Characteristic of Urinary Tract Stones Patient in Sido Waras General Hospital Mojokerto

Kristian Mohamad Daniputra[1], Antono Pratanu[2]*
[1]General Practitioner, Sido Waras General Hospital Mojokerto
[2]Urologist, Sido Waras General Hospital Mojokerto

Abstract

Introduction & Objectives: Urinary tract stones had been discovered since ancient Egyptian period. In eighteenth century, a Russian scientist H.C.G von Struve discovers struvit stone in which the formation of the stone is initiated by urinary tract infection. Prevalence of kidney stone disease in Indonesia is 0,6% in 2013 and in the United States, incidence of kidney stone disease is 116/100.000 people in 2000. The objective of this research is to determine the characteristic of urinary tract stone patients treated in Sido Waras General Hospital Mojokerto, East Java.
Material & Method: The design of this research is descriptive study. The inclusion criteria is all new cases of urinary tract stone treated in Sido Waras General Hospital between 2017 until 2018. All clinical data regarding urinary tract stone disease is obtained from medical record retrospectively.
Results: There are 285 new cases of urinary tract stone treated in Sido Waras General Hospital Mojokerto in 2 years, in which 236 cases (83%) are male and 49 cases (17%) are female. Most of urinary tract stone patients are classified in 40-60 years old group with 197 cases in two years. The most common case of urinary tract stone is kidney stone with 147 cases (51%). Open surgery is the most common management which is done for urinary tract stone disease in two years (52%). Based on comorbid disease, there are 120 urinary tract stone patient (42%) suffering hypertension and 84 urinary tract stone patients (29%) suffering diabetes mellitus.
Conclusion: The incidence of urinary tract stone in Sido Waras General Hospital is 285 cases. Urinary tract stones are more common in male, with male to female ratio 4:1. The majority of cases are kidney stone.
Key Words: Urinary tract stone, Characteristic, Sido Waras General Hospital
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Correspondence: Kristian Mohamad Daniputra; c/o: General Practitioner, Sido Waras General Hospital Mojokerto. Email: kristian.mohamad.md@gmail.com

INTRODUCTION

Urinary tract stone disease has been known since ancient Egypt, this was evidenced by the discovery of stones in the bladder of a mummy. In today's modern era, the increasing prevalence of kidney stones is a global phenomenon. Data obtained from five countries in Europe, the United States and Japan show an increase in the prevalence and incidence of kidney stones from 1960 to 2000. In the United States, in 2000 the incidence of kidney stones reached 116/100,000 population, while in Japan in 2005 the incidence of kidney stones reached 114/100,000 population.[1-4] In several countries in Asia, the prevalence of kidney stones was found at 9.6% in 2002 in Taiwan and in Iran, the prevalence rate of kidney stones was 8%. In Indonesia, complete data regarding kidney stone sufferers have not been widely reported, according to Riskesdas data from the Ministry of Health in 2013, the prevalence of kidney stones in Indonesia was 0.6%, where the highest prevalence was occupied by DI Yogyakarta Province at 1.2%, while the prevalence of kidney stones in East Java Province, namely 0.7%. Based on age, the highest prevalence was 1.3% at the age of 55-64 years and based on gender, the highest prevalence was 0.8% for male sex.[4,5,6]

When viewed from the composition of kidney stones, the results of research conducted at the Center for Nephrology and Dialysis and the Center for Kidney Stones in the city of Turin in Italy in 2010 stated that 50-70% of the composition of kidney stones is calcium, both bound to oxalate and to phosphate. Then uric acid stones as much as 10-20% and struvite stones as much as 5-10%. This is also in line with research conducted at the Clinical Pathology Section of FK Unhas/RS. Wahidin Sudirohusodo where the highest number of stone constituents was calcium oxalate with 87.4%, followed by uric acid stones with 32.2% and struvite stones with 24.6%.[7,8] Management of urinary tract stones, divided into conservative and surgical, is performed depending on it and various factors of the patient. Although the management of urinary tract stones has been increasingly developed, the recurrence rate can occur by 50% in 5 years and 70% in 10 years. Therefore, identification of the risk factors that cause urinary tract stones is important as an effort to prevent the appearance of urinary tract stones.[1]

The results of this study are expected to be able to provide data regarding the incidence of urinary tract stones at Sido Waras Mojokerto Hospital during the period January 2017 - December 2018, to be able to provide an overview of the characteristics of urinary tract stone patients at Sido Waras Mojokerto Hospital in terms of gender, age, stone location, management actions taken and co-morbidities (hypertension and DM). In addition, it is hoped that this research can be the beginning of further research in the field of urology at Sido Waras Hospital..

