

FREQUENCY OF RENAL LITHIASIS AMONG PATIENTS VISITING A TERTIARY CARE PUBLIC SECTOR HOSPITAL IN PESHAWAR, PAKISTAN

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ABSTRACT

OBJECTIVES

To determine the frequency of renal lithiasis among patients coming to Khyber Teaching Hospital Peshawar.

METHODOLOGY

This Observational cross-sectional study was undertaken at Khyber Teaching Hospital Peshawar, period (January 2021 to August 2021). Data were collected through a self-administered questionnaire. Non-probability convenient sampling technique was used to recruit 61 patients. Institutional Review Board approval was obtained prior to data collection. SPSS version 20 was used to analyze data.

RESULTS

Out of 160 patients, 61(37.5%) patients were having renal calculi. Among those 61 patients, n=49(80%) were male participants and 12(20%) female participants said that they are having renal calculi. The age of the participants was 12-65years. The proportion of males was approximately higher as compared to the females. Most of the participants have renal calculi at the time of the examination.

CONCLUSION

There is a high rate of renal lithiasis in mostly male patients and at young ages. These demographic factors may be potentially associated with the occurrence of renal lithiasis. Further research is required to study these factors in detail in relation to renal lithiasis.

KEYWORDS: Renal lithiasis, Risk factors, renal calculi, public sector Hospitals.

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INTRODUCTION

Renal lithiasis is a hard, crystal-clear mineral material which is developed within the kidney or urinary tract; it is also called kidney stones/renal calculi. The condition of having kidney stones is termed “nephrolithiasis. Pakistan is situated in the calculi belt district, where a reliably increase rate of urolithiasis has been accounted for.¹ In a healthy

individual, during the residence time of urine in the urinary tract, crystals either do not form or are so small they are eliminated uneventfully the rate of crystal nucleation and growth may become such that the crystals cannot be easily eliminated due to their size.² Urine composition factors are important in crystal formation as urine is a metastable liquid containing several coexisting substances that can crystal to generate renal calculi.³ Currently, it is the third most frequent urological disease after urinary tract infections and prostate problems.⁴ Renal lithiasis is a frequent and recurrent disorder that affects 6 to 12% of people during their lifetime.⁵ Most renal Calculi (85%) are made of calcium and are frequently associated with an inappropriate control of calcium or phosphate balance that can lead to bone demineralization.⁶ Renal calculi are small, often between the extent of a portion of corn

& grain of salt. At the point when our body has excessively of specific minerals and it doesn't have enough fluid, these stones-like objects can form. The calculus can be rough or smooth & brown or yellow. Calculus that are < 5 mm (0.2 in) in diameter can pass spontaneously in 98% of cases, while those which are measuring 5- 10 mm (0.2 - 0.4 in) in diameter can pass spontaneously in < 53% of the cases.^{7,8} Stones which are large enough to fill out the renal calyces are called staghorn calculi; these are only formed in presence of urease-forming bacteria. Other forms which can possibly grow to become staghorn calculi are those comprise of uric acid, cystine, & calcium oxalate monohydrate.⁹ The most common cause of renal stones is the lack of water in the body. Calculus is more commonly found in individuals who drink less than the recommended eight to ten glasses of water a day. The study of idiopathic calcium oxalate calculus formation demonstrated the initial therapy for prevention of any type of renal calculi recurrence is a high liquid intake to ensure a urine volume of no less than 2 liters every day.¹⁰ Dehydration from the decreased liquid intake is a significant factor in calculus development, Obesity is a chief risk factor as well as increased dietary intake of animal protein.¹¹ A family history of renal calculi is also a risk factor for the development of renal calculi. In a small number of pregnant women, there may also form renal calculi & there is some proof that the pregnancy-related changes may increase the risk of renal lithiasis. Insights into the magnitude and risk factors of renal lithiasis may be very useful in identifying strategies to prevent and manage them and contribute to the body of knowledge in this area. Therefore, this study aimed to determine the frequency of renal lithiasis among patients coming to Khyber Teaching Hospital Peshawar.

METHODOLOGY

A descriptive observational design was used to investigate renal lithiasis disease and risk factors in a tertiary care hospital in Peshawar. The study was from January 2021 to August 2021. The sampling technique was non-probability convenient sampling. A total of 160 patients were approached. all the relevant patients belonging to Peshawar and the surrounding area were included in the study. Patients with other diseases and those who were not willing to participate were excluded from the study. The study is authorized by the institutional review committee and written consent was taken from the head of the department of radiology before enrolling samples in our study. Data were

collected from patients in the radiology department of Khyber teaching hospital. The data was collected using a self-structured and well-organized questionnaire related to the study. The data collectors were trained prior to and piloted before actual implementation. Data were analyzed in Excel and different statistical measures were used such as percentages, frequency, ratio and proportions.

RESULTS

In this examination over a time of four months, sequential 160 patients with renal stones disease manifestations were considered. Out of 160 patients a total of 61 patients who were having renal calculi. As shown in table 1 age of the participants was 12-65years and most of the participants were from the age group 12-30.

