

# Incidence of Urolithiasis in Nawabshah Pakistan

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*A study carried out at Surgical Unit II of Medical College Hospital, Nawabshah showed that from 1980 to 1987, 1191 patients presented with urinary calculi constituting 37% of all urological cases and about 11% of total admissions. There were 82% male and 18% female patients in this series; 53% patients had vesical calculi, 27% renal calculi, 12% ureteric calculi and 5% had urethral calculi whereas 3% cases had calculi at more than one site.*

*Keywords: urolithiasis, epidemiology, Nawabshah, Pakistan.*

Urinary calculi have plagued men for centuries. Evidence of bladder stones has been found in Egyptian mummies preserved for over 7000 years. Vesical calculi have been identified in the remains of two North American Indians, one of whom lived around 1500 BC<sup>1</sup>.

Since that time, the varying incidence of stone disease in different populations and the difference in the distribution of calculi within the urinary tract has fascinated and perplexed many observers<sup>2</sup>. As societies shifted from an agrarian to an industrial focus, the location of urinary calculi also changed. The incidence of bladder stones has decreased whereas calculi in the upper urinary tract have increased in advanced countries<sup>1</sup>.

Urolithiasis is prevalent worldwide. The overall incidence in U.K. is 3% and in U.S.A, 12%<sup>2</sup>. However, endemic stone disease still persists in Pakistan, India, North Africa and South East Asia<sup>3,4,5</sup>.

Dr. Hugh Whitfield from Institute of Urology, London while delivering the Haziqul Yaqeen Memorial Lecture<sup>6</sup> organized by Society of Surgeons of Pakistan in 1988 on "Recent Advances in the treatment of renal stones" speculated that as many as 3 million people are likely to suffer from stone disease in Pakistan.

Although the incidence is quite frequent in Sindh, NWFP, and Balochistan in Punjab, it is higher in the Multan region especially Muzaffargarh<sup>7</sup>. It is also common in our armed forces<sup>8</sup>.

It is difficult to establish the true incidence of urolithiasis in our country due to limited resources and funds. However, using a sampling technique like

hospital admissions<sup>9</sup> an attempt has been made to bring to light the prevalence of urolithiasis at Nawabshah which reflects the rural population of Sindh.

## Materials and Methods

All patients admitted with urinary stones at surgical Unit II, Medical College Hospital, Nawabshah from January 1980 to December 1987 are included in this study. Data is obtained from admission and other registers and patients files.

## Results and Discussion

Between the period of January 1980 to December 1987, 11098 patients were admitted at Surgical Unit II of Medical College Hospital, Nawabshah. Out of these 3207 (29%) belonged to the largest group of urological admissions. Amongst these cases, 1191 (37%) patients had urinary calculi thus accounting for 10.75% of total admissions. There were 973 (82%) male patients and 218 (18%) females. Other authors<sup>4,10-13</sup> have also reported male predominance in urinary calculi.

There were 631 patients of vesical calculi (53%), 321 cases of renal calculi (27%), 143 cases of ureteric calculi (12%) and 58 cases of urethral calculi (5%) whereas 38 (3%) patients had calculi at more than one site **Graph 1**. Whitfield<sup>2</sup> has reported that in advanced countries upper urinary tract stones predominated while in developing countries bladder stones are still quite common.

Three hundred and forty seven cases of renal stones presented in this study. Of these 321 had only renal stones whereas 26 cases had calculi at other sites also.

dietary factors <sup>12,15,16,17</sup> are possibly involved in the increased incidence of vesical calculi in children.

**Table 3 : Age and Sex incidence in vesical calculi**

Age in Years	<5	5-10	11-20	21-30	31-40	41-50	51-60	>60
Male	231	88	52	40	30	43	55	48
Female	37	17	8	6	1	6	1	3
Total	268	105	60	46	31	49	56	51

Sixty one cases of urethral calculi presented during the 8 year period of 1980-87. Out of these 58 had urethral calculi alone while 3 cases had associated stone elsewhere in the urinary tract. All patients were male and majority of children. Bailey<sup>14</sup> also describes calculi as occurring less frequently in the urethra than in other parts of urinary tract and mostly in children below 2 years of age due to the comparatively large

vesical neck which allows them to pass out of the bladder.

