2.6 percent), Makassar City (2.3 percent), North Toraja Regency (2.8 percent), and Palopo City (2.3 percent). The prevalence of this disease that has been diagnosed by doctors or based on symptoms has increased in Tana Toraja Regency by 5.7%, Makassar City by 5.3%, Luwu Regency by 5.2%, and North Luwu Regency by 4.0%. The increase in DM disease based on a doctor's diagnosis and existing symptoms increases with increasing age, and this disease tends to increase in women compared to men (Safitri, Sudarman, and Nur 2021).

In diabetes mellitus, a urine sediment examination must be carried out. This urine sediment is divided into two groups, namely organic and inorganic elements. Organic elements include epithelium, leukocytes, erythrocytes, cylinders, bacteria, parasites, spores, and hyphae. Meanwhile, those included in inorganic elements are normal crystals, namely urate crystals, calcium oxalate, triple phosphate, and calcium carbonate. And the abnormal crystals themselves include leucine, cystine, tyrosine, cholesterol, and bilirubin crystals (Afifah, I., & Sopiany 2017).

Based on data obtained at RSUW, University of East Indonesia, Makassar city, in 2021 the number of Diabetes Mellitus patients was 30 outpatients, while in 2022 the number of Diabetes Mellitus patients was 132 outpatients.

METHODS

The type of research used in this research is laboratory observation, to obtain an overview of the results of urine sediment examination in diabetes mellitus sufferers.

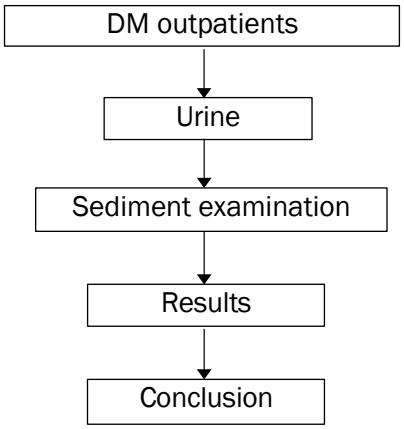

Figure 1.
Research Design Scheme

The population in this study were patients suffering from diabetes mellitus. The sample in this study was diabetes mellitus (DM) sufferers whose urine was examined using Accidental Sampling, which was carried out by taking cases or respondents who happened to be present or willing to be in a place according to the research context at the same time. The independent variable in this study is patients with diabetes mellitus. The dependent variable in this study is the urine of patients with diabetes mellitus. This research will be carried out at the Tourism

General Hospital Laboratory of East Indonesia University, Makassar. The time or date of this research will be carried out in June 2023. The type of method used in this research is the sedimentation method with microscope observation. The results of the data taken in this research are presented in table form which is then narrated.

RESULTS AND DISCUSSION

Result

Research was conducted on 20-22 June 2023 at the Laboratory of the Tourism General Hospital, University of East Indonesia, Makassar. The number of samples taken in this study was 5 samples taken by accidental sampling which aimed to determine the results of urine sediment examination in diabetes mellitus sufferers with the following data:

Table 1.

Results of examination of blood glucose levels in diabetes mellitus sufferers in the laboratory of the Tourism General Hospital, University of East Indonesia

No.	Name	Age (Year)	Gender (L/P)	Blood Glucose Levels (mg/dL)	Information
1	DT	68	P	355	Abnormal
2	AW	33	P	225	Abnormal
3	HU	70	P	288	Abnormal
4	JB	74	P	293	Abnormal
5	AS	68	L	318	Abnormal

Normal values for Blood Glucose Levels < 200 mg/dL

Based on **Table 1**, the blood glucose level examination results obtained from 5 samples all had abnormal glucose levels

Table 2.

