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Original Research Article

A demographic study of urolithiasis in patients attending tertiary urological hospital in Dibrugarh, Assam, India

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ABSTRACT

Background: Urolithiasis is a common disease entity seen in medical practice. Various studies from different areas of the world indicates higher male preponderance. Our study was done to find out the gender, age and area of distribution of Urolithiasis in a tertiary urology centre in upper Assam.
Methods: Our study was a retrospective study done between January 2018 to June 2018. Data was collected from the records. A total of 1041 patients were examined during this period, out of which 307 patients were diagnosed and treated for urolithiasis.
Results: Out of 307 patients, 228 were males and 79 were females. Male to female ratio was 2.9:1. The maximum number of patients in the age group was between 30-39 years. Majority of the patients were from the Dibrugarh district of upper Assam. Most of the positive urolithiasis cases was fund in patients consuming a non-vegetarian diet.
Conclusions: Urolithiasis is a disease with preponderance in adult males. Geographical distribution, age and diet are factors that affect the occurrence of the disease.

Keywords: Assam, Diet, Tertiary care centre, Urolithiasis

INTRODUCTION

Urolithiasis refers to a condition characterized by the formation or occurrence of calculi in the urinary tract.[1] Urolithiasis is the third most common urinary tract disease in humans, following urinary tract infections and prostatic diseases. According to localization, the stone maybe present in one or more sites i.e. in the kidney, ureter, bladder and urethra. Urolithiasis is the third most common urological disease affecting both males and females but predominant among males in a proportion of approximately 2:1.[2] Unfortunately, a large number of people are affected by urolithiasis all over the world. The prevalence and incidence of nephrolithiasis are reported to be increasing across the world. By a variety of indicators including inpatient admissions, out- patient office visits, and emergency department visits, men are affected 2-3 times more often than women.[3]

Urinary stones are related with various risk factors that have to do either with each person's endogenous risk factors or with the environment (exogenous risk factors). Usually there is a combination of both endogenous and exogenous factors leading to the formation of stones.

The prevalence of urolithiasis is on the rise due to various changes in the socio-demographic and other etiological factors in the north-eastern states of India in general and Assam in particular. However, there is a lack of proper scientific study on this condition in this tiny part of the country and hence this present study was initiated to determine the prevalence of urolithiasis in upper Assam.

METHODS

This was the retrospective type of study. This study was conducted for 6 months (January 2018- June 2018). There are total 307 peoples were included in the study. All age groups were included.

Inclusion criteria: Cases diagnosed with urolithiasis.

Exclusion criteria: Medical conditions other than urolithiasis.

A single centre retrospective study was conducted by Urovision Hospital, Dibrugarh, Assam, a tertiary centre in Urology from period January 2018 to June 2018. The study was comprised of patients visiting the tertiary care centre from various districts in upper Assam.

The study was approved by the Institutional Ethics Committee of Urovision Hospital and followed the tenets of Declaration of Helsinki. Data were collected from the hospital records. As it was a retrospective study, therefore, informed consent could not be obtained from patients.

On reviewing the hospital medical records of patients, we found that a total of 1041 patients were examined during the study period and 307 were diagnosed with Urolithiasis after thorough clinical examination, detailed history and investigation.

The most common presenting symptom was flank pain. The patients suspected of suffering from urolithiasis were asked to undergo radiological imaging to confirm the diagnosis. Some of the radiologic imaging techniques used for the diagnosis of urolithiasis were X-ray KUB and pelvis, ultrasonography of pelvis and KUB, IVU (Intravenous Urography), CT Scan (Computed Tomography), etc.

Treatment options were discussed with the patient at the time of offering treatment and the best accepted modality was carried out. The treatment options offered was either surgical or conservative.

Only the patients diagnosed with urolithiasis were included in the study. Remaining patients diagnosed with medical condition other than urolithiasis were excluded from the study. Further on the 307 patients were segregated into various categories based on sex, age, month of arrival in the tertiary care centre, districts they hailed from and diet.

RESULTS

During our study period of 6 months from January 2018 to June2018 we gathered a total of 1041 patients. In our study out of 1041 patients, 307 patients were diagnosed and treated for Urolithiasis. Among the 307 patients, 228 (74.3%) were males and 79 (25.7%) were females. The male to female ratio was 2.9:1 (Table 1).

Table 1: Sex distribution.

