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Urinary Lithiases: Epidemiological, Clinical and Therapeutic Aspects of 164 Cases at Sheikh Zayed Hospital in Nouakchott—Mauritania

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Abstract

Urinary lithiases occupy an important position with respect to urological activities in our department. In our Sahel region, lithiasic pathology represents 40% in urology in Senegal [1]. In Mauritania, we did not find a study evaluating the prevalence of this pathology. The frequency and gravity are variable. The objective of the study was to report the clinical profile and the results of management of urinary lithiasis in our environment. **Materials and Methods:** We conducted a retrospective, descriptive study spanning over two years (April 2015 to March 2017) in the urology department of Sheikh Zayed Hospital in Nouakchott. All patients operated for urinary lithiasis during this period were included in the study. The operative techniques used were semi rigid ureteroscopy, extra corporeal lithotrity, open surgery. Our center did not have flexible ureteroscopy and percutaneous nephrolithotomy. The indications were lithotrity for calculations lower than 20 mm of low density. Biger than 20 mm were by open surgery. Semi rigid ureteroscopy for distal ureteral calculi. Medical treatment or monitoring for non-obstructive calculi is less than 7 mm. Urine drainage by jj probe or nephrostomy are performed. We excluded all patients with lithiasis for the medical treatment. The result was good when absence of lithiasis residues was less than 7 mm and removal of the obstruction. **Results:** A total of 164 patients were found. The average age was 41 years, and F/M ratio was 1/10. Considering geographical origin, 82% of patients came from rural areas. The presenting complaint was mainly Lower Urinary Tract Symptoms (56%) and Renal Colicky Pain (31%). The bladder and kidneys were the most common (respective 45% and 35%) sites of stone location. Bilateral stones were 18%. Staghorn stones constituted 6% of the cases. Non steroidal anti-inflammatory treatment was administered in 82% of cases, while antibiotic therapy was administered in 32% of cases. Complications occurred in open surgery about 11% like parietal infection and

residual stones. 0.6% of ESWL got uretere obstruction that needed jj catheter. 4% of cystolithotomy had infection. **Conclusion:** Urinary lithiasis often consults at the complication stage. Minimally invasive techniques are limited in our service and offer less complication.

Keywords

Lithiasis, Urinary

1. Introduction

The epidemiological and therapeutic profile of urinary lithiasis depends on several factors including socioeconomic status of the country, level of medical care and climatic conditions [1]. This profile undergoes constant change. In Mauritania, few data is available on urinary lithiasis, which has an important place in the urologic activities carried out in our department. In our Sahel region, lithiasic pathology represents 40% in urology activity in Senegal [1]. Localization of stone is diverse and the treatment modalities are rapidly changing with technological evolution. The objective of our study was to report the clinical profile and the results of management of urinary lithiasis in our context.

2. Patients and Methods

We conducted a two-year retrospective study between April 2015 and March 2017 in the urology department of the Sheikh Zayed Hospital in Nouakchott. Our department has a small capacity of 12 beds, three urologists, and one resident. It is situated at the outskirts of Nouakchott with a high population density. All patients operated in our unit were included in the study. Diagnostic methods were uroscaner for lithiasis of the upper urinary tract. Ultrasound coupled with conventional radiology in bladder stones. The operative techniques used were semi rigid ureteroscopy, extra corporeal lithotrithy, open surgery. Our center did not have flexible ureteroscopy and percutaneous nephrolithomy. The indications were lithotrithy for calculations lower than 20 mm of low density. Bigger than 20 mm were by open surgery. Semi rigid urestroscopy for distal ureteral calculi. Medical treatment or monitoring for non-obstructive calculi and less than 7 mm. urine drainage by jj probe or nephrostomy are performed. We excluded all patients with stones treated medically. The result was good when absence of lithiasis residues less than 7 mm and removal of the obstruction Parameters studied was, age, localization, obstruction, choice of treatment, complications. Statistics analysis was IPSS.

