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Research Article

RENAL STONE IN PATIENTS WITH DIABETES MELLITUS

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Abstract:

OBJECTIVE: To determine the frequency of renal stone in patients with diabetes mellitus

PATIENTS AND METHODS: A total of fifty patients fulfilling inclusion criteria as having renal stone were recruited in one-year cross sectional study (2015) conducted at tertiary care hospital. Patients were interrogated in detail regarding their particulars, presenting complaints, past history, treatment received, any previous surgery done etc. Patient demographic and clinicopathological characteristics and biochemical markers were investigated. All patients underwent routine blood and urinary examination. Imaging of stones was done both with ultrasonography, X-rays, CT was done whenever felt necessary. All these patients underwent surgical intervention whereas the frequency / percentages (%) and means \pm SD computed for study variables.

RESULTS: During six month study period total fifty patients having renal stones were explored and study. The mean \pm SD for age (yrs) of population was 32.21 ± 7.31 . Regarding gender distribution male and female population was observed as 35 (70%) and 15 (30%), residence as urban 32 (64%) and rural 18 (36%) and stone composition identified as calcium oxalate 37 (74%) and uric acid 13 (26%) respectively.

CONCLUSION: There is a strong association between type 2 diabetes, calcium and uric acid stone formation.

KEYWORDS: Kidney, Stone, Uric Acid, Calculi and Diabetes Mellitus

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INTRODUCTION:

The incidence of urinary stone disease has shown a steep rise in recent decades in all developed countries and epidemiologic changes have occurred along with marked modifications in dietary habits and life style that occurred in all Western and westernized populations, characterized by a high calorie intake coupled with reduced physical activity [1-5]. Two studies have revealed an increased prevalence of renal stones in patients with diabetes mellitus (DM) though the exact chemical composition of the stone was not identified [6,7]. It has not been well defined whether calcium or uric acid stones or both contributed to the increased prevalence of kidney stone disease in patients with diabetes mellitus as alterations in urine biochemistry associated with obesity and type 2 diabetes may favor the formation of uric acid stone as well as of calcium stones [8]. The present study gives us the knowledge of the segment profile of age and gender of the patients with renal stone among diabetic population presented at tertiary care hospital Hyderabad.

PATIENTS AND METHODS:

A total of fifty patients fulfilling inclusion criteria as having renal stone were recruited in one year cross sectional study (2015) conducted at tertiary

care hospital while the patients of renal malignancy, connective tissue disorder and pregnant and lactating women were excluded from this study. Patients were interrogated in detail regarding their particulars, presenting complaints, past history, treatment received, any previous surgery done etc. Patient demographic and clinicopathological characteristics and biochemical markers were investigated. A detailed history of these patients was recorded which included source of water, diet detail, previous history of stones and their treatment. All patients underwent routine blood and urinary examination. Imaging of stones was done both with ultrasonography, X-rays, CT was done whenever felt necessary. All these patients underwent surgical intervention to extract the renal calculi while the extracted stone and fragments were analyzed to note the chemical composition. The data was collected on pre-designed proforma and analyzed in SPSS to manipulate the frequencies and percentages.

RESULTS:

During six month study period total fifty patients having renal stones were explored and study. The mean \pm SD for age (yrs) of population was 32.21 ± 7.31 . The demographical and clinical profile of study population is presented in Table 1.

TABLE 1: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF STUDY POPULATION

Parameter	Frequency (N=50)	Percentage (%)
AGE (yrs)		
20-29	10	20
30-39	20	40
40-49	11	22
50-59	06	12
60+	03	6.0
GENDER		
Male	35	70
Female	15	30
RESIDENCE		
Urban	32	64
Rural	18	36
STONE COMPOSITION		
Calcium oxalate	37	74
Uric acid	13	26

DISCUSSION:

Renal stone is a major cause of morbidity worldwide and identifying common systemic disorder that increase the risk of kidney stone formation would help in preventing the occurrence and recurrence of renal stones. [9] It is well known that in type 2 diabetes mellitus there is metabolic derangement that may increase the risk of kidney stone formation. Although a low urinary pH plays an important role in uric acid kidney stones and a defect in renal acid excretion also an important risk factor for calcium stones. [10] The family history and male gender were significant risk factors for the development of urinary stones in diabetic population. Taylor EN et al [7] evaluated and observed the relation between DM and prevalent kidney stones. The onset of uric acid stone in a patient should prompt a check for type 2 diabetes and the components of the metabolic syndrome. Cameron MA, et al [11] observed that the patients with type 2 diabetes at increased risk for uric acid stones. Thus the main risk factor for uric acid was a low urine pH in patients with diabetes mellitus.

CONCLUSION:

There is a strong association between type 2 diabetes, calcium and uric acid stone formation and it is necessary to screen all diabetic individuals for renal stones on periodic basis and whenever feel necessary.

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