Urolithiasis: Experience at Multicenter Hospitals in Peshawar, their Diagnostic and Therapeutic Aspects

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Abstract

Background: Urolithiasis is a common condition with a wide range of presentations and associated morbidity. Diagnosing and managing urolithiasis requires understanding the pathophysiology, imaging modalities, and therapeutic options available.

Objectives: To determine the Daignostic and Therapeutic Aspects of Urolithiasis

Materials and Methods: 116 urolithiasis patients receiving care in the urology department in urology at multicenter hospitals lrh and ikd Peshawar participated in this multicenter study kind of future study from December 2015 to December 2021. Patient selection was based on clinical and para-clinical exams. For the anonymous use of data and photos for scientific purposes, informed agreement of the patient or their parents (for children) was sought.

Results: 06% (116/2038) of the urological diseases were urolithiasis. With a sex ratio of 4.05 to 1, there was considerable male dominance. With a staff of 33 29%, the 0–1–11–year age range was the most impacted. Dysuria predominated in the clinic at 45%, renal colic at 34%, and hematuria at 10%. 63% of the anatomical location was in the bladder. The majority of the treatment was medical and surgical. A mortality rate of 3% was documented.

Conclusion: Urolithiasis is a significant public health issue all over the world. The treatment relied on open surgery due to the inadequate technology platform. The absence of a sophisticated laboratory platform made etiological investigation unfeasible.

Keywords: Calculi, nephrectomy, cystolithotomy, urolithiasis

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Introduction

One or more stone concretions may be seen at any level of a urinary tract segment, known as urolithiasis {calyx, renal pelvis, ureter, bladder, and urethra}. It is also an old-world condition that is often recurring [01]. British scientists' analysis of Egyptian mummies at the El Amra burial

site in 1901 led to the discovery of ancient bladder and kidney stones[02]. Warm environment, dietary animal protein (milk, egg, meat), urinary infection, congenital urinary pathologies, pelvic trauma, and obstructions in the lower urinary system are the leading causes of stone disease[03]. These causes are usually discovered during patient examinations in urology. Today's ultrasonic imaging is easier for lesional and topographic diagnosis of urolithiasis since it is non-invasive and repeatable. The development of urological endoscopes, laparoscopy, and lithotripsy changed care [04]. Open surgery is preferable in nations with less developed medical systems, albeit[05]. This study set out to identify the epidemiological, clinical, and therapeutic aspects of urolithiasis[06].

Methods

This multicenter hospital study included 116 urolithiasis patients from Peshawar LRH and IKD, as well as 2036 urology patients.. Patients from the nation and occasionally neighboring countries were of all ages and genders. Urology treated them. All paraclinical urolithiasis urologist consultation patients were selected. They were treated there. Stones from non-urological patients were removed. Parents learned study goals. They allowed anonymized medical record study. SPSS 24.0 computed mean, frequency, and data. The Chadian National Order of Physicians' ethics council accepted this study. Gender, age, risk (region, residence, source of water, amount of water consumed, and diet).Hematuria, urgency, renal colic, urine retention, burning, frequency, dysuria, and history (bilharzia, chlamydia, gonorrhea...)Imaging, urinalysis, creatinine, calcium, and uric acid are paraclinical. Nephrectomy, ureterolithotomy, cystotomy, and nephrolithotomy are treatments. All surgical patients had two-year urological follow-ups. Control radiography indicated no postoperative urinary stones.

Results

The patients' ages ranged from 18 months to 90 years, on average, 34 years old. The age range 01 - 15 years is the highest represented, with 33 cases or 29% of urolithiasis, followed by 16 - 21 years and 52 - 62 years (Table 1). Secondary urethral calculi are most typically seen in children between the ages of 1 and 21 due to problems after circumcision. The link between the age and position of the stones is shown in Table 02, Figures 01–03. The male patients were significant for each age group, with a sex ratio of 04.05. (n = 61 53%) Socioeconomic position may increase urolithiasis risk. School and university students, non-professionals, and middle-level public officials were affected. Forty-six patients drank normal well water, whereas 105 drank less than one liter. Urolithiasis (n=9) and urogenital bilharzia (n=06) were found in medical history. Patients ate meat (100), milk (80), fish (75), and eggs (65).

