

## Original Article

### Analysis of Cases of Renal Stones and Complications in Study Population: A Clinical Study

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#### ABSTRACT:

**Background:** Renal stones are common disease in both developed and developing countries. This pathology has become more common over the past few decades as a result of the rapid variations in dietary habits and the increasing standard of living. The present study was conducted to investigate evaluate the cases of renal stones in population. **Materials & methods:** This study was conducted on 160 patients of renal stones of both genders. Patients's parameters such as age, gender, type of stones etc. were recorded. Ultrasonography (USG) was performed in all patients. **Results:** Males were 60 and females were 100. The difference was significant ( $P < 0.05$ ). Common symptoms were pain in males (45) and females (86), hematuria in males (50) and females (70), dysuria in males (15) and females (45), anuria in males (10) and females (20), fever in males (55) and females (67) and colic in males (38) and females (51). The difference was significant ( $P < 0.05$ ). Types of stones was calcium oxalate in males (17) and females (25), calcium phosphate in males (14) and females (20), uric acid in males (10) and females (28), mixed in males (7) and females (12) and struvite in males (12) and females (15). The difference was significant ( $P = 0.01$ ). **Conclusion:** Author concluded that renal stones are frequent occurring renal diseases. Females showed higher prevalence as compared to males. Most common type was calcium oxalate.

**Key words:** Calcium oxalate, Chronic kidney disease, Renal stones

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#### INTRODUCTION

Renal stones are common disease in both developed and developing countries. This pathology has become more common over the past few decades as a result of the rapid variations in dietary habits and the increasing standard of living. Changes in socioeconomic conditions over time have affected not only the incidence but also the site and chemical composition of calculi. Renal stones, composed of ammonium urate and calcium whereas renouretal calculosis featuring mainly calcium oxalate and phosphate is currently more frequent in economically developed countries. Chronic kidney disease (CKD) is becoming a major public health problem worldwide. The current burden of disease might due to a change of the underlying pathogenicity of CKD.<sup>1</sup>

CKD is a complication of kidney stones as a result of rare hereditary disorders. Glomerulonephritis was the one of the leading causes of kidney disease several decades ago. Nowadays, infections have become a less important cause for kidney disease, at least in the western world. Moreover,

current evidence suggests that hypertension and diabetes are the two major causes of kidney disease worldwide. Kidney stones and chronic kidney disease (CKD) were reported in 5% and 13% of the adult population.<sup>2</sup>

Kidney stones may be associated with complications such as infection, acute renal failure and chronic kidney damage. The prevalence of the end-stage renal disease (ESRD) due to kidney stones among patients who start maintenance hemodialysis was approximately 3.2%. Infection stones are the most frequent cause of urolithiasis associated ESRD especially in bilateral developing of stag horn stones configuration. Extensive stone development has been observed with uric acid, calciumoxalate or cystine stones.<sup>3</sup> The present study was conducted to investigate evaluate the cases of renal stones in population.

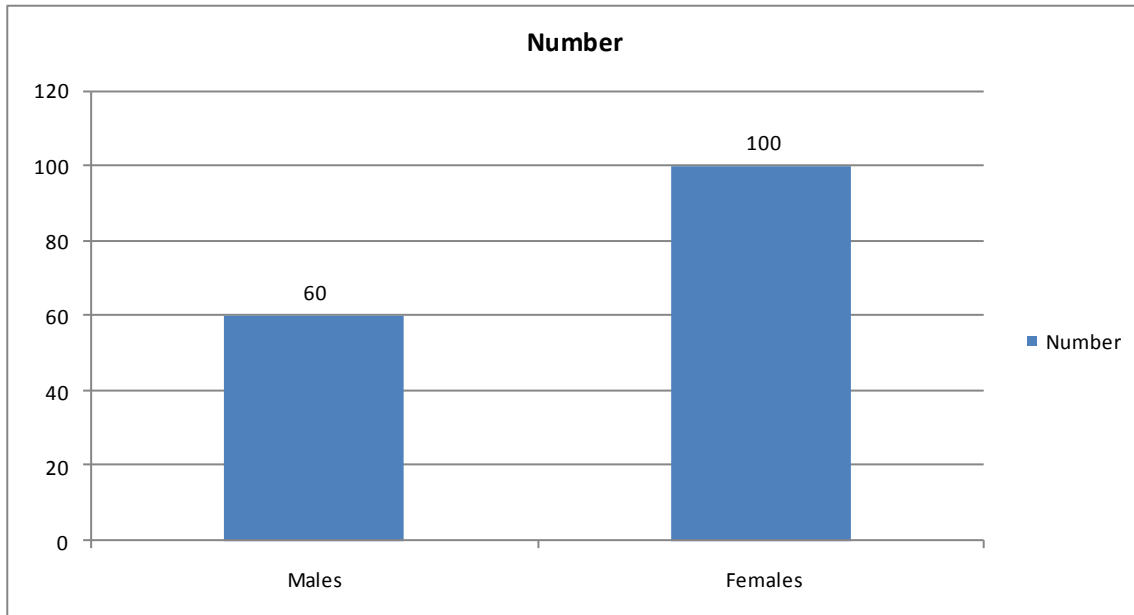
#### MATERIALS & METHODS

This study was conducted in department of general surgery. It included 160 patients of renal stones of both genders. All were informed regarding the study and written consent was

obtained. Patients’s parameters such as age, gender, type of stones etc. were recorded. Ultrasonography (USG) was performed in all patients. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

