INCIDENCE OF UROLITHIASIS IN BIR HOSPITAL

by

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Introduction

"Urolithiasis is one of the oldest of man's diseases, and at one time one of the commonest." (Edwin S. Clarke, 1968). The oldest bladder stone so far discovered in man was found in a mummy dating from about 4700 B.C. and consists of uric acid, oxalate and phosphates. In Ancient India, urinary tract stones seem to have been commoner than in Egypt, and it was known that cutting for stones was practised in those days. Early accounts about bladder stone dates back to Susruta in India, Hippocratic era in Greece, Celsus in Rome and many others in the middle ages.

Methods

There have been many studies of the incidence of urinary lithiasis in the past and recently both in the European countries and USA, and in the developing nations of Asia., which tends to show distinctive pattern in different regions and their evolution in time. There has so far been no statistical study of this disease in Nepal.

The incidence of urinary lithiasis may be studied in different ways, as:

1. Hospital incidence per 1,000 (or 10,000) total *in*-patients.
2. Hospital incidence per 100,000 population in the surrounding area.
3. True population incidence per 100,000 (by an adequate population sampling technique) etc.

For the present study we have chosen the first method.

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In the present study we have tried to asess the prevalence of urolithiasis in the Bir Hospital inpatients for last seven years from 2021 to 2027 B.S. (1964 to 1970) based on the radiological study. We have chosen the radiological method for this study because this is the most reliable method of detecting urolithiasis In this group was included all those who had plane X Ray of the abdomen, those with symptoms of urinary calculi and without, where the radiograph was being taken for other reasons. Intravenous pelography was done in all those found to have or suspected of having upper urinary tract stones.

Table 1. No. of **X'Ray Abdomen**

	Below 12 Years			Above 12 Years			
Year	Male	Famale	Total	Male	Famale	Total	Grand Total
2021 (1964 A.D.)	2	2	4	42	54	96	100
2022 (1965 A.D.)	8	2	13	105	92	197	210
2023 (1966 A.D.)	8	8	16	59	61	120	136
2024 (1967 A.D.)	8	6	14	62	76	138	152
2025 (1968 A.D.)	18	16	34	182	165	347	381
2026 (1969 A.D.)	13	4	17	129	77	206	223
2027 (1970 A.D.)	12	5	17	172	156	328	349

Table 2. **Bladder Stones**

Years	Below 12 Years			Above 12 Years			Grand Total
	Male	Famale	Total	Male	Female	Total	
2021 (1964)	×	×	×	4	×	4	4
2022 (1965)	5	×	5	1	1	2	7
2023 (1966)	5	1	6	×	×	×	6
2024 (1967)	3	2	5	×	2	2	7
2025 (1968)	6	2	8	2	1	3	11
2026 (1969)	6	1	7	1	×	1	8
2027 (1970)	3	1	4	2	×	2	6

Table 3. **Kidney and Ureteric Stones**

Years	Below 12 Years			Above 12 Years			Grand Total
	Male	Female	Total	Male	Female	Total	
2021 (1964)	×	×	×	12	10	22	22
2022 (1965)	1	×	1	13	14	27	28
2023 (1966)	1	×	1	12	10	22	23
2024 (1967)	1	×	1	14	23	37	38
2025 (1968)	1	×	1	55	35	90	91
2026 (1969)	4	×	4	18	4	22	26
2027 (1970)	×	1	1	33	14	47	48

Table 4.

Total		In-patient Admission (2021-2027 B.S.) 60, 857 (Male : 27,794 and Female : 33,063)	
		Below 12 Years	Above 12 Years
Total No. X'RAY Abdomen	Male	69	751
	Female	46	681
	Total	115	1,432
Bladder Stone	Male	28	10
	Famale	7	4
	Total	35	14
Kidney and Uretric Stone	Male	8	157
	Female	1	110
	Total	9	267

Result : [See Table 1-4]

In the seven years between 2021 and 2027 B.S. (1964-1970) 60,857 patients were admitted in the Bir Hospital. There were 33,063 female and 27,794 male. Among these 1,432 adults and 115 children (below the age of 12 years) had plain X'Ray of the abdomen.

Bladder stone was found in 35 children (28 male and 7 female) i.e. in 30.4% of all children who were X'Rayed. Only 14 adults (10 male and 4 female) i.e. 0.09% of all the adult X'rayed had bladder stone.

Renal and Ureteric stone was found in 267 adults (157 male and 110 female) which constitutes about 10.87% of the adult inp tients X'Rayed. Only 9 children (8 male and 1 female) had upper urinary tract calculi.

The overall incidence of the urinary calculi in the hospital in-patients was 53.4 per 10,000.

Discussion:

One of the earliest statistical studies of urolithiasis is that of Yelloly (1829-1830) who made a general survey in Great Britain based on hospital records. He found the average incidence to be 1 in 100,000 with marked regional variations. Civale of Paris (1838) found a similary low incidence of 4.4 per 100,000 (in Bavaria) and only 0.7 per 100,000 in 12 districts of France. He studied the available records from hospitals in 20 countries mainly in Europe. McCarrison and his colllegues in India in 1931 estimated the average incidence as 10 per 100,000 with great local variation e.g. 478 per 100,000 in Punjab, 266 per 100,000 in Hyderabad and only 0.3 in Madras.

A study by Rao (1953-55) (Haffkine Institute Report) in Mehsana district of Gujarat found an incidence of 7 to 103 per 100,000. An extensive statistical study of urinary calculi in Thailand by Unakul (1961) of all the provinces for the year 1953-1959 showed an average 23.1 admission per 100,000 population. There was a marked regional variation from 102.9 to 0.0. There has been several studies in Europe and USA. Hellstome (1911-31) surveyed the hospital incidence in Sweden from 1911 to 1931 and gives the incidence as 31 (1911-14) and 117 (1927-31) per 10,000 hospital inpatients. Andersen in 1961-1962 surveyed the incidence in Norway from 1853 to 1960 based on hospital records There was 80 in 1921 and 160 in 1960 per 10,000 hospital inpatients. It was found that from 1900 to 1960 the rate of incidence of bladder stones diminished and on the other hand the surgical incidence of upper urinary tract stones in the hospital rose from below 0.5 to 5% in 1955.

Andersen (1967) based on the study of different pattern of urolithiasis and their historical evolution in different regions has grouped them into:

1. That of developing countries of S.E. Asia: represented by India and Thailand. The outstanding feature here is the high incidence of bladder stones in children compared with other groups.
2. That of modern industrialised countries represented by Norway and Great Britain. The hospital incidence here shows predominance of stones of the upper urinary tracts in adults. There is historical disappearance of bladder stones in children.
3. Intermediate group of Mediterranian countries which show relatively low incidence of lower urinary tract stones in children and upper urinary tract stones in adult.

In contrast to these groups are the Bantus in S. Africa where the urinary tract calculi is very rare.

The present study shows that in Nepal the bladder stone in children is very common (found in 30.4% of all the children who had X'Ray of the abdomen) compared to other groups. The urinary calculi in adult is comparatively rare. The commonest stone found in adult is the upper urinary tract one (found in 10.87% of the adult X'Rayed). And with the overall incidence of urolithiasis of 53.40 per 10,000 inpatients Nepal belongs to the first category of the Andersen's classifications. If the historical pattern of change in other regions is still continuing it may well be expected that with the rise in economic standard of the people in Nepal we will see in future the gradual disappearance of the 'endemic' bladder stones, whereas the incidence of the upper urinary tract stones is expected to rise.

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