3. Results

We treated 164 cases of urinary lithiasis, which represent of 28.1% of all patients operated in our department, and these involved several localizations of the uri-

nary system. The bladder (45%) and kidneys (35%) were the most frequent localizations (Figure 1). The mean age was 41 years and ranged from 2 to 84 years. The majority were in the range 20 - 40 years age with 43.9% of cases (Figure 2). The F/M ratio was 1/10. For geographical origin, 82% of patients came from rural area. The presenting complaints were mostly renal colicky pains (31%) and lower Urinary Tract Symptoms (52%) of cases were incidentally discovered during routine analysis (Table 1, Figure 1). Biological complications were found in 35% of cases (anemia, high creatinin); three of them were in chronic renal failure currently undergoing dialysis for renal parenchyma laminated following obstruction. Dilatation of the urinary tracts was observed in 37% of cases. Localization was bilateral in 18% of cases. Staghorn stone was found in 6% of cases (Figure 3 and Figure 4), and one patient had the bladder completely filled

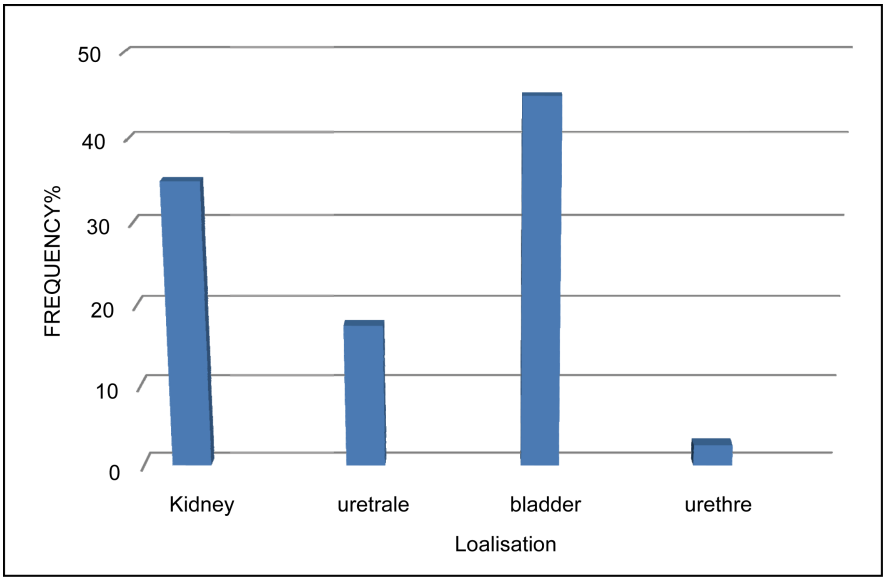

Figure 1. Localization of the stones in the urinary tract.

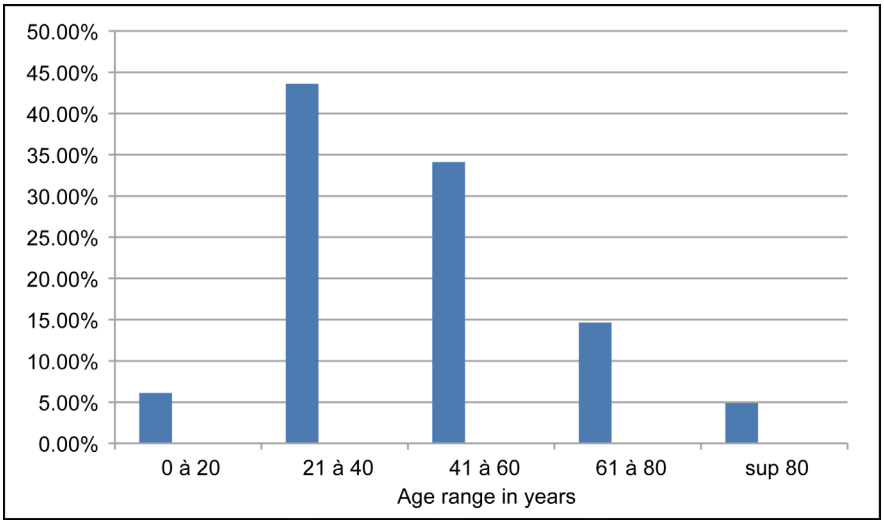

Figure 2. Distribution of patients according to age.

with a huge stone with severe bilateral uretero pyelocaliceal dilatation. The etiology of the stone was unknown in 48%, metabolic analysis for stone necessary for determine etiology. Bladder neck and prostatic obstruction in 35%, urethral stricture 10%, and ureteropelvic junction obstruction in 3.75% of cases. Urethral stricture and bladder neck contracture were the etiological factors associated with the huge stone which completely filled the bladder in one patient. The stone extracted weighed 480 g. (Figure 5). Before surgery, 38.7% of patients had received antibiotic treatment, specifically quinolones. Antibiotic therapy based on

Table 1. Distribution of patients according to presenting complaint.

Renal colicky pains	Lower Urinary Tract Symptoms	Hypogastric pain	Haematuria	Incidental finding	total
41.2%	25%	22.5%	8.7%	2.5%	100%

Figure 3. Bilateral radio-opaque staghorn stone on a plain radiograph.