MATERIAL AND METHODS

The design of this study was a descriptive study with the inclusion criteria for the study sample, namely urinary tract stone patients (new cases) who arrived and were managed at Sido Waras Hospital in the period January 2017-December 2018. The research sample data included gender, age, stone location, management measures undertaken, and comorbidities (hypertension and diabetes mellitus) obtained through retrospective tracing of patient medical records.

RESULTS

This study used the data from medical records of patients with urinary

tract stones who came and were managed at Sido Waras Hospital, Mojokerto Regency from January 2017 to December 2018. The data was collected retrospectively. Based on data from research samples, within two years total of 285 new cases (incidents) of urinary tract stones were obtained at Sido Waras Hospital.

When viewed from gender aspect, 83% (236 cases) of urinary tract stone patients was obtained for male sex and 17% (49 cases) for female sex as shown in the diagram below (figure 1).

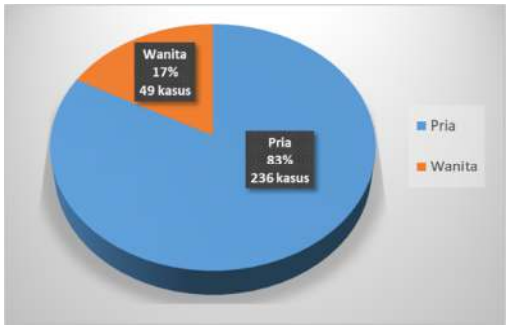


Figure 1. Proportion of Patients with Urinary Tract Stones by Gender.

When viewed from the age aspect, the highest distribution of urinary tract stone patients at Sido Waras Mojokerto Hospital was in the group of age 40-60 years, followed by the age group of >60 years and the age group <40 years which had the least number. And within a span of two years, there was an increase in the number of patients in all of these age groups. This can be seen in the diagram presented in Figure 2.

Figure 3 shows the cases proportion of urinary tract stones based on the location of the stones within a period of two years, where the highest number of the cases were kidney stones with a percentage of 51% (147 cases), followed by cases of ureteral stones with a percentage of 40% (114 cases), bladder stones with percentage of 8% (22 cases) and urethral stones with a percentage of 1% (2 cases).

Figure 2. Cases Distribution of Urinary Tract Stones by Age.

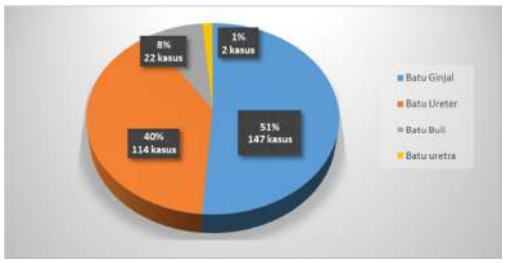


Figure 3. Cases Proportion of Urinary Tract Stones Based on Location of Stones.

Based on the proportion of urinary tract stone management at Sido Waras Hospital within two years, open kidney stone surgery (nephrolithotomy, bivalve nephrolithotomy and pyelolithotomy) was the most frequently performed procedure with a percentage of 52% (124 cases), followed by URS procedure with a percentage of 39 % (95 cases), vesicolithotomy with a percentage of 8% (19 cases) and meatotomy with a percentage of 1% (2 cases). This can be seen in Figure 4.

Based on data from the study sample, it was found that the proportion of urinary tract stone patients who had hypertension comorbidities was 42% (120 patients) and the proportion of urinary tract stone patients who did not have hypertension comorbidities was 58% (165 patients). For the proportion of urinary

tract stone patients who had diabetes mellitus (DM) comorbidities was 29% (84 patients) and the proportion of urinary tract stone patients who did not have DM comorbidities was 71% (201 patients). This can be seen in Figure 5.

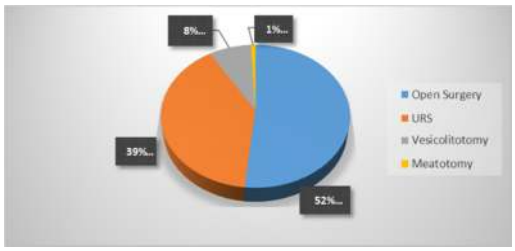
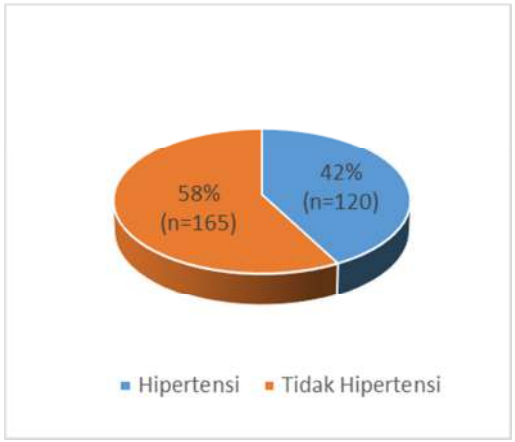


Figure 4. Proportion of Actions for the Management of Urinary Tract Stones.



