

CHARACTERISTICS OF PATIENTS WITH URINARY TRACT STONES AND PROFILE OF URIC ACID AND CHOLESTEROL AT KUSTATI ISLAMIC GENERAL HOSPITAL SURAKARTA IN THE PERIOD OF OCTOBER 2020 TO MARCH 2022

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ABSTRACT

Objective: This study aims to research the characteristic of patients with urinary tract stones and the profiles of uric acid and cholesterol at the Kustati Islamic General Hospital (RSUI) in the period from October 2020 to March 2022. **Material & Methods:** This research uses the cross-sectional retrospective approach with the descriptive method. The research subjects are the patients with urinary tract stones that have undergone operations in Kustati Islamic General Hospital in the period between October 2020 and March 2022 as well as patients that have had their level of uric acid and cholesterol examined in the laboratory of Kustati Islamic General Hospital in the period from October 2020 to March 2022. **Results:** Urinary tract stones occur the most in men (70.3%) and in the age group 46-59 years old with a percentage nearing 50%. Urinary tract stones occur the most in the upper section of the urinary tract, mainly in the kidneys (67.2%). Hyperuricemia occur mostly in men while hypercholesterolemia occur mostly in women. **Conclusion:** The location of stone is mostly found in the kidneys. Patients with hyperuricemia are mostly men, while patients with hypercholesterolemia are mostly women.

Keywords: Urinary tract stones, uric acid, cholesterol.

ABSTRACT

Tujuan: Penelitian ini bertujuan untuk mengetahui karakteristik pasien batu saluran kemih serta profil asam urat dan kolesterol di Rumah Sakit Umum Islam (RSUI) Kustati periode Oktober 2020 sampai Maret 2022. **Bahan & Cara:** Penelitian ini menggunakan pendekatan cross-sectional retrospective dengan metode deskriptif dengan subjek penelitian adalah pasien batu saluran kemih yang melakukan operasi di Rumah Sakit Umum Islam (RSUI) Kustati periode bulan Oktober 2020 sampai dengan bulan Maret 2022 dan pasien yang memeriksakan kadar asam urat dan kolesterol di laboratorium RSUI Kustati periode bulan Oktober 2020 sampai dengan bulan Maret 2022. **Hasil:** Penderita batu saluran kemih paling banyak terjadi pada laki-laki (70.3%) dan terjadi pada kelompok usia 46-59 tahun dengan persentase mendekati 50%. Batu saluran kemih paling banyak terjadi pada saluran kemih bagian atas utamanya adalah di ginjal (67.2%). Penderita hiperurisemia lebih banyak adalah laki-laki sedangkan penderita hiperkolesterolemia paling banyak adalah perempuan. **Simpulan:** Letak batu paling banyak ditemukan di ginjal. Pasien dengan hiperurisemia paling banyak adalah laki-laki, sedangkan pasien dengan hiperkolesterolemia paling banyak berjenis kelamin perempuan.

Kata kunci: Batu saluran kemih, asam urat, kolesterol.

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INTRODUCTION

Urolithiasis or urinary tract stones is a condition where stones form in the urinary tract. These stones can be formed from the renal pelvis (kidney stones or nefrolithiasis), ureter (ureterolithiasis), urinary bladder (vesicolithiasis),

urethra (uretrolithiasis). Initially, the stone formation will not cause any symptoms. Then, symptoms will correlate with the location of the stone, consisting of renal colic (an intense cramping pain), pelvic pain (pain in the pelvis area), hematuria, obstruction in the urinary tract, infection and hydronephrosis.¹⁻²

In the United States of America, one million visits to the Emergency Room has been reported each year, with incidences occurring about 1 out of 11 suffering from urinary tract stones. In Asia, it has been reported that the rate of incidence is 1-19.1%. The prevalence differs in some regions due to the difference in socio-economic status and geographical location. In West Asia, Southeast Asia, South Asia and developed countries such as South Korea and Japan, the prevalence is 5-19.1% while in East Asia and North Asia only around 1-8%.^{1,3}

The prevalence of urinary tract stones occur mostly in population containing productive age. It occurs mostly in men more than women. The recurrence level after the first episode is around 14%, 35%, and 50% each occurring in year 1, 5, and 10 respectively. There are several types of kidney stones, with stones formed out of calcium oxalate being the most found with more than 50%. Other types of stones include uric acid, struvite, cystine, and others. Economic growth and unhealthy diet such as those with high fat content can cause metabolic syndrome which correlates with the increase in cases of urinary tract stones. This can occur due to individuals with metabolic syndrome have increased serum uric acid and cholesterol in their blood.⁴⁻⁵

To reduce the urinary tract stones incidence rate, proper handling comprising treatment and prevention is needed. Adequate and sufficient prevention can surely be achieved if we can understand the epidemiology of the disease of urinary tract stones itself so that the prevention can be appropriately applied.

OBJECTIVE

This study aims to research the characteristic of patients with urinary tract stones and the profiles of uric acid and cholesterol at the Kustati Islamic General Hospital (RSUI) in the period from October 2020 to March 2022.

MATERIAL & METHODS

This research uses the cross-sectional retrospective approach with the descriptive method. The variable of this research is examined without intervention. The subject of this research are patients with urinary tract stones that have undergone operations at the Kustati Islamic General Hospital (RSUI) in the period from October 2020 to March 2022 as well as patients that have had their level of

uric acid and cholesterol examined in the laboratory of RSUI Kustati in the period from October 2020 to March 2022.

