Urinary calculi in Northern Province, Sri Lanka; A descriptive cross-sectional study conducted at Teaching Hospital Jaffna among the patients underwent surgical interventions for urinary calculi

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Abstract – Urinary calculi may affect the renal function and cause permanent damage to the kidney, if it is not treated. This study was carried out to find the distribution of urinary calculi in Northern Province patients who underwent surgical interventions for urinary calculi at Genitourinary surgical unit, Teaching Hospital Jaffna. It is a descriptive cross sectional study carried out from October 2016 to November 2017. The demographic data including age, gender, place of residence during the last ten years, and recurrence were obtained from the clinical notes and recorded in data extraction sheets. Of the 115 patients selected higher percentage of urinary calculi was reported in males (n=76, 66.1%) than in females (n=39, 33.9%) with the ratio of 1.9:1. The age of patients having stones ranged from 07 to 85 years with the mean age of 50.9 (±16.2) years. In this study, 60 males (79%) and 32 females (82%) were in the age range of 31-70 years. Highest number of patients was from Jaffna District (n=73, 63.5%) and lowest number was from Mannar District (n=5, 4.3%). This study showed that 28.7% (n=33) had past history of urinary calculi surgical recurrence. Recurrence also common in males (60.6%) than females (39.3%). From this study it can be concluded that, the urinary calculi were more common in males than in females from all five Districts of Northern Province; males had more recurrence of urinary calculi than females and urinary calculi were more common in productive age group. Systematic survey should be carried out to confirm this problem in Northern Province, Sri Lanka.

Key words – Northern Province, Sri Lanka, Urinary calculi

I. INTRODUCTION

Urolithiasis is one of the common and most painful medical problem encountered all over the world [1]. Urinary calculi are polycrystalline aggregates composed of varying amounts of crystalloid and a small amount of organic matrix. It can affect the renal function and lead to permanent damage of the kidney, if it is not treated [1].

About 2 to 5% of Asians develop urinary calculi in their lifetime. It is estimated that approximately 2% of the population experiences urinary stone disease at sometime in

their life with male-female ratio of 2:1. The peak incidence is observed in 2nd to 3rd decades of life.

Prevalence of urinary calculi in Sri Lanka is mainly associated with certain dietary habits and environmental geochemical factors, which greatly influence the aetiology of urinary calculi [1]. It has been reported that trend in the admission of patients with kidney stones to Teaching Hospital, Jaffna is increasing [2]. The aim of this study was to find the distribution of the urinary calculi in Northern Province patients who underwent surgical intervention for urinary calculi at Genitourinary surgical unit, Teaching Hospital Jaffna.

II. METHODOLOGY

It was a descriptive cross sectional study carried out from October 2016 to November 2017. A total of 115 patients [3] from Northern Province who underwent surgical intervention for urinary calculi at Genitourinary surgical unit, Teaching Hospital, Jaffna were recruited for this study. A written, informed consent was obtained prior to their recruitment. The demographic data including age, gender, place of residence during the last ten years and surgical recurrence were obtained from the clinical notes and recorded in data extraction sheets.

Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna. The collected data were analyzed using SPSS version 20.

III. RESULTS

Demographic data

Among the patients those who were affected with urinary calculi, highest number was from Jaffna District (n=73, 63.5%) and lowest number of patients were from Mannar District (n=5, 4.3%) (See Table 1).

Table 1

Distribution of the urinary calculi in northern province patients who underwent surgical intervention for urinary calculi at genitourinary surgical unit, teaching hospital jaffna.

District	Total		Male		Female	
	No.	%	No	%	No	%
Jaffna	73	63.5	47	64.4	26	35.6
Killinochchi	11	9.6	06	54.5	05	45.5
Mullaithivu	16	13.9	12	75.0	04	25.0
Vavuniya	10	8.7	08	80.0	02	20.0
Mannar	05	4.3	03	60.0	02	40.0
Total	**115**	**100.0**	**76**	**100.0**	**39**	**100.0**

Of the 115 patients selected for this study males (n=76, 66.1%) were affected more than females (n=39, 33.9%) with the ratio of 1.9:1 (See Table 2). In all five Districts males were affected more than females (See Table 1).