Figure 4. Bilateral staghorn after removal by open surgery.

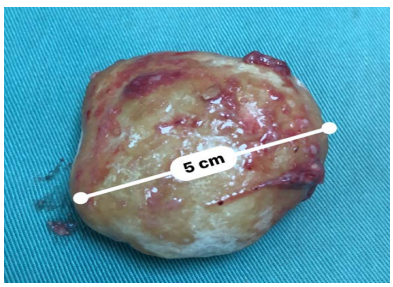

Figure 5. Bladder stone.

cytobacteriological examing or clinical signs of urinary tract infection Non-steroidal anti-inflammatory drugs were prescribed to 80% of patients. Anti-inflammatory drugs are prescribed for analgesic purposes and apart from contraindications. Open surgery was performed in 87% of the patients, while 8 patients we re-treated using Extracorporeal Shock Wave Lithotripsy (ESWL).

Postoperative complications included hemorrhage in 2 cases of staghorn stone requiring blood transfusion. Two cases of residual kidney stones were secondarily treated with ESWL. Three patients developed a vesico-cutaneous fistula requiring prolonged bladder drainage and a long hospital stay. Abdominal wall infection was found in 3.7% of cases.

4. Discussion

Urinary stone disease varies according climatic zones, feeding habits and the quality of drinkable water. In Congo, Odzebe [2] reported 68 cases over 4 years and Zoung-K [3] in Cameroon 118 cases over 4 years. Countries in Sahel seem to be more exposed than those in Central African region. In Senegal, Y Tfeil [4] found 30 children with urolithiasis over a 2-year period. The mean age varies between 30 - 50 years in the literature [5] [6]; Odzebe [2] found a mean age of 53 years. Majority of our patients were young, and age from 20 to 60 year was the mostly affected age range. Sex ratio varies according to different authors F/M 1/8 to 1/10 [4] [7]. Lower urinary tract symptoms were the most frequent presenting complaint followed by renal colicky pains.

The bladder was the common (45%) site of stone localization in this study. In Cameroon, 42% of bladder stones against 39% of renal stones [2]. Ureteral localization is very rare but with the remarkable symptom [8]. staghorm are more frequent in our series, the authors find 01% to 04% [9] [10]. Bilateral urinary stones were 21% to Mali [11].

Imaging investigations usually reveal the diagnosis; ultrasonography usually done as first choice, coupled with plain kidney-ureter-bladder (KUB) radiography and or a computerized tomography urography scan (CTU) were the diagnostic tools in our series and in the literature [12] [13] [14]. Intravenous Urography was rarely requested. Staghorn stone and bilateral stone localization were common and required a search for etiology [15] [16]. There was a patient who presented with a poor general state carrying a huge stone occupying the entire bladder cavity on a urethral stricture. A 480 g stone adherent to the bladder wall was extracted. the etiological factors were sedentariness, lack of drinking water in rural areas, consumption of red meat; the hot and dry climate of the Sahel. Delay in consultation is an aggravating factor, favoring the occurrence of complications. Medical treatment with Non-steroidal Anti-inflammatory Drugs (NSAID) has been reported to between 48% to 72% in some series [17] [18]. Antibiotic treatment is used in cases of fever, cloudy or purulent urine, or positive urine culture [19] [20]. Microorganism commonly encountered includes Proteus, K. Pneumoniae, Staphylococcus and *E coli* [20]. In current practice, treat-

ment of urolithiasis is oriented towards minimally invasive techniques including ureteroscopy, ESWL and percutaneous nephrolithotomy (PCNL) [8] [19] [21]. Open surgery is reserved for some complex stones [22]. In our context, open surgery still has a major role due to the lack of minimally invasive equipments. All types of urinary drainage techniques were used in our series in emergency. Drainage in cases of obstruction was performed as a means of relief while awaiting surgery [23]. Hemorrhagic complications following conventional open surgery are reported to be rare in the literature [18] [24]. Vesicocutaneous fistula and wound infections are common, attributable to urine infection complicating urolithiasis [18] [25]. Postoperative drainage could be maintained until the urinary tract is completely sealed [25].

5. Conclusions

Urolithiasis is common in Mauritania, a country located in Sahel region, which is hot and dry. The quality of drinkable water is below standard in certain parts of the country. The feeding habits are based on red meat essentially, and a sedentary life style is some factors which favour the occurrence of stone.

Delay ance before consultation and the absence of imaging equipments in all the cities could account for the occurrence of complex stones and the frequency of functional renal complications. Stone disease could be prevented by improving hygiene and dietary life style measures, curable by the development of non or minimally invasive therapeutic modalities.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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