



ORIGINAL RESEARCH PAPER

General Surgery

UROLITHIASIS :DIETARY RISK FACTORS IN A HOSPITAL BASED STUDY

KEY WORDS:

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ABSTRACT

Renal stone disease is a prevalent entity bothering mankind since ages. Recent data provide evidence that the incidence of nephrolithiasis is rising. The life time prevalence of renal stone disease is estimated at 1-15%. There are different types of calculi. 75-80% of the stones are calcium containing stones. Diet can help in preventing formation of kidney stones and it is best to avoid oxalate-rich foods such as beets, beans, blueberries, celery, grapes, chocolate, strawberries, spinach, rhubarb, tea, nuts, bran, almonds and peanuts

INTRODUCTION

Nephrolithiasis is a painful disease that can leave kidney with long term derangements. Nephrolithiasis begins with solute supersaturation (SS), crystal formation, and aggregation, followed by retention in the collecting system and further growth. In India upper and lower urinary tract stones occur frequently but the incidence shows wide regional variation.¹ The incidence of renal calculi is comparatively low in the southern part of country compared to other parts.² There are different types of calculi. 75-80% of the stones are calcium containing stones. In adults, kidney stones are associated with hypertension and chronic kidney disease, as well as an increasing financial burden. Recurrent renal stone disease is very prevalent in hilly areas of uttarakhand as seen in day to day opd. Thus this study was undertaken to give an insight into risk factors and preventive measures.

Epidemiology

Nephrolithiasis poses a growing public health burden. it can be conceptualized as a chronic pathophysiologic process. The prevalence of USD is similar to diabetes, affecting 1 in 11 people in their lifetime³. Over the past 15 years, the prevalence of USD has nearly doubled⁽³⁾, and it is growing even more rapidly among historically lower-risk groups, such as children, women, and blacks⁴. contributing factors likely include changes in body habitus, fluid status, dietary habits, and the environment⁽⁵⁾. It is likely that computed tomography (CT) incidentally detects asymptomatic stones; the extent to which this phenomenon contributes to increasing prevalence of USD warrants investigation.

MATERIAL AND METHODS

This prospective observational study was conducted in the Department of General Surgery at Dr.Susheela Tiwari Hospital from November 2013 to October 2015. Sixty patients admitted in various surgical wards with clinical features suggestive of kidney stone disease were recruited for the study. Ethical approval was obtained from the Ethical committee of the hospital and informed consent from patients was also obtained.

A meticulous history was taken from all the cases including personal history followed by thorough clinical examination.

Various laboratory tests were performed. Parents provided the data in the case of children. Those with renal calculi were subjected to operation for retrieval of stones which were then analysed via suitable analytical method. **(Fouriers transform infra red spectroscopy)FTIR METHOD FOR ANALYSIS OF KIDNEY STONE**

Observations were made on mode of presentation. After evaluation, those cases unfit for anesthesia and with contraindications of lithotripsy were excluded from the study.

Observation and results

This age distribution shows that maximum percentage of patients lies in the age group between 41- 60 yrs 42.6% with males(47.1%)34 >females(38.5%26).overall males:females (1.3:1).

THIS bmi distribution shows that 58.3% of the patients lie in the overweight group and 1.7%were obeseLoIn pain was the most common complaint present in 86.7%of the patients followed by dysuria present in 73.3%Ofthe patients. gross hematuria was present in 30% of patients and bladder outlet obstruction was present in 23.3% patients only Mean haemoglobin in our patients was 13.2gm/dl with standard deviation of 13.2+1.6gm/dl.range was from 10-17gm/dl.

MeanTLC in our patients was found to be 8684.41 and the range is 3500-23200.

Mean UREA was34.28 mg/dl range was 13 mg/dl to140mg/dl.