**Table 4: Age and Sex incidence on urethral calculi**

Age in Years	<5	5-10	11-20	21-30	31-40	41-50	51-60	>60
Male	48	3	1	3	3	3	0	0

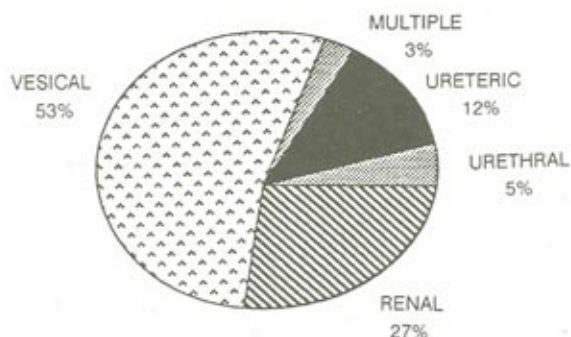
Accurate statistics regarding the incidence and prevalence of urinary calculi are not available. The statistics from present series revealed that bladder stones formed the major portion of urinary calculi followed by renal stones, ureteric and urethral calculi in that order. Males predominate the spectrum of urolithiasis. Vesical and urethral calculi were most common in children whereas renal and ureteric stones showed maximum incidence in the third decade.

The field of urolithiasis needs more research work and there is a great need for mass education as regards to the prevention, advantages of early reporting and treatment of urinary tract stones to reduce their incidence, complications, morbidity and mortality.

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There were 248 (71%) males and 99 (29%) females in this series. Similar sex incidence has been reported elsewhere.<sup>14</sup>



**Graph 1 :** Types of Urinary Calculi

Majority of cases presented in the third decade (Table 1). In males a second small peak is seen in the fifties which is probably due to obstructive uropathy. In females majority of cases present uropathy in late teens. This can be put down to increased incidence of urinary infections in them as a result of early marriage and pregnancies in rural Sindh.

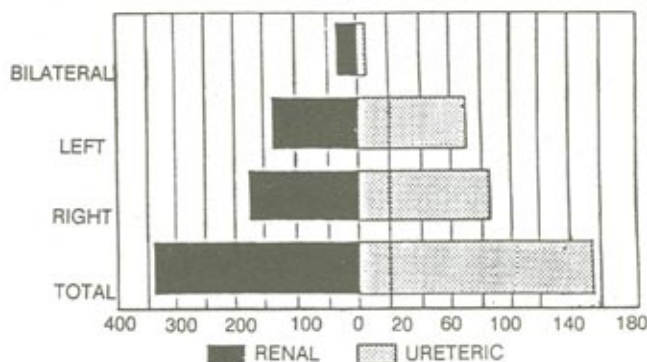
Of the total 347 renal calculi, 176 (51%) patients had stones on the right side and 139 (40%) on the left side whereas 32 (9%) patients had bilateral stones (Graph 2). PMRC report<sup>7</sup> also confirms presence of more renal calculi on the right side. However, it gives a figure of 15-20% for bilateral calculi in children.

**Table 1 :** Age & Sex Distribution in Renal Calculi

Age in Years	<5	5-10	11-20	21-30	31-40	41-50	51-60	> 60
Male	4	18	51	71	32	29	32	11
Female	2	8	26	23	20	12	5	3
Total	6	26	77	94	52	41	37	14

A total of 155 cases of ureteric stones presented between 1980-87. Out of these 143 had ureteric calculi only whereas 12 cases had stones at other sites also. There were 115(76%) male and 40(24%) female amongst ureteric calculi. Age incidence (Table 2) revealed pattern similar to that seen in renal calculi

i.e. majority of cases in third decade with a second peak in fifties in males and an early peak in



**Graph 2 :** Site in Renal and Ureteric Calculi

the females. As regards to the site 83(54%) patients had ureteric stones on the right side and 67(43%) on the left side while in 5 (3%) cases bilateral calculi were noted (Graph 2).

**Table 2 :** Age & sex distribution in ureteric calculi

Age in Years	<5	5-10	11-20	21-30	31-40	41-50	51-60	>60
Male	1	6	16	43	18	10	17	4
Female	1	2	10	9	7	6	4	1
Total	2	8	26	52	25	16	21	5

Bladder stones dominated the spectrum of urolithiasis at Nawabshah accounting for 666 cases out of the total 1191 seen between 1980-87. Six hundred and thirty one patients had vesical calculi only while 35 had calculi at other sites also.

Sex incidence in vesical calculi revealed that there were 587(88%) males and 79(12%) females. Deans<sup>3</sup> also described a preponderance of males amongst bladder stones cases whereas Bailey<sup>4</sup> has reported a male to female ratio of 8 : 1.

The pattern of age incidence Table 3 in our series indicate majority of cases occurring in children followed by a decline as age increases till a second rise in fifties and sixties probably due to obstructive uropathy. Bailey<sup>14</sup> and Deans<sup>3</sup> also agree that there is an increased prevalence of bladder stones in children especially in developing countries., Dehydration and