Analysis of the data is carried out by compiling data and shown descriptively by identifying patients with urinary tract stones at RSUI Kustati which have been obtained from medical records of the surgery installation unit at RSUI Kustati as well as patients that have had their level of uric acid and cholesterol examined in the laboratory of RSUI Kustati which have been obtained from examination records of uric acid and cholesterol in the laboratory of RSUI Kustati, the data of which is then presented in the form of a table, followed with a calculation of its percentage.

The inclusion criteria include all patients with urinary tract stones that have undergone operations at the Kustati Islamic General Hospital (RSUI) in the period from October 2020 to March 2022 and the result of the examinations of uric acid and cholesterol in the laboratory of Kustati Islamic General Hospital in the period from October 2020 to March 2022.

RESULTS

Research has been carried out on 623 patients with urinary tract stones at Kustati Islamic General Hospital (RSUI) Kustati in the period from October 2020 to March 2022 and 2284 patients who have had examinations on uric acid and cholesterol at RSUI Kustati in the period from October 2020 to March 2022.

In Table 1, it is shown that male patients with urinary tract stones (70.3%) are more than female patients (29.7%). Urinary tract stones occur mostly in age group of 46 to 59 years old which is 41.6% of all the patients in the research period. In the data, it can be seen that urinary tract stones are also found in patients under the age of 18 (0.2%), with the youngest being 15 years old and the oldest being 91 years old and mean/average age of 50.5 years old.

In Table 2, it is shown that in both male and female patients, urinary tract stones occur the most in kidneys, with a percentage of 51.2% in male patients and 67.2% in female patients out of all the cases that occur at RSUI Kustati.

In Table 3, it is known that patients suffering from hyperuricemia is dominated by male patients in the last 2 years with the percentage of more than 50%. While in Table 4, there are more female patients suffering from hypercholesterolemia than male patients with the percentage of more than 50%.

Table 1. Patients with urinary tract stones.

Age	Gender				Total	
	Male		Female			
	n	%	n	%	n	%
<18	1	0.2	0	0	1	0.2
19-30	29	4.6	13	2.1	42	6.7
31-45	107	17.2	46	7.4	153	24.6
46-59	185	29.7	74	11.9	259	41.6
>59	116	18.6	52	8.3	168	26.9
Total	438	70.3	185	29.7	623	100

Table 2. Urinary tract stones.

Diagnosis	Male		Female	
	n	%	n	%
Renal Stone	232	51.4	125	67.2
Ureteral Stone	159	35.2	57	30.6
Bladder Stone	60	13.3	4	2.1

Table 3. Patients suffering from hyperuricemia.

Year	Total	Uric Acid					
		Hyperuricemia		Male		Female	
		n	%	n	%	n	%
2020	98	32	32.6	13	40.6	19	59.4
2021	528	167	31.6	110	65.9	57	34.1
2022	138	50	36.2	33	66	17	34

Table 4. Patients suffering from hypercholesterolemia.

Year	Total	Cholesterol					
		Hypercholesterolemia		Male		Female	
		n	%	n	%	n	%
2020	93	48	51.6	16	33.3	32	66.7
2021	498	193	38.7	85	44	108	56
2022	129	53	41.1	18	34	35	66

DISCUSSION

Almost all of the literature discussing urinary tract stone shows that cases of patients with urinary tract stone increases in number along with age and mainly occurs in male patients than female patients. Stamatelou in their research which explains the epidemiology of kidney stones shows that the prevalence of kidney stones occurs more in men, even though the difference in cases involving male patients and female patients have started to decrease along with time.

Zhang et al. in their research also explain that men suffer more from urinary tract stone than women and men aged 50-54 years old are more likely to suffer from urinary tract stone. Wang et al. whose research is about the role of age and sex in the composition of urinary tract stones explain that men possess more risk factors to suffer from urinary tract stones. Therefore, men are more prone to suffer from urinary tract stones.⁶⁻⁸

Qaader et al. who carried out research on patients with urinary tract stones being treated in the city of Baghdad show that 67.4% of stones were

found in the kidneys while the rest are equally found in the ureter or in the urinary tracts. This is because kidney stones originate from mineral deposits (mainly calcium) and salts that have formed in the kidneys.^{9,10}

Dorio et al. in their research on the level of serum uric acid and the prevalence of hyperuricemia explain that patients with hyperuricemia is dominated by men with the ratio of 6:1. In another research carried out by Zhang et al. in Tibet show that out of all individuals over the age of 40 that have had their level of uric acid examined, more men suffer from hyperuricemia than women with the percentage of 2.96% vs 0.75%. This is due to men having smoking habits, alcohol consumption, and the habit of consuming foods with high level of purine compared to women. Ibrahim et al in their research on hypercholesterolemia explain that hypercholesterolemia occur more in women.¹¹⁻¹⁴

CONCLUSION

Patients suffering from urinary tract stones at RSUI Kustati in the period from October 2020 to March 2022 are mostly male (2.4:1). The youngest age of patient suffering from urinary tract stone is 15 years old while the oldest is 91 years old. Urinary tract stone is mostly found in patients in the age group of 46-59 years old. The location of stone is mostly found in the kidneys. Patients with hyperuricemia are mostly men, while patients with hypercholesterolemia are mostly women.

Going forward it is hoped that there will be research conducting study on the composition of stones in patients suffering from urinary tract stones at RSUI Kustati so that a clearer understanding of a preventative measure to prevent incidences of urinary tract stones as well as its treatment can be known.

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