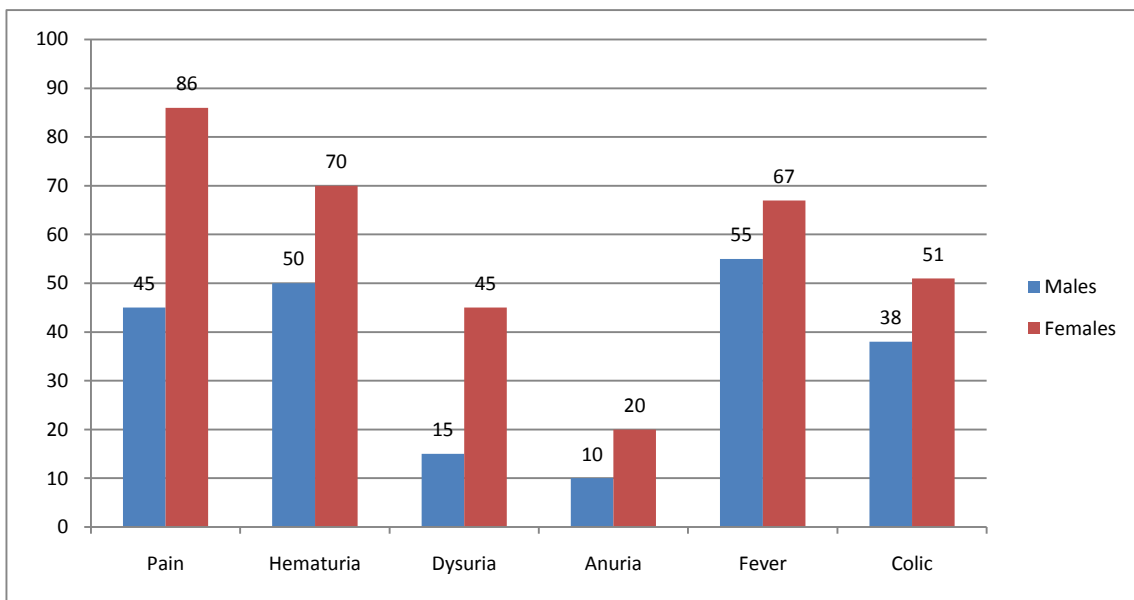
**RESULTS**

**Graph I** Distribution of patients



Graph I shows that males were 60 and females were 100. The difference was significant (P< 0.05).

**Graph II** Symptoms in patients



Graph II shows that common symptoms were pain in males (45) and females (86), hematuria in males (50) and females (70), dysuria in males (15) and females (45), anuria in males (10) and females (20), fever in males (55) and females (67) and colic in males (38) and females (51). The difference was significant (P< 0.05).

**Table I** Composition of stones

Composition	Males	Females	P value
Calcium oxalate	17	25	0.01
Calcium phosphate	14	20	
Uric acid	10	28	
Mixed	7	12	
Struvite	12	15	

Table I shows that types of stones was calcium oxalate in males (17) and females (25), calcium phosphate in males (14) and females (20), uric acid in males (10) and females (28), mixed in males (7) and females (12) and struvite in males (12) and females (15). The difference was significant (P- 0.01).

## DISCUSSION

The exact mechanism of progressive renal failure has not yet completely recognized, even with well-known obstructive and infections mechanisms of kidney injury crystal deposition in the tubules and interstitium of both kidneys. The potential risk of degradation of renal function justifies the etiological investigation of all lithiasis associated pathologies. Thus, calculus analysis of the crystalline phases and morphological characteristics is an important factor in the etiological diagnosis of the disease.<sup>4</sup> Chronic kidney disease (CKD) is emerging to be an important chronic disease globally. One reason is the rapidly increasing worldwide incidence of diabetes and hypertension. In India, given its population >1 billion, the rising incidence of CKD is likely to pose major problems for both healthcare and the economy in future years. Indeed, it has been recently estimated that the age-adjusted incidence rate of ESRD in India to be 229 per million population.<sup>5</sup>

In present study, males were 60 and females were 100. We found that common symptoms were pain, hematuria, dysuria, anuria, fever and colic. This is similar to Oussama et al.<sup>6</sup> It is reported that the calcium oxalate stones were the most common type of urinary stones in men and women, we showed that incidence of this kind of stones was more.

Foley et al<sup>7</sup> in their study found male predominance of urolithiasis with a sex ratio of 1.5. Stones were located in the upper urinary tract in 70.7% of cases. Calcium oxalate was the predominant constituent in 52.6% of stones. There was an increasing prevalence of calcium oxalate stones according to age in both genders. Struvite was more frequent in patients aged 2-9 years and significantly more prevalent in boys than in girls ( $P<0.001$ ). Ammonium urate stones were observed in 14.2% and were more frequent in infants.

Jungers et al.<sup>8</sup> also reported that the overall contribution of nephrolithiasis lead to end stage renal disease (ESRD) was 3.2%. In Gupta et al. study on 2000 patients with nephrolithiasis, only 33 patients (1.7%) had mild to moderate renal failure. In our study the impaired renal

function level was very low. The prevalence of uric acid stones in various studies has been reported in 7.2-15.3% of cases.

Nalini et al<sup>9</sup> found a high prevalence of kidney stone is due to low fluid intake 72.07%, dehydration 67.56% and dietary habits of mixed diet 91.59%, high intake of coffee and tea 57.50%, sodium 64.26%, sugar 49.84%. Life style modifications of smoking 36.03%, alcohol consumption 41.59%, lack of physical activity 42.79%, obesity 54.80% also revealed a high prevalence of this disease.

## CONCLUSION

Author concluded that renal stones are frequent occurring renal diseases. Females showed higher prevalence as compared to males. Most common type was calcium oxalate.

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