

Management of Urological Emergencies at the Reference Health Centre of Markala

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Abstract

Original Research Article

Context and Objective: Urological emergencies correspond to pathological situations of the urinary tract of both sexes and/or the male genital tract, with a functional and/or vital prognosis at stake in the absence of appropriate and effective treatment as soon as possible. The objective of this study was to evaluate the management of urological emergencies at the Markala health centre. **Method:** Our work is a prospective descriptive study of 12 months from May 2021 to April 2022 during which we recorded 107 cases of urological emergencies. The average age of occurrence of these pathologies was 47.6 years. The extremes were 04 months and 92 years. The most represented age group was 61 to 80 years with 30.8%. The male sex was the most affected with a sex ratio of 4.94. The most frequent reason for consultation was total inability to urinate with 42.1%. Acute urinary retention (AUR) was the most common urological emergency with 42.1% of cases. The main etiologies of AUR included BPH (57.7%) and urinary lithiasis (17.7%). Non- surgical procedures accounted for 78.5% of the therapeutic procedures performed. Bladder catheterisation accounted for 63.6% of non-surgical emergency procedures. Debridement accounted for 21.7% of emergency surgical procedures. Prostatic adenomectomy was the most performed etiological treatment with 23.4%. We recorded one case of death (0.93%) due to sepsis from Fournier's gangrene. **Conclusion:** Urological emergencies occupy an important place in our daily activity. The most frequent urological emergency was acute retention of urine, the predominance of which was linked to the frequencies of benign prostatic hyperplasia, urinary lithiasis and urethral stricture. The target population, dominated by adult males in their 50s, implied an etiological role for prostate adenoma. The emergence of these emergencies was mainly related to the delay in consultation and the lack of health education in the general population. Urethral catheterisation, debridement and suprapubic bladder catheterisation were the most commonly performed procedures.

Keywords: Urological Emergencies, Epidemiology, Clinic, Treatment, CSREF, Markala.

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I-INTRODUCTION

Urological emergencies are pathological situations of the urinary tract of both sexes and of the male genital tract, with a functional and/or vital prognosis at stake in the absence of appropriate and effective treatment as soon as possible [1, 2]. These emergencies are characterised by the existence of severe suffering that requires significant and immediate

relief. The hazards are usually caused by the existence of an obstructive, tumorous, infectious or traumatic process affecting the urogenital sphere.

These emergencies are many and varied and can be divided into five main groups: obstructive, hematic, traumatic, infectious and genital-scrotal [3].

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They are more frequent in older men because of prostatic diseases [4, 5]. In children, they are the consequence of multiple and varied anomalies that may be congenital, iatrogenic or simply related to the terrain [6].

Patients must be relieved rapidly and sometimes the etiological research is carried out on an outpatient basis at a distance from the acute episode.

In France, Mondet *et al.*, [7] noted five emergency urological consultations per day and added that 8% of hospitalisations in urology were due to emergencies, 25% of which were due to low back pain.

In Guinea [1] and Senegal [8], urological emergencies dominated by urine retention represented 22% of urological admissions (in Guinea) and 64.94% of urological emergencies per month (in Senegal).

In Mali and Markala, where our study took place, although the management of urological emergencies is part of the activities of the health structures, they have not been the subject of any specific study. Thus, the realization of this study could bring out results likely to improve our diagnostic and therapeutic management strategies.

The aim of our study was to highlight the therapeutic management profile of urological emergencies received at the CSREF of Markala.

II-PATIENTS AND METHODS

This is a prospective, descriptive study conducted in the CSREF of Markala for a period of 12 months from May 2021 to April 2022, which included

all patients of both sexes, admitted to the urology department and the emergency department of the CSREF of Markala for a urological emergency. The inclusion criteria were all patients who presented one or more clinical manifestations related to urological emergencies (all critical clinical situations concerning the urological system and requiring an emergency procedure).

The exclusion criteria concerned all patients seen for urological pathologies that were not emergencies or for emergencies of another speciality (strangulated inguinal hernia, non-obstructive anuria, macroscopic haematuria of nephrological origin). The data were collected on a survey form from the consultation record book and the operating theatre report book. The data were entered into Windows Excel 2007 from the survey forms and analysed using SPSS version 21.0.