Table 1: Renal Lithiasis in Patients with Age-Wise Division (n=61)

Age (Years)	Patients Number	%Age
12-30	32	52.4%
31-45	17	27.8%
46-65	12	19.6%

In patients with renal lithiasis disease, there were dominancy of male. With the proportion of the male patients was 80%(n=49) and the female patients were 20% (n= 12) as shown in figure 1.

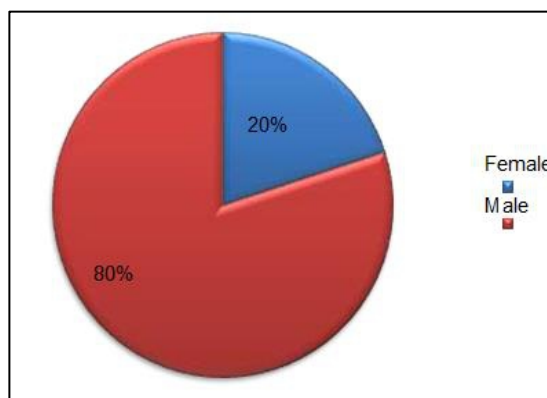


Figure 1: Percentage of Renal Lithiasis in Male & Female Patients (n=61)

In the majority of patients, the calculi were unilateral either the left or right side while both sides is present only in 24.6%.Detail are given in table 2.

Table 2: Division of Renal Lithiasis Based on Site (n=61)

Side	Patients Number	%Age
Unilateral (Left)	23	37.7%
Unilateral (Right)	23	37.7%
Both Sides	15	24.59%

Based on comorbidity patients were found to have diseases such as renal calculi, ureteric calculi, UB (urinary bladder) calculi, renal cysts, renal concretions, and hydronephrosis as shown in table 3.

Table 3: Renal Lithiasis Patients with other Diseases (n=61)

Disease	No. of Patients	%Age
Renal Concretions	17	15%
Renal Cysts	16	14%
Hydronephrosis	19	17%

Patients having renal calculi were 47 in number, ureteric calculi were 8, UB calculi were 6 renal cysts were 16 renal concretions were 17, and hydronephrosis was present in 19 patients respectively.

DISCUSSION

The overall male and female in our study were 1.9:1. Which correlates well with those observed in other studies from Pakistan, which lie in the range of 2.1:1 to 3.8:1.^{10,11,23} Same observation was seen in the available literature from Thailand^{2.1}. However, it was lower than observed in Arab countries such as Kuwait 9.1 and Saudi Arabia 5.1.¹⁷ The average age of presentation in our study was 33.1 years majority of patients lay in the 12-65 years of age group. The facts were supported by available literature from the USA in which the majority of patients to lie between 20 to 49 years¹ and Peshawar with the major patient population in the 30 to 50 years age group.¹⁸ However, the average age in our study was less than that observed in Karachi was 44 years, Kuwait was 41.91 years and Thailand was 40.3 years.^{19,20} Most common presenting complaint was left flank pain followed by bilateral Similar pattern was observed in studies done in Kuwait, the USA, and Karachi.²⁰ Modification in urinary PH additionally plays an imperative part in the combination of kidney calculus, on the grounds that in specific calculi, PH is. In struvite calculus, urine stays antacid (alkaline) for a long time & over soaked with particles that advance struvite calculus development. Increased urinary pH (>7) is seen in 20% of patients in this examination. F. Barbey et al made comparable perceptions of increased urinary PH (>7.2) claim for the amalgam of struvite calculus.⁷ In this study, 13.2% of cases, had radiological proof of Staghorn calculi. Another has reported 2-3% of staghorn calculi.¹¹ In 54% of patients there was recurrence (frequency) of the renal lithiasis disease. In 93.4% of patients, calculi were one-sided. In 37.7% of patients, the calculi are unilateral (left) and furthermore 37.7% of the calculi are unilateral (right) and calculi on both sides are present only in 24.6%. So, the observations showed that most of the stones were made in both (the left and right) of the kidney. The study has shown that the most important thing you can do is, to drink enough fluid, mostly water to

prevent renal lithiasis disease formation. There is a high rate of renal lithiasis in mostly male patients. As indicated by the investigation, participants generally knew about Renal Lithiasis Disease prevention. In addition, conducting a comparative examination including the patients of different hospitals in Peshawar will make the findings more particular.

LIMITATIONS

This study has several methodological limitations such as small a sample size particularly for a descriptive study, non-probability sampling, single-site study and only a descriptive level of analysis. Further research may be conducted by addressing these shortcomings.

CONCLUSION

Based on this study's findings it may be concluded that renal lithiasis is prevalent in males and in young people. These demographic factors may be potentially associated with the occurrence of renal lithiasis. Further research is required to study these factors in detail in relation to renal lithiasis

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CONTRIBUTORS

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5. **Suleman Khan** – Concept & Design