The age of the subjects having stones ranged from 07 to 85 years with the mean age of 50.9 (±16.2) years. Among the recruited patients the youngest was a female child of 7 years. When the ages of the selected patients were classified in 10 year intervals, highest number of male patients was in the age group of 51 to 60 years (n=19, 25.0%) while the highest number of females were in the age group of 61 to 70 years (n=11, 28.2%). In this study, 60 males (79%) and 32 females (82%) affected were in the productive age group (31 to 70 years) (See Table 2).

Table 2
Age and gender distribution of patients who underwent surgical intervention for urinary calculi at genitourinary surgical unit.

Age	Total		Male		Female	
(Years)	No.	%	No	%	No	%
0-10	01	0.9	00	0.0	01	2.6
11-20	02	1.7	02	2.6	00	0.0
21-30	10	8.7	05	6.6	05	12.8
31-40	21	18.3	18	23.7	03	7.7
41-50	18	15.7	08	10.5	10	25.6
51-60	27	23.5	19	25.0	08	20.5
61-70	26	22.6	15	19.7	11	28.2
71-80	07	6.1	06	7.9	01	2.6
81-90	03	2.6	03	3.9	00	0.0
Total	**115**	**100.0**	**76**	**100.0**	**39**	**100.0**

Recurrence of urinary calculi
As per the information collected in this study, 33 patients (28.7%) had past history of urinary calculi surgical recurrence. Among these patients, higher percentage of recurrence was reported in males (n=20, 60.6%) than in females (n=13, 39.3%). Most affected recurrent age group was 51-60 years (See Table 3).

Among the recurrent urinary calculi patients 24 (72.7%), 4 (12.1%), 2 (6.1%) and 1 (3%) had recurrence one, two, three and more than three times respectively. Among the patients who had recurrence one-time (n=13, 54.2%) and two-time (n=3, 75%) highest number were males. Among the one- time recurrent male patients highest number (n=9, 69.3%) were from third to sixth decades of life. Among the 115 patients recruited, 4 patients underwent recurrent surgical intervention during the study period and 3 (75%) were males.

Table 3
Age and gender of the selected patients who had surgical recurrence for urinary calculi.

Age	Total		Male		Female	
(Years)	No.	%	No	%	No	%
21-30	1	3.0	1	5.0	0	0.0
31-40	6	18.2	5	25.0	1	7.7
41-50	8	24.2	3	15.0	5	38.5
51-60	9	27.3	4	20.0	5	38.5
61-70	6	18.2	4	20.0	2	15.4
71-80	2	6.1	2	10.0	0	0.0
81-90	1	3.0	1	5.0	0	0.0
Total	**33**	**100.0**	**20**	**100.0**	**13**	**100.0**

IV. DISCUSSION

Genitourinary surgical unit in Teaching Hospital Jaffna is the only unit in Northern Province offers various surgical modalities to treat urinary stones. Majority of the patients living in Northern Province get advanced and new modalities of surgical treatment for urinary stones at Teaching Hospital Jaffna. Due to the several reasons people from Districts like Vavuniya and Mannar get treatment not only from Teaching Hospital Jaffna but also from Teaching Hospital Anuradhapura which has the same facilities. Hence number of patients treated from each Districts of Northern Province does not reflect the distribution of urinary stone disease in each District.

In this study urinary calculi is common in males than females. Similar finding was reported in a study conducted in Sri Lanka [4], India [5], Pakistan [6], Kenya [7] and Argentinean [8].

When compared to the previous studies [4], [5], [6], [7] [8] the mean age of patients in present study was higher (50.9).

Surgical recurrence of urinary stones in present study was 28.7% which is higher and lower when compare with previous study conducted in Argentina [8] and India [9] respectively.

V. CONCLUSION

From this study it can be concluded that, the urinary calculi were more common in males than in females from all five Districts of Northern Province; males had more recurrence of urinary calculi than females and urinary calculi were more common in productive age group. This is the first study, which attempts to present the distribution of urinary calculi in Northern Province. However the systematic survey was not carried out in all the five Districts, but the reported results is based on the patients who underwent surgical intervention for urinary calculi at Genitourinary surgical unit, Teaching Hospital, Jaffna. We suggest that a systematic survey should be carried out to confirm this problem in Northern Province, Sri Lanka.

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