Mean CREATNINE in our patients was 1.017 mg/dl range was 0.1 to 4.6 mg/dl

Mean SERUM ALBUMIN was 6.41 gm/dl and the range was 5.0 to 8.2 mg/dl

Mean SERUM URIC ACID was 5.032mg/dl and the range was3.0 to 7.2 mg/dl

Mean urine PH was 6.73 with standard deviation of .747 with range of 4.5 to 8.0 showing frequency of urine culture

| URINE CULTURE | NO (%) |
|---------------|----------|
| NO CULTURE | 35(0.0) |
| E COLI | 13(52.0) |
| PROTEUS | 6(24.0) |
| KLEBSIELA | 4(16.0) |
| PSUEDOMONAS | 2(8.0) |

DISTRIBUTION OF FACTORS AFFECTING STONE FORMATION AMONG PATIENTS

| | Present No (%) | Absent No (%) |
|-----------------------|----------------|---------------|
| Adequate Fluid Intake | 10(16.7) | 50(83.3) |
| Alcohol | 20(33.3) | 40 (66.7) |
| High Risk Diet Intake | 47(78.3) | 13(21.7) |

TABLE Shows that inadequate fluid intake was present in 83.3% of patients,66.7% were non alcoholics and 78.3% were consuming high risk diet according to local norms.

univariate analysis of various dietary factors with calcium oxalate stones.

| Diet | | Total | Calcium oxalate stones | Others | Odds ratio | 95% CI |
|---------------------|-------------|-------|------------------------|-----------|------------|------------|
| Tomato | 1 to 3 days | 18 | 8 (44.4) | 10 (55.6) | 1.00 | |
| | 4 to 5 days | 15 | 12 (80) | 3 (20) | 5.00 | 1.04–24.03 |
| | Everyday | 27 | 25 (92.6) | 2 (7.4) | 15.63 | 2.81–86.76 |
| Spinach | 1 to 3 days | 21 | 12 (57.1) | 9 (42.9) | 1.00 | |
| | > 3 days | 39 | 33 (84.6) | 6 (15.4) | 4.13 | 1.21-14.06 |
| Cauliflower/Cabbage | 1 to 3 days | 21 | 12 (57.1%) | 9 (42.9) | 1.00 | |
| | > 3 days | 39 | 33 (84.6) | 6 (15.4) | 0.13 | 0.04-0.50 |

This table shows that the odds of having calcium oxalate stones in patients eating tomato for 4 to 5 days in a week and every day was 5.00 and 15.63 as compared to those eating tomato one to three days a week and this was found to be statistically significant. In patients eating spinach for more than three days a week the odds of having calcium oxalate stones was found to be 4.13 as compared to those eating spinach for less than three days a week and this was also found to be statistically significant, but in case of cauliflower the odds of having calcium oxalate stones was found to be (0.13) in those eating cabbage cauliflower for 3-7 days as compared to those eating for 1-3 days and this was statistically significant.

Conclusion

In this study, work up of 60 patients was done by thorough clinical examination and routine laboratory investigations followed by special investigations where required. In our study most common **age group** affected was of adults (40-60 yrs) out of 60 patients only one was a child with age 7 yrs. Measures must be taken to reduce weight and maintain **BMI** within normal range. **Dietary measures** are the first level of intervention in primary prevention, as well as in secondary prevention of recurrences. **Water intake** must be raised sufficiently to prevent kidney stone formation. Treatment must be sorted on time to prevent renal damage. This can be done by ensuring availability of health facilities in hilly terrains and creating health awareness among people. **UTI** was present in 41.7% of the patients with most organisms being gram negative aerobes thus quinolones and other medicines which have good bioavailability in genitourinary tract can be given empirically to cure infection. Dietary advice must be given to reduce the consumption of oxalate rich food items. All these measures can be applied to reduce the incidence and suffering from stone disease. Further studies with evaluation of other contributing factors will definitely be helpful to understand kidney stone disease in a better way, apply preventive measures, and prevent recurrences.

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