Sex	Number of patients	Percentage
Male	228	74.3
Female	79	25.7

The maximum number of patients with Urolithiasis were clustered in the age group between 30-39 years, 104 patients (33.8%) out of the 307 patients, followed by age group 20-29 years 69 patients (22.40%) and followed by age group 40-49 years, 58 patients (18.80%) (Table 2). The mean age of the patient was 39.41±14.21 years. The mean age of males with urolithiasis was 40.39±14.03 years. The mean age of females with urolithiasis was 36.57±13.18 years. But the difference was not statistically significant with *p* value= 0.5942.

Table 2: Age distribution.

Age group	Number of patients	Percentage
0-9	1	0.33
10-19	7	2.28
20-29	69	22.40
30-39	104	33.80
40-49	58	18.80
50-59	34	11.07
60-69	21	6.84
70-79	11	3.58
80-89	2	0.65

Out of the 307 patients, the maximum number of patients were observed in the months of January and May, 63 patients (20.5%), followed by April, 60 patients (19.5%) and followed by June, 50 patients (16.2%) (Table 3).

Table 3: Number of patients in relation to month of presentation.

Month	Number of patients	Percentage
January	63	20.5
February	30	9.77
March	41	13.3
April	60	19.5
May	63	20.5
June	50	16.2

It was observed that maximum number of patients were from the Dibrugarh district, 92 patients (29.9%) followed by Tinsukia district, 58 patients (18.8%) and followed by Sivasagar district, 44 patients (14.3%) (Table 4).

In this study we found that majority (81.8%) of the patients attending our tertiary care centre were non-vegetarian by diet (Table 5). From this study, it was found that the major risk factors that contribute to the

stone formation and its re occurrence are age, gender, and dietary habits (vegetarian and non-vegetarian).

Table 4: District wise distribution of patients.

District	Number of patients	Percentage
dibrugarh	92	29.9
Tinsukia	58	18.8
Golaghat	15	4.88
Sivasagar	44	14.3
Majuli	2	0.65
Lakhimpur	10	3.25
Jorhat	19	6.18
Dhemaji	35	11.4
Charaideo	2	0.65
Others	30	9.77

Table 5: Type of diet.

Diet	Number of patients	Percentage
Vegetarian	56	18.2
Non- vegetarian	251	81.8

DISCUSSION

Epidemiological surveys have been previously reviewed showing that in economically developed countries the prevalence rate ranged between 4% and 20%.[4] The prevalence and incidence of nephrolithiasis are reported to be increasing across the world.[3] In this study the prevalence of urolithiasis was 29.4% amongst the patients attending the tertiary speciality centre.

According to literature, urolithiasis is more common in men than in women. Urolithiasis is the third most common urological disease affecting both males and females but predominant among males in a proportion of approximately 2:1.[2] In our study 74.3% were males and the male to female ration was 2.9:1.

A previous study has demonstrated that urolithiasis usually occurs between the third and fourth decades of an individual's life, and that the prevalence rate varies considerably according to age, while peak incidence of urinary calculi is from twenties to the forties.[2] The peak age for onset of stone formation is in the third decade, and prevalence increases with age until 70.[5] Similarly, our study also reported maximum prevalence 104 (33.8%) in the age group of 30 to 39 years.

There exist a direct relationship between non- vegetarian food habit with kidney stone formation.[6] A diet rich in animal protein, because of its high purine content, which produces uric acid in its catabolism, may increase the risk of uric acid stone formation.[7] In this study we established significant relationship between high intake of animal protein and stone formation. This study suggests that vegetarians are at a lower risk for stone formation in contrast to non-vegetarian. However, a randomized prospective dietary intervention study demonstrated that reduction of sodium and animal protein and maintenance of normal dietary calcium intake attenuates stone activity in recurrent hypercalciuric stone formers.[8]

It has been well documented that the incidence of urinary stones is higher in countries with warm or hot climates, probably due to low urinary output and scant fluid intake.[9] Given the preponderance of evidence from different study designs across the globe, it seems undeniable that climate, whether it is through temperature, humidity, or sunlight, has at least some role in the development of urinary calculi, in at least some patients.[10] On the contrary, our study shows a higher incidence of urolithiasis in the winter and spring season. The climate is of Assam is described as "Tropical Monsoon Rainforest Climate". The geographic distribution of stone disease tends to roughly follow environmental risk factors; a higher prevalence of stone disease is found in hot, arid, or dry climates such as the mountains, desert, or tropical areas.[3]

One of the limitations of the study was that the study was for a short duration of time due to which the data collected was not sufficient to generate a result on the distribution of urolithiasis in upper Assam. Another being, the absence of any other study done on a similar topic of discussion.

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