Results of Urine Erythrocyte Examination in Diabetes Mellitus Patients at the Laboratory of the Tourism General Hospital, University of East Indonesia

No.	Name	Age (Year)	Gender (L/P)	Erythrocytes (/lpk)	Information
1	DT	68	P	33	Abnormal
2	AW	33	P	20	Abnormal
3	HU	70	P	25	Abnormal
4	JB	74	P	42	Abnormal
5	AS	68	L	25	Abnormal

The reference values for Erythrocytes are:

Normal: 0-3 /lpk,
Positive (+): If 4-8 Erythrocytes/lpk are found
Positive (++): If 8-30 Erythrocytes/lpk are found
Positive (+++): If found more than 30/lpk

Based on **Table 2**, the results of the urine erythrocyte examination were obtained from 5 samples, all of which had abnormal urine erythrocyte values.

Table 3.

Results of Urine Leukocyte Examination in Diabetes Mellitus Patients at the Laboratory of the Tourism General Hospital, University of East Indonesia

No.	Name	Age (Year)	Gender (L/P)	Leukocytes (/lpk)	Information
1	DT	68	P	25	Abnormal
2	AW	33	P	23	Abnormal
3	HU	70	P	25	Abnormal
4	JB	74	P	20	Abnormal
5	AS	68	L	25	Abnormal

Leukocyte reference values are:

Normal: 0-4/lpk
Positive (+): If leukocytes are found 5-20/lpk
Positive (++): If 20-50 leukocytes/lpk are found
Positive (+++): If leukocytes are found to be more than 50/lpk

Based on **Table 3**, the urine leukocyte examination results obtained from 5 samples all had abnormal urine leukocyte values.

Table 4.
Results of Urine Epithelium Examination in Diabetes Mellitus Patients at the Laboratory of the Tourism General Hospital, University of East Indonesia

No.	Name	Age (Year)	Gender (L/P)	Epithelium	Information
1	DT	68	P	-	Normal
2	AW	33	P	-	Normal
3	HU	70	P	-	Normal
4	JB	74	P	-	Normal
5	AS	68	L	-	Normal

Epithelial reference values are:

Normal: 0-4/lp

Based on **Table 4,** the results of urine epithelial examination were obtained from 5 samples, all of which had normal urine epithelial values.

Table 5.
Results of Urine Crystal Examination in Diabetes Mellitus Patients in the Laboratory of the Tourism General Hospital, University of East Indonesia

No.	Name	Age (Year)	Gender (L/P)	Crystal	Information
1	DT	68	P	-	Normal
2	AW	33	P	-	Normal
3	HU	70	P	Calcium oxalate	Abnormal
4	JB	74	P	-	Normal
5	AS	68	L	-	Normal

Crystal reference values are:

Normal: 0-1/lp
Positive (+): 1-5/lp
Positive (++): 5-10/lp
Positive (+++): 10-30/lp

Based on **Table 5**, the results of the urine crystal examination were obtained from 5 samples, one sample with the sample code HU had an abnormal urine crystal value with the discovery of 6 calcium oxalate urine crystals, and the other 4 samples had normal urine crystal values.

Discussion

Urine sediment is a laboratory examination that is often used to detect abnormalities in urine samples that will have fatal consequences for the body, where urine sediment examination is often related to diabetes mellitus. The occurrence of abnormal levels in the results of urine sediment examination indicates that the body has experienced various health problems, one of which is hematuria, which is where there is an increase in erythrocyte levels and other abnormalities that are often associated with inflammation or inflammation in the body.

Diabetes mellitus is a disease that people are often wary of. The prevalence of Diabetes Mellitus sufferers in South Sulawesi according to Riskesdas in 2018 who were diagnosed by a doctor or based on existing symptoms was 3.6%. The highest increase in DM was in Pinrang Regency (2.6 percent), Makassar City (2.3 percent), North Toraja Regency (2.8 percent), and

Palopo City (2.3 percent). The prevalence of this disease that has been diagnosed by doctors or based on symptoms has increased in Tana Toraja Regency by 5.7%, Makassar City by 5.3%, Luwu Regency by 5.2%, and North Luwu Regency by 4.0%. The increase in DM disease based on a doctor's diagnosis and existing symptoms increases with increasing age, and this disease tends to increase in women compared to men (Safitri, Sudarman, and Nur 2021).