III- RESULTS

1. Frequency: Table 1 Frequency of urological emergencies in relation to the different types of consultation.

During the study period, we recorded 107 cases of urological emergencies in the Markala health district:

- Out of 813 urological consultations, i.e. an overall frequency of 13.16
- Out of 572 cases of urological pathologies, i.e. 18.7%,
- Out of 266 cases of urological surgical pathologies, i.e. 40.22%,
- Out of 1515 consultations in the emergency department, i.e. 7.06%.

Table 1

Types de consultations	Nombres	Fréquence des urgences urologiques
Consultations au service d'urologie	813	13,16%
Pathologies urologiques	572	18,70%
Pathologies urologiques chirurgicales	266	40,22%
Autres urgences (pédiatrie, médecine chirurgie)	1515	7,06%

2. Socio-Demographic Data

2.1 Graph 1: Distribution of patients according to age:

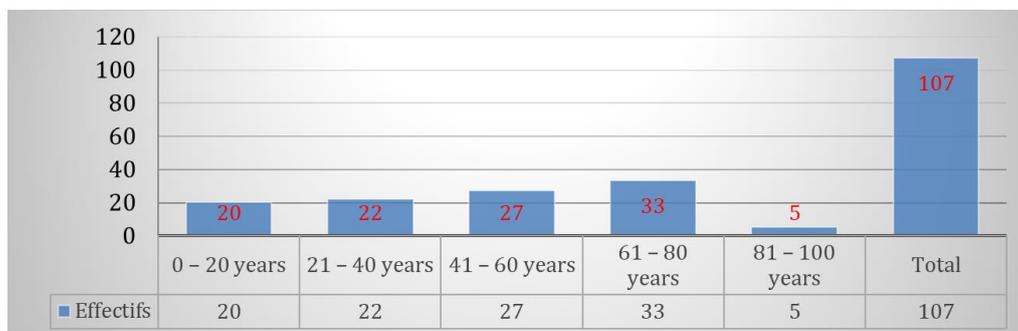


Figure 1: Age distribution of patients

The average age of our patients was 47.6 years, with extremes ranging from 4 months to 92 years.

The male sex was the most represented with 89 cases or 83.2% and a sex ratio of 4.94.

The age group 61-80 years was the most represented with 30.8%.

2-2-Table 2: Reason of Consultation.

Table 2

Consultation reason	Effectifs	%
Complete inability to urinate	45	42,1
Tumefaction of the penis	4	3,6
Lumbo-abdominal pain	16	15
Testicular pain	9	8,4
Fever	4	3,7
External genitalia wounds	6	5,6
Uretorrhagy	1	0,9
Dark or red urine	22	20,6
Total	107	100

The clinical examination revealed a bladder globe in 42.1% of patients.

2-3-Table 3: Distribution of patients according to type of urological emergency.

Table 3

	Effectifs	%
Vesical globe	45	42,1
Defect of l'albuginea	3	2,8
hypogastric pain	1	0,9
Dysuria	17	15,9
Prolonged erection	1	0,9
Burning of the micturition	5	4,6
Large and painful bursa	5	4,7
Necrose genitale	5	4,6
abolished cremastrian reflexi	4	3,7
Sign of geordano(+)	20	18,7
Perineal tumefaction	1	0,9
Total	107	100

Figure 2 Distribution of patients according to the therapeutic aspect.