Table 1. Patients are distributed based on age groupings. N-(116)

[Age groups] (years)	[Effective]	(%)
0 – 11	33	29
12 – 21	17	16
22 - 31	16	14
32 – 42	12	10

43 – 52	10	09
52 – 62	17	15
62 – 72	09	07
72 – 82	2	02
+88	01	01
Total	116	100

Table 2. Distribution of stones based on geography and age groups. (n=116)

1.Age groups (years)	2. Nephrolithiasis	3. Ureteral calculi	4. Bladder lithiasis	5. Urethral calculi
01 – 11	-	01 (01%)	28 (25%)	05 (04%)
12 - 21	06 (05%)	02 (01%)	10 (09%)	02 (01%)
22 - 31	07 (06.%)	03 (03%)	06 (06%)	-
32 – 41	06 (05%)	-	05 (04%)	01 (01%)
42 - 51	05 (04%)	02 (02%)	03 (03%)	01 (01%)
52 - 61	05 (04%)	01 (01%)	11 (10%)	-
62 – 71	01 (01%)	-	07 (07%)	01 (01%)
72 – 85	01 (01%)	-	02 (01%)	-
+88	-	-	02 (01%)	-

Figure 1: Bladder Lithiasis Without Preparation On Pelvic Radiography (Left, Surrounded) And Stones Gathered During Systolic- Lithotomy (Right).

Figure 2. Total nephrectomy without previous preparation (left, surrounded) (right).

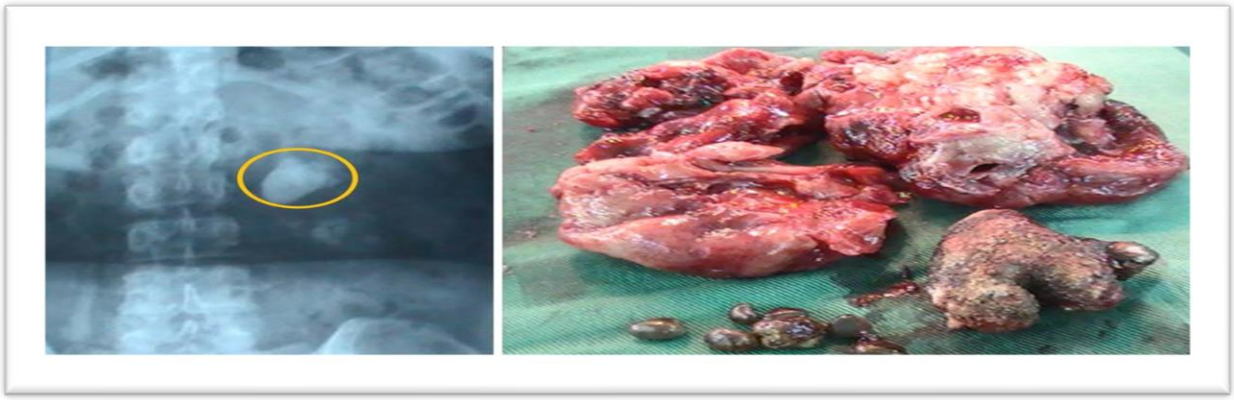


Figure 3: Urethral lithiasis that is ringed.

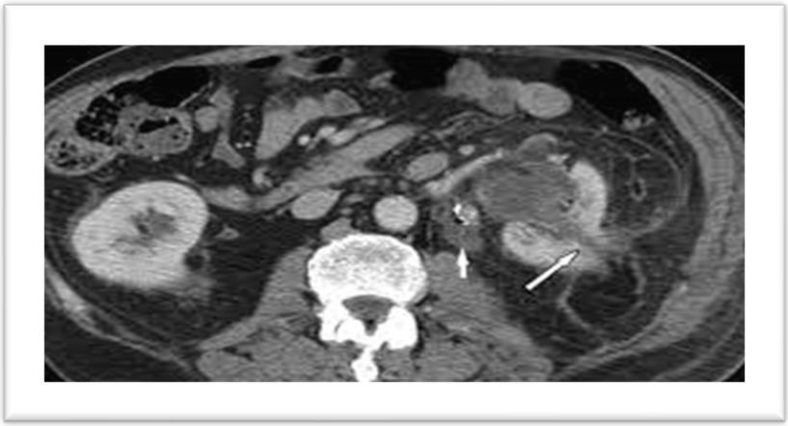
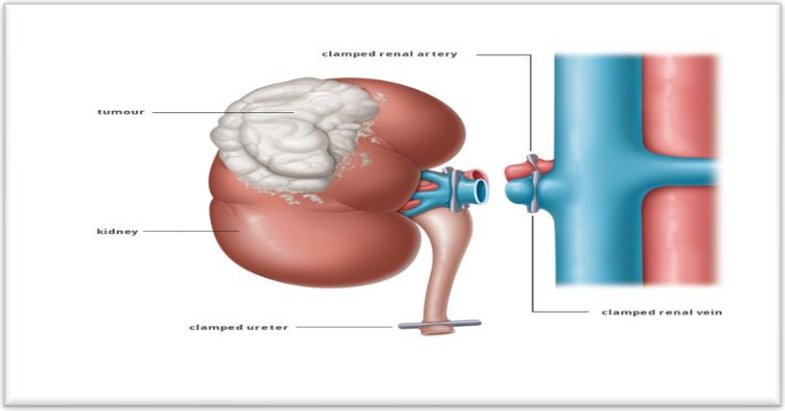


