

## Urinary Stone Disease in Kano, North Western Nigeria

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### ABSTRACT

**Background:** Urinary stone disease is the third most common affliction of the urinary tract after urinary tract infection and pathologic conditions of the prostate. Although the disease is commoner in the developed countries, the incidence is also increasing in the developing countries. In this study, we sought to determine the pattern and treatment given for patients with urinary stones in our institution. **Patients and Method:** A 5 year retrospective study of patients treated for urolithiasis was conducted in a Teaching Hospital in North-western Nigeria. The age, sex, clinical presentations, investigations and treatment offered to the patients were reviewed. **Results:** A total of seventy six patients were treated for urinary stones during the study period. 58(76.3%) were males and 18(23.7%) females. Majority of patients 39(51.3%) presented with loin pain as the main presenting symptom. The diagnosis of stones was by plain abdominal X-ray(KUB) in 68 patients and abdominal ultrasound scan in 46 cases. Urine culture was positive in 27 patients with E. coli as the predominant organism. All had normal serum calcium, phosphate and uric acid. 56(73.7%) patients had stones in the upper urinary tract and 20 (26.3%) in the lower urinary tract. Thirty four (44.7%) patients were found to have predisposing factors. Most of the patients 50(65.7%) were treated by open surgery and 26(34.2%) by endoscopic removal/lithotripsy. **Conclusion:** Urinary stone disease is common in this environment. Majority of the stones are radio-opaque on plain x-rays. Significant number of patients had a predisposing factor and majority of the stones were found in the upper tract. Most of the patients were treated by open surgery while a significant number were treated with endoscopic removal/lithotripsy.

**Keywords:** Urinary stones, Northern Nigeria, Treatment

### INTRODUCTION

Urolithiasis remains a serious urological problem<sup>1</sup>. The prevalence in America was 3.2% in 1980 and 5.4% in 1994 and is commoner in males than females<sup>2</sup>. Although the disease is commoner in the developed countries, the incidence is also increasing in the developing countries particularly in the urban areas. Stones can affect both the upper and lower urinary tracts with the former being commoner particularly in stone endemic areas. The types of stones formed depend mainly on the composition of urine, which in turn reflects the type of diet consumed among other factors<sup>1</sup>. Urinary stones result from metabolic abnormalities, urinary stasis, urinary tract infection and idiopathic in some individuals.

In this study, we determined the pattern and

treatment given for patients with urinary stones in our institution.

### PATIENTS AND METHODS

This was a five year retrospective study (September 2005- August 2010) of all patients treated for urinary stones in the Urology Unit of Aminu Kano Teaching Hospital Kano, Northern Nigeria. Case notes of the patients were analysed for age, sex, clinical presentation, investigations, location of stones and treatment offered.

The data was analysed using SPSS 15.0

### RESULTS

During the study period, 76 patients were treated for urinary stones in our institution. There were 58(76.3%) males and 18 (23.6%) females. Their ages ranged from 1 to 90 years (Figure 1). Majority of patients, 39 (51.3%), presented with loin pain as the main presenting symptom, 29(38.2%) presented with suprapubic pain, 22 (28.9%) with gross haematuria, 16 (21.1%) with acute urine retention and 4 (5.3%) with history of passage of

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stones in urine (Table 1).

The diagnosis of stones was by plain abdominal X-ray directed at the kidneys, ureters and bladder (KUB) in 68 patients, and abdominal ultrasound scan in 46 cases. Sixty patients had an intravenous urography, out of whom 38 had hydronephrosis on the affected kidneys and 12 had Pelvic-Uretric Junction (PUJ) obstruction. Urine culture was positive for bacterial colonies in 27 patients which showed mixed growth of staph aureus, pseudomonas, E-coli and klebsiella in most cases. The serum urea, electrolyes and creatinine was normal in all patients except in one patient with bilateral ureteric obstruction who had an elevated urea and creatinine. All had normal serum calcium, phosphate and uric acid.

Fifty six (73.79%) patients had stones in the upper urinary tract, 36 in the kidneys, 24 in the ureters and 20 (26.3%) in the lower urinary tract (Figure 2). Multiple stones ocured in one patient who had bilateral ureteric obstruction due to schistosomiasis, he also had bilateral hydroureteronephrosis (Figures 3 & 4). Five patients had stones in the bladder and urethra. Thirty four (44.7%) patients had predisposing factors in the form of pelvi-ureteric junction (PUJ) obstruction in 10 patients, ureteric strictures in 11 patients, and bladder outlet obstruction due to benign prostatic hyperplasia (BPH), carcinoma of prostate and urethral strictures in five patients, three patients had foreign bodies in the urinary tract (Table 2). Five children had posterior urethral valve. Idiopathic stones accounted for only 55.3% of cases. Most of the patients 50 (65.8%) were treated by open surgery and 26 (34.2%) by endoscopic lithotripsy.