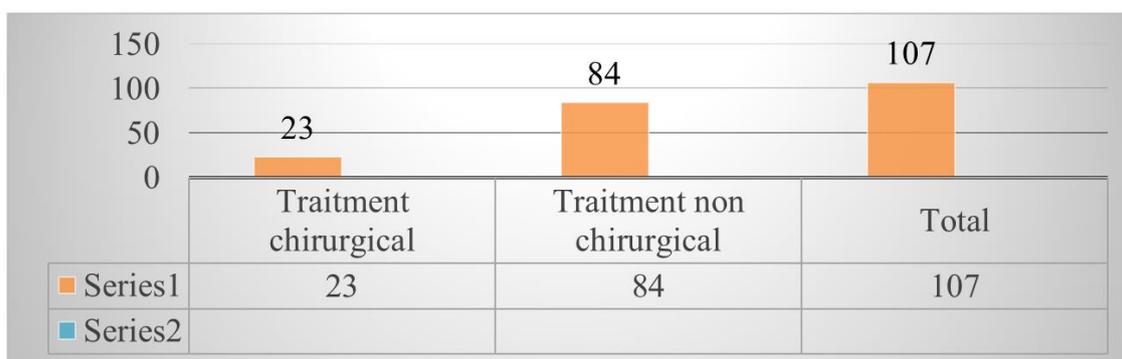


Figure 2: Distribution of patients by type of treatment received

Non-surgical procedures accounted for 78.5% of the therapeutic procedures performed.

Etiological Treatments

Table 4: Distribution of patients by type of aetiological treatment

	Effectifs	%
Circumcision accident	1	0,9
Nephritic colic	16	15
Acute Cystitis	4	3,7
Fractured penis	3	2,8
Fournier's Gangrene	5	4,7
Hematuria	18	16,8
Acute Orchi-epididymitis	5	4,7
Priapism	1	0,9
Acute pyelonephritis	4	3,7
acute retention of urine	45	42,1
Torsion spermatique	4	3,7
trauma to the urethra	1	0,9
Total	107	100

Prostatic adenomectomy accounted for 24.8% of documented etiological treatments.

4 patients were lost to follow-up and 2 patients were referred.

Table 5: Short-term outcome of all cases studied

Evolution	N	%
Sepsis	1	0,9
Surgical site infection	2	1,9
Simple	104	97,2
Total	107	100

Follow-up was simple in 97.2% of cases.

Table 6: Relationship between age and aetiology in urological emergencies

Etiology	Age					Total
	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	
Urethral stricture	0	0	2	1	0	3
prostate Cancer	0	0	0	1	0	1
Anomalie of testicle fixity	3	1	0	0	0	4
Bilharziosis	4	2	1	0	0	7
Drépanocytosis	1	0	0	0	0	1
BPH	0	0	5	16	5	26
bacterial Infection	3	5	5	6	0	19
urinary Lithiasis	6	11	6	2	0	25
diabete	1	0	1	0	0	2
Phimosis	1	0	0	0	0	1
Trauma (penis, urethra)	1	2	1	1	0	5
Bladder Tumor	0	1	8	4	0	13
Total	20	22	27	33	5	107

Chi-2=106.804, ddl=60, P=0.000

We found a statistically significant relationship between age and the etiology of urological emergencies (P=0.000).

The two main aetiologies included urinary lithiasis for age under 60 years and BPH for age 61-80 years.

Table 7: Relationship between gender and aetiologies of urological emergencies

Etiology	Sexe		Total
	Female	Male	
Urethra stricture	0	3	3
prostate Cancer	0	1	1
Anomalie of testicle fixity	0	4	4
Bilharziosis	1	6	7
Drépanocytosis	0	1	1
BPH	0	26	26
bactériel Infection	4	15	19
Lithiasis	5	20	25
diabete	0	2	2
Phimosis	0	1	1
Trauma (penis, urethra)	0	5	5
Bladder Tumor	8	5	13
Total	18	89	107

Fisher's exact test =0.011, ddl=15, P=0.014

We found a statistically significant relationship between gender and the etiology of urological emergencies (P=0.014).