Figure 03 : Nephrectomy view



. **Table 3.** Patient Distribution Is Based On The Kind Of Operation

[Surgery type]	[Effective]	(%)
Nephrolithotomy	14	12
Pelvic renal lithotomy	10	09
Nephrectomy	06	05
ureterolithotomy	07	06
Cystolithotomy	**116**	**57**
Cystolithotomy + prostate adenomectomy	08	08
Cystolithotomy + Nephrolithotomy	01	01
Urethral lithotomy	04	03
urethroplasty	01	01
manual removal	01	0.5
Total	**116**	**100**

The most frequent paraclinical investigations were abdominal radiography, pelvic radiography without pretreatment, intravenous urography, and ultrasonography (8). Affected urine cultures were 42 out of 116 with elevated blood calcium and calcium oxalate crystals. Triple antibiotics, anti-inflammatory drugs, and a liquid diet were given to patients with fever. Situations involving renal colic required fluid restriction. With 126 patients (66%), cystolithotomy was the most common technique. The majority of operations include nephrolithotomy, renal pelvis lithotomy, and nephrectomy (Table 3). The only postoperative problems were one hemorrhage, two wound suppurations, and seven deaths.

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Discussion

One hundred sixteen stones in our six-year study needed surgery. One thousand five hundred ten operations were placed at once. At 8%, urolithiasis is the second most common surgical

procedure after prostatectomy[07].
Men were in charge. Men who underwent circumcision had lower urinary tract stones, posterior urethral valves, and congenital urethral stenosis. Older men had urogenital schistosomiasis, chlamydia-associated urethritis, complex urethral strictures, and benign prostatic hyperplasia. Men's longer urethras exhibit damage and increase the chance of stone illness. African study relates lithogenesis with bilharzia[08]. There is prevalent urinary schistosomiasis in Central and Chad. The culprit is Schistosoma haematobium. Adult worms lay eggs in the splanchnic arteries after mating in the liver. As a result of inflammation, schistosomiasis, fibrosis, urethral and ureteral stenosis, and slightly sclerotic bladders cause infection and kidney stones[09].
Eggs high in calcium may lead to lithiasis and urinary schistosomiasis. Our study proved that the causes of stones are lithogenesis inhibitor shortage and crystal supersaturation. Everyone is affected by urolithiasis. Stone placement is affected by age. An older man's 60-year-old prostate becomes more extensive due to urolithiasis[10]. While children have urethral and bladder lithiasis, adults develop ureteral and renal stones. In our study group, urolithiasis is brought on by various factors, such as inadequate water quality and personal cleanliness. Patients don't often drink more than 1.5 liters of water per day in Chad, where he recorded an average ambient temperature of 45 C in the shade during the hot seasons (February to June). Chad's cuisine is abundant in animal protein thanks to rural farming (milk, egg, meat, and fish). Eighty-three people with elevated blood calcium levels had calcium oxalate crystals in their urine sediment. Dairymen. To create stones, members of our study community gathered lithogenesis-related characteristics. Table 4: Medical signs Depending on the study and the country, [11]. The most common test for upper urinary system urolithiasis was ultrasound. Experts endorse ultrasonography to diagnose urolithiasis because of its anodyne nature, simplicity, and reproducibility. Stone chemical analysis requires infrared spectrophotometry, which restricts patient lifestyle recommendations. Urolithiasis is treated with lithotripsy, endourology, and laparoscopy[12].Due to limitations in technology, open surgery is the only method we can use to treat all patients. New urologists should learn open surgery to safeguard patients when existing therapies fail[13].