The examination carried out in this study uses a microscopic method to see the urine sediment in each sample to be examined. The process of this research is by separating the urine using a centrifuge which aims to obtain urine sediment which will later be examined, each sample is then examined under a microscope using the smallest magnification up to 40 times magnification.

From the results of research carried out in the laboratory of the East Indonesia University Tourism General Hospital, **Table 1** shows abnormal results in urine glucose examination in the five samples that have been examined. five patients have been diagnosed with type 2 diabetes mellitus, where diabetes mellitus is a disease that can disrupt health, a history of type 2 diabetes mellitus can affect body health, one of which is the organ that plays an important role in the body, namely the kidneys, where the kidneys have the main function of cleaning the blood. of toxic compounds in the body.

Table 2, based on the results of erythrocyte research from urine sediment examination in diabetes mellitus patients, showed abnormal results in the five samples that were examined. This indicates that there are abnormalities or disorders in the body, in line with research carried out by Nujuliana in 2020 which was carried out on 30 samples at UPT. The North Sumatra Provincial Health Laboratory challenged the picture of urine sediment in diabetes mellitus sufferers by proving the presence of erythrocytes which were mostly abnormal, namely in 18 samples, while the leukocytes showed mostly abnormal in 20 samples.

According to (Afifah, I., & Sopiany 2017) the presence of erythrocytes that are found must be alerted because of the possibility of experiencing trauma, inflammation, and bleeding which can make red blood cells high in the urine sediment. Hematuria is an increase in the number of erythrocytes in the urine caused by a tumor that erodes the urinary tract, glomerular damage, kidney trauma, urinary tract stones, inflammation, infection, kidney infarction, acute tubular necrosis, nephrotoxins, and upper and lower urinary tract infections. If you look at the physical condition, the patient will experience skin that feels itchy, and pale, and the patient will experience drastic weight loss. Leukocyturia is a sign of inflammation of the urinary tract (which includes the ureters, urethra, kidneys, and bladder). If you look at the physical condition of patients with diabetes mellitus, there will be widening wounds on their legs which can be caused by infection and the wounds are decaying. Based on **Table 3**, the results of laboratory examinations found abnormal leukocytes in each sample, indicating damage and inflammation in the body. In **Table 4**, the urine examination showed normal epithelial results, according to (Marlini 2018) the epithelium functions as a constituent of the outer parts of the body's organs, which have different sizes and shapes. The results of **Table 5** of the urine examination showed the results of Ca oxalate crystals in one sample with the code (Student et al. 2021a). This indicates that the body's organs have been disturbed, which if left unchecked will result in kidney stones.

Based on the results of field observations that have been carried out, abnormal results occur in patients who have been diagnosed with type two diabetes mellitus and are more than 20 years old. Diabetes mellitus is a metabolic disorder characterized by an increase in blood sugar due to a decrease in insulin secretion which is unable to work normally, where This disease is a long-term disease that must always be considered and requires clinical treatment. The five patients underwent routine laboratory examinations twice a week. In the urine samples that had been examined, various urine sediments were obtained, and the presence of leukocytes

erythrocytes, and oxalate crystals were found. found in urine samples in large quantities will result in inflammation of the urinary tract which is most likely caused by a large number of bacterial attacks, the number of leukocytes that exceed the normal value is called leukocyturia.

A urinalysis or urinalysis examination, which is used as a laboratory examination to identify abnormalities that occur in the body, is an initial examination to identify abnormalities that occur in the body, especially kidney disease. Urine sediment comes from the blood, urinary tract, and kidneys, so urine sediment examination is one of the examinations that is often carried out to help diagnose and follow the course of diseases involving kidney and urinary tract disorders. Urine examination is one of the important routine examinations in screening examinations.

CONCLUSION

Based on the results of research carried out, namely examination of urine sediment in diabetes mellitus sufferers at the Tourism General Hospital, University of East Indonesia, Makassar, it was found that erythrocytes and leukocytes were present in the 5 who had been examined.

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