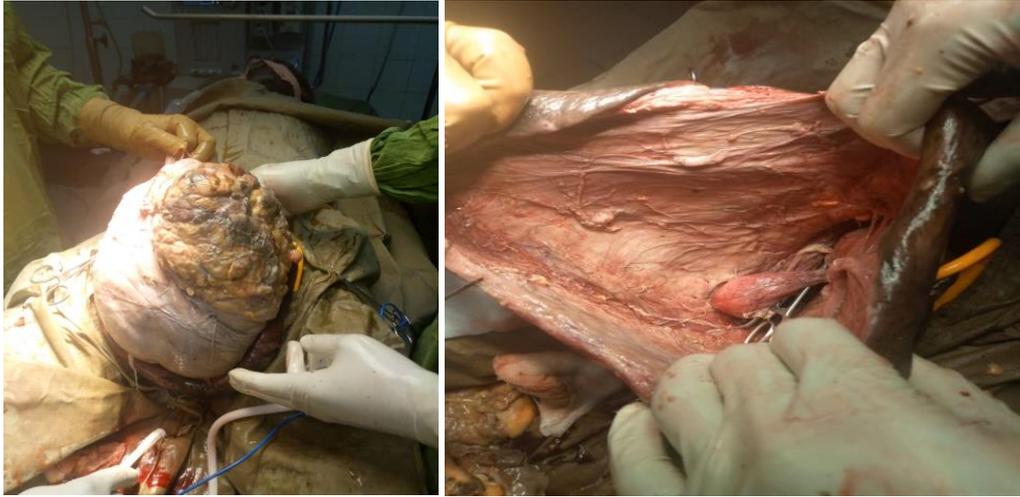
Table 8: Relationship between diagnosis and therapeutic follow-up

Urological emergency	Suites			Total
	Sepsis	Surgical site Infection	Simple	
Accident of circoncision	0	0	1	1
nephretic Colic	0	1	15	16
Acute Cystitis	0	0	4	4
Penile Fracture	0	0	3	3
Gangrena of Fournier	1	0	4	5
Hématuria	0	0	18	18
Acute Orchiépididymitis	0	0	5	5
Priapism	0	0	1	1
Acute Pyélonéphritis	0	0	4	4
Acute urinary retention	0	1	44	45
spermatic Torsion	0	0	4	4
Trauma of urethra	0	0	1	1
Total	1	2	104	107

Khi-2= 27,364, ddl=3

Some Pictures of Our Activities in the MARKALA Reference Centre

**Fournier's gangrene with scrotal necrosis (A)**



Debridement of necrotic tissue (B)



Scrotoplasty



Recovery

IV-COMMENTS AND DISCUSSION

1-Frequency:

The results of our study showed that urological emergencies occupy an important place in the activities of the urology department. This had been mentioned in previous studies [1, 8] and confirmed by the present

study. The latter revealed that urological emergencies constituted 13.16% of our urology consultations, whereas in Guinea [1] and Senegal [8], in university hospitals, they represented 22% of admissions (P=0.001). This difference can be explained by the galloping demography of the capitals [1, 8].

2-Social and Epidemiological Aspects

2-1. Age:

In our series, the mean age of patients was 47.6 years with extremes of 4 months and 92 years ($P=0.000$), comparable to that of Bobo Diallo *et al.*, [1] which was 56 years, that of Mondet *et al.*, [7] 53.18 years and Fall *et al.*, [8] 58 years. In Europe, the affected population had a mean age of 47 years [12]. The majority of our patients were between 61 and 80 years of age, i.e. a frequency of 30.8%, which is lower than the 66.72% for the same age group in RABETSIAHINY Lalao Fabienne [2].

Thus these studies reveal that these urological emergencies essentially affect the elderly.

2-2. Sex:

In our study, 89 cases were male against 18 female, a sex ratio of 4.94. Numerous studies [10-7, 28-9] confirm the clear predominance of males in urological emergencies, due to the high frequency of emergencies caused by urethro- prostatic pathologies.

In our series the frequency of male sex was 83.2%, comparable to the 90% of RABETSIAHINY Lalao Fabienne [2] ($P=0.04$).

3-Clinical Aspects:

Total inability to urinate was the most frequent reason for consultation with 42.1% of cases.

Our result is similar to that of the Dakar University Hospital [8] where RAU represented 53% of the reasons for consultation ($P=0.002$), 22% at the Pitié-Salpêtrière University Hospital [7] ($P=0.04$), and 24% at the Besançon University Hospital with ($P=0, 012$) [12], but it is lower than that of Bobo Diallo *et al.*, who found a frequency of RAU of 73.9% [1] ($P=0.75$), but higher than the 8.5% of the Atlanta hospital in the USA ($P=0.86$) [29].

The most frequent medical and surgical antecedents were arterial hypertension and inguinal hernia, i.e. 15.9% and 3.5%, which were lower than those of HODONOU R [30] and SANGARE F [30] who reported 20.74% and 19.8% respectively.