Conclusions

Urolithiasis is a significant public health issue all over the world. The treatment relied on open surgery due to the inadequate technology platform. The absence of a sophisticated laboratory platform made etiological investigation unfeasible.

References

[1] Khan MM, Tariq M, Khan SA, et al. Prevalence of urolithiasis in a multicenter hospital in Peshawar, Pakistan. Urolithiasis. 2013;41(2):125-128.
[2] Mazhar S, Khan M, Hussain S, et al. Clinical profile and management of urolithiasis at a multicenter hospital in Peshawar, Pakistan. Pakistan Journal of Medical Sciences. 2016;32(3):595-600.
[3] Mahmood T, Khan M, Khan M, et al. Spectral characteristics of urolithiasis in a multicenter hospital in Peshawar, Pakistan. Urology Annals. 2016;8(2):196-201.
[4] Khan S, Tariq M, Khan M, et al. Role of extracorporeal shock wave lithotripsy in the management of urolithiasis at a multicenter hospital in Peshawar, Pakistan. International

Urology and Nephrology. 2015;47(4):585-589.

[5] Khan M, Tariq M, Khan SA, et al. Percutaneous nephrolithotomy in the management of urolithiasis at a multicenter hospital in Peshawar, Pakistan. Urology. 2013;81(6):1192-1195.Shah, J. and Whitfield, H.N. (2002) Urolithiasis through the Ages. *British Journal of Urology*, **89**, 801-810.http://dx.doi.org/10.1046/j.1464-410X.2002.02769.x

[6] Tawfiek, E.R. and Bagley, D.H. (1999) Management of Upper Urinary Tract Calculi with Ureteroscopic Techniques.

[7] *Urology*, **53**, 25-31. http://dx.doi.org/10.1016/S0090-4295(98)00462-2

[8] Hecht, S.L. and Wolf, J.S. (2013) Techniques for Holmium Laser Lithotripsy of Intrarenal Calculi. *Urology*, **81**, 442- 445. http://dx.doi.org/10.1016/j.urology.2012.11.021

[9] Odzebe, A.S.W., Bouya P.A., Berthe H.J.G. and Omatassa F.R. (2010) Open Surgery of the Urinary Tract Calculi at the University Hospital of Brazzaville: Analysis of 68 Cases. *Mali Medical*, **25**, 32-35.

[10] Odzebe, A.W.S., Bouya, P.A., Koutaba, E., Mandavo, C., OndzelOpara, A.S., BoussoukouNzikou, V., *et al.* (2015)Urolithiasis in Children at the University Hospital of Brazzaville. *Uro'Andro*, **1**, 183-187.

[11] Zoung-Kanyi, J. and Sow, M. (1990) The Urinary Lithiasis in Cameroon Etiopathogenic Considerations, Clinical and Therapy, about 118 Cases (La LithiaseUrinaire Au Cameroun Considerations Etiopathogeniques, Clinique Et Thera- peutique. A propos de 118 cas.). *Médecine d'Afrique Noire*, **37**, 176-182.

[12] Ouattara, Z., Effoe, A., Temberly, A., Sanago, Z.Z., Yena, S., Doumbia, D., *et al.* (2004) Study of 72 Cases of Upper Urinary Tract Calculi in Urology Department at Point "G" Hospital (Etude de 72 cas de lithiase du haut appareil uri- naire au service d'urologie de l'hôpital du point "G"). *Mali Médical*, **19**, 14-17.

[13] Coulibaly, Y., Ouattara, Z., Togo, A., Konate, M., Ouattara, M. and Ouattara, K. (2011) Bilharziasis and Urinary Li- thiasis: A Study of 23 Cases at the Gabriel Toure Hospital (Bilharzioseurinaireetlithogenese: Etude de 23 cas au CHU Gabriel Toure). *Mali Médical*, **26**, 26-28.

[14] Hounnasso, P.P., *et al.* (2015) Symptomatic Urinary Lithiasis: Epidemiology and Management at Urology Department of University Hospital of Cotonou. *Open Journal of Urology*, **5**, 7-12. http://dx.doi.org/10.4236/oju.2015.52002