Figure 1; Age Distribution of Patients with Urinary Stones

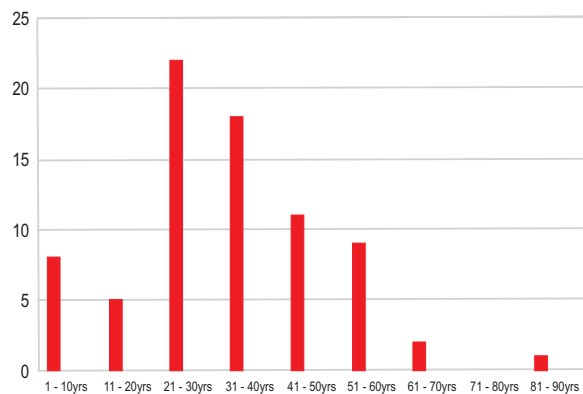


TABLE 1: CLINICAL PRESENTATION

CLINICAL FEATURE	NO OF PATIENTS	(%)
LOIN PAIN	39	34.2%
SUPRAPUBIC PAIN	29	25.4%
GROSS HEMATURIA	22	19.3%
PASSAGE OF STONES IN URINE	4	3.5%
LOWER URINARY TRACT SYMPTOMS (LUTS)	4	3.5%
ACUTE URINE RETENTION	16	14.1%
<b>TOTAL</b>	<b>114</b>	<b>100%</b>

Figure 2: Location of Stones

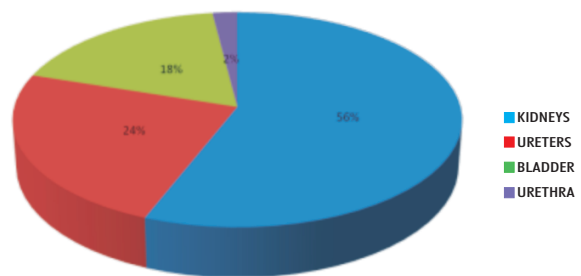


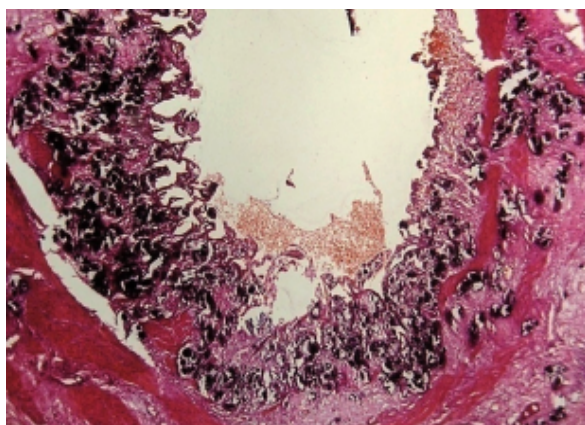
TABLE 2: PREDISPOSING FACTORS

PREDISPOSING FACTOR	NO OF PATIENTS	(%)
PUJ OBSTRUCTION	10	13.2%
URETERIC STRICTURE	11	14.5%
BLADDER OUTLET OBSTRUCTION	5	6.6%
FOREIGN BODIES	3	4%
POSTERIOR URETHRAL VALVE	5	6.6%
NONE	42	55.3%
<b>TOTAL</b>	<b>76</b>	<b>100%</b>

Figure 3: IVU Showing Multiple Stones & Bilateral Hydronephrosis



Figure 4: Histology Showing Schistosomiasis of the Ureter



## DISCUSSION

This study, like many others,<sup>3,12,15</sup> should that urinary stone disease affects more men than women. Peak age of occurrence of urinary stones is the 3<sup>rd</sup> decade which is similar to the findings in southern Nigeria<sup>4</sup>. The predominance of the stones in the upper urinary tract concurs with the report from Maiduguri, south eastern Nigeria and other parts of the world where stone diseases are common<sup>5,6</sup>.

The high incidence of stones in the upper tract compared to lower tract, explains why flank pain was the main clinical presentation in our center. The findings compares favourably with results elsewhere even among children<sup>7,8,9</sup>.

Although axial CT scan is the gold standard in the diagnosis of urinary stones, KUB and abdominal ultrasound scan are good, available and affordable diagnostic tools in our environment. None of our patients had CT scan because it is not readily available or affordable.

Although there was a high rate of urinary infections in our series, this is lower than expected because most of the patients were on antibiotics even before presenting to us which might account for the relatively low rate of isolates. This is similar to the findings in Southeastern Nigeria where 32% were associated with urinary tract infection<sup>6</sup>. This has shown that urinary tract infection is a strong aetiologic factor for stone formation in our environment. The serum calcium, phosphate and uric acid in all our patients contrast with other areas where metabolic abnormalities are

the aetiologic factors<sup>7,10, 11</sup>. Bladder outlet obstruction also plays significant role in urinary stone formation in our settings.

In conclusion, there is a high rate of urinary stone disease in our environment. Significant number of patients had predisposing factors, mainly from obstruction and infection. Most of the stones occurred in the upper tract. While majority of the patients were treated by open surgery, some were successfully treated by endoscopic lithotripsy.

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