UAE was the most frequent urological emergency in our series with 42.1% of cases. This result is lower than that of Bobo Diallo *et al.*, [1] at the University Hospital of Conakry with 73.9% of acute retention of urine ($P=0.03$), comparable to that of the study carried out in Senegal where acute retention of urine constituted the first emergency with 53% of cases [8] ($P=0.004$), which is also the case in Benin [24], but higher than the study carried out in France [7], where it comes in second place after low back pain.

This disparity in the frequency of studies between France and African countries can be explained

by the fact that in France patients consult as soon as dysuria occurs, whereas in Africa they consult most often at the stage of complication, which is urinary retention.

4-Paraclinical Aspects

4-1. Ultrasound:

In our study, urinary ultrasound was an important part of the assessment of a nephritic colic crisis. It allowed us in the majority of cases to confirm its lithiasis origin, and also to evoke the possible existence of an obstructive obstacle on the excretory tract by showing a pyelocalic dilatation. It has been the reference complementary examination for prostatic hypertrophy. The prescription of this examination was facilitated by its affordable cost and its non-invasive character. It was performed in 78.5% of our patients.

4-2.PSA:

In our series, ESRD was used to visualize radiopaque urinary lithiasis, which was the cause of nephritic colic and UAR. It was performed in 23.3% of our patients.

4-3.URO-CT:

In our study this examination was rarely requested due to its high cost and the fact that our technical platform did not have this examination.

It was only performed in two (2) of our patients who had anuria and pyonephrosis.

4-4. ECBU:

Escherichia coli was the most common germ with a frequency of 13.2%. Our rate is lower than the 28.2% of M. ALHADER [27].

5-Aetiological Aspects:

5-1. Etiology of UAE:

BPH was the most common etiology with a frequency of 57.7% of cases. This result is comparable to those of Ikurowo *et al.*, [26] in Nigeria where benign prostatic hypertrophy (64%) was the main etiology of acute urinary retention and those of Fall *et al.*, [8] in Senegal who found 66.57%.

6-Therapeutic Aspects:

6-1. Emergency Non-Surgical Procedures:

The most common non-surgical procedure performed in our setting was urethrovessical catheterisation with 63.6% of cases.

The predominance of bladder catheterisation was also found in most publications on urological emergencies [1- 10, 22- 25]. Bladder catheterisation allowed us to remove the majority of urinary obstacles caused by BPH. Mastery of bladder catheterisation is therefore very important. In other words, it must be placed under strict aseptic conditions to avoid infectious complications. When choosing between catheter type

and size, it is best to avoid small caliber catheters in the first instance and use an 18 or 20 gauge Foley catheter [21]. In children, the size of the catheter varies between charrière 6 and 14. It is also advisable to carry out a progressive bladder emptying, which is controversial for some authors, and to clamp the catheter for a few minutes every 500 ml [21]. If the bladder is emptied too quickly, macroscopic haematuria may occur, known as a vacuo haematuria, and a venous line must be inserted before emptying with replacement (isotonic saline or lactated Ringer's infusion) of the volume of urine collected, to avoid an obstruction lifting syndrome.

6-2. Emergency Surgical Procedures:

In our study, emergency surgical procedures were dominated by debridement of external genitalia gangrene with a frequency of 21.7%.

This result is different from those of Fall *et al.*, [8] where debridement represented 15.4% (P=0.67).

Technically, debridement is performed as an emergency. The patient is installed under general anaesthesia in the supine position, legs spread on supports, with the buttocks extending beyond the edge of the table. The operating field is wide, extending over the abdomen and thighs. The aim of the treatment is to expose the lesions to the ambient air and to avoid the creation of collected areas. Removal should involve all devitalized tissues, including skin, subcutaneous tissue and fascia, until normal-looking fascia is restored. All pockets should be debrided with the finger and all devitalized tissue excised until the sectional area bleeds. In these conditions, mechamining becomes the most suitable drainage system compared to multi-tubed non-declined blades [16]. If the scrotum is involved, testicular vitality should be explored. The debrided and denuded areas are covered with wet, wrung-out compresses.