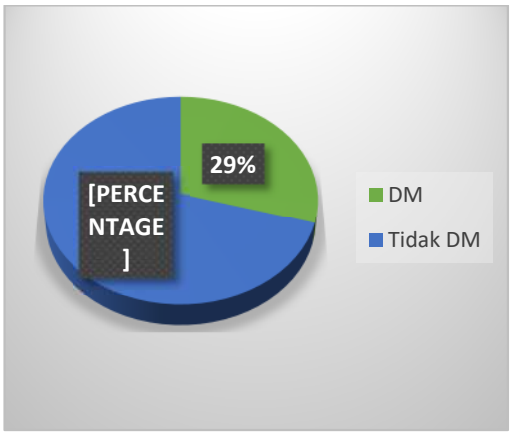


Figure 5. Cases Proportion of Urinary Tract Stones Based on Concomitant Diseases.

DISCUSSION

The overall number of new cases of urinary tract stones at Sido Waras Mojokerto Hospital over a two-year period (January 2017 to December 2018) was 285 based on research sample data. In 2017-2018, 285 cases of urinary tract stones were diagnosed at Sido Waras Mojokerto Hospital, according to the data gathered.

The proportion of urinary tract stone cases by sex was 83% (236 cases) for the male sex and 17% (49 cases) for the female sex, based on the obtained research sample data. Based on these findings, it may be inferred that men are four times more likely than women to have urinary tract stones. According to research conducted by Romero V et al., incidences of urinary tract stones are more prevalent in males than in women in nations such Iran, Japan, Italy, the United States, and South Korea.[16]

Based on the age of the patients in the study sample, there was an increase in the number of patients with urinary tract stones in each age group over the course of two years. The majority of people with urinary tract stones are between the ages of 40 and 60. This is consistent with research undertaken by Nur Lina in 2008 at RSUP. dr. Kariadi, RSI Sultan Agung, and Roemani Hospital, which found that the biggest number of patients with urinary tract stones were between the ages of 40 and 59.[17]

Regarding the location of urinary tract stones, kidney stones had the largest incidence rate, with 147 instances during a two-year period, while urethral stones have the lowest incidence rate, with only two cases. This study's findings are consistent with studies undertaken by Endrika Noviandrini at Cipto

Mangunkusumo Hospital regarding the characteristics of individuals with urinary tract stones, the majority of which are kidney stones.[18]

In the span of two years (January 2017 to December 2018), open surgery on kidney stones was the most prevalent treatment for urinary tract stones. 124 kidney stone open surgery procedures were performed over the course of two years. Because treatment methods such as ESWL and PCNL are not yet accessible at Sido Waras Hospital, kidney stone removal via open surgery is nevertheless often performed. The treatment of buli stones continues to include open surgery (Open Vesicolithotomy). URS is the minimally invasive technique used at Sido Waras Hospital to treat urinary tract stones (Ureterorenoscopy). Compared to the current situation in the United States, where open surgery for the management of urinary tract stones is rarely performed and minimally invasive techniques such as ESWL, PCNL, and URS are the most common, this condition is unquestionably very different.[19]

Based on comorbidities in urinary tract stones, 42% (120 patients) of the study's sample of patients with urinary tract stones had a history of hypertension, and 29% (84 patients) had a history of diabetes. This conclusion is consistent with a study conducted by Chou Y et al. in Taiwan, where it was determined that 23.9% of patients with urinary tract stones had diabetes and 50% of patients had hypertension. In a study conducted by Basiri A et al. in Iran, 11.4% of patients with urinary tract stones had diabetes and 15.8% of patients with urinary tract stones had hypertension.[20,21]

CONCLUSION

From 258 cases the incidence of urinary tract stone patients at Sido Waras Hospital in the period of January 2017 until December 2018 has been increased in the span of two years, where in 2017 the total new cases of urinary tract stones were 139 cases and in 2018 the total cases of urinary tract stones were 146 cases. Most urinary tract stones are experienced by male patients compared to female patients with a ratio of 4:1 and suffered by patients in the age group of 40-60 years. Kidney stones are the most common cases of urinary tract stones at Sido Waras Hospital within a span of two years. The management of urinary tract stones is mostly done by the open surgery method compared to other minimally invasive methods due to limited equipment available. In patients with urinary tract stones there are comorbidities of hypertension and diabetes mellitus with a proportion of 58% and 29% respectively.

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