There is no recommendation as to the type of lavage fluid to be used: saline, betadine or chlorhexidine. A colostomy is indicated in the case of extensive rectal and sphincter damage and in the case of faecal incontinence, which may soil the debrided wound. In case of damage to the sheath of the penis or the OGE, a suprapubic catheter is placed in a healthy area. This type of drainage generally improves wound care and reduces the complications of prolonged urethral catheterisation. The dressing, often bleeding, may include a layer of calcium alginates and compresses. Iterative dressings, carried out in the operating theatre, allow debridement of necrotic tissue to continue, wash the wound and begin the budding phase in the presence of healthy tissue [16].

The treatment of testicular torsion is a surgical emergency. Diagnostic doubt alone requires exploratory scrototomy. In our series, the delay in consultation was at the origin of 4 cases of orchietomy, i.e. 17.4% of

our emergency surgical procedures, which were due in the majority of cases to necrosis spread over the entire testicle and its vascular complex. In practice, the ideal attitude to any testicular torsion is to be able to perform external detorsion manoeuvres at the time of diagnosis. These manoeuvres consist of moving the upper pole of the testicle away from the midline "like turning the pages of a book" [20], clockwise to the left and anticlockwise to the right.

Even if the pain is completely sedated, surgery is still essential [19]. The incision is made via the scrotal route, except in the case of doubt about a tumour when the inguinal route is preferred. After opening the vagina, a bacteriological sample is taken in case of a reactive hydrocele [19]. Externalization of the testicle allows us to determine its condition, confirm the diagnosis and determine the type of torsion. If the testis is viable, it is preserved and attached to the median raphe (orchidopexy). Contralateral orchidopexy may be performed at the same time. If the testis is non-viable, orchietomy should be performed. The prognosis is correlated with the earliness of the operation. The overall rate of testicular preservation after torsion is 40-70%. The preservation rate is 100% before three hours, 90% before six hours and less than one in two after ten hours [15].

Emergency drainage of acute obstructive pyelonephritis accounted for 17.4% of the surgical procedures performed in our study, which is lower than the study by Mondet *et al.*, [7] in France, where it accounted for 31% of emergency procedures. Drainage consists of a bypass nephrostomy or ureteral catheterisation. Endoscopic JJ catheterization was not performed here due to lack of adequate equipment.

Suprapubic cystocatheterization was performed as an alternative after failure of urethrovesical catheterization and in case of trauma or urethral stricture, in our series it represented 17.4% of the procedures, lower than the 59.8% of Fall *et al.*, [8] (P=0.44).

6-3. Etiological Treatments

In the majority of cases, the etiologies of urological emergencies are surgical pathologies as in our series. The most frequent are BPH (57.7%), urinary lithiasis (17.7%), and urethral stenosis (6.7%).

Etiological treatments for urological emergencies were often scheduled.

Transvesical prostatic adenomectomy was the most common (24.8%). Radical and definitive emergency treatment accounted for 20.8% of cases. In addition, some patients (3.7%) were lost to follow-up and we did not know whether or not they had received etiological treatment. For financial reasons, other patients (11.9%) were unwilling or unable to undergo

surgery and were content with palliative treatment by means of an indwelling bladder catheter.

7-Evolution and Complications

The immediate evolution of the treated cases was generally favourable at the cost of a therapeutic procedure adapted to the local technical platform. The morbidity rate was low in our study (2.8%) and the complications were mainly infectious.

The mortality rate was also very low (0.93%), and the main causes were infectious sepsis due to Fournier's gangrene; in the literature, the mortality rate during the emergency management of urological pathologies is almost nil [3].

CONCLUSION

Urological emergencies occupy an important place in our daily activity. The most frequent urological emergency was acute urinary retention, the predominance of which was related to the frequencies of benign prostatic hyperplasia, urinary lithiasis and urethral stricture. The target population, dominated by adult males in their 50s, implied an etiological role for prostate adenoma.

The emergence of these emergencies was mainly related to the delay in consultation and the lack of health education in the general population.

Urethral catheterisation, debridement and suprapubic bladder catheterisation are the most commonly performed procedures.

CONFLICT OF INTEREST

The authors declare that the manuscript has no conflict of interest.

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