



Original article

Spectrum of urological emergencies and surgical interventions in a single tertiary health center



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ABSTRACT

Objectives: Emergency urologic conditions are relatively common, albeit rarely life threatening, there is often a need for prompt and expedient management in order to avert severe or permanent morbidities. This study aimed to evaluate the spectrum of Urologic emergencies and interventions offered in a tertiary hospital in Nigeria.

Patients and methods: We retrospectively reviewed the records of patients who were managed in our institution for emergency urologic conditions over a period of 6 years (2011–2017). The data extracted included; the demographic information, diagnosis and the treatment offered. The data obtained were analyzed using SPSS version 20. Data were displayed using mean \pm standard deviation and percentages.

Results: The records of a total of 681 patients were retrieved and they span across almost all ages with age range or 2–90 years. Urinary retention was the commonest emergency seen, accounting for 51.7% of the patients. Testicular torsion was the next most common (10%), others are bilateral ureteric obstruction and priapism with 5.4% and 5.3% respectively. Suprapubic cystostomy (SPC) was the commonest operative procedure performed (37.6%). The age range for patients with urinary retention was 3–90 years, though the peak incidence was in the 7th decade (37.3%). Patients with testicular torsion were young adults between the ages of 11 and 44 years.

Conclusion: Urinary retention was the commonest urologic emergency followed by testicular torsion. Though urethral catheterization was successful in most patients urinary retention, making it the commonest procedure. SPC was the commonest emergency operative procedure performed. Other emergencies occurred sporadically.

African relevance

- Urological emergencies are usually not life threatening but may result in irreversible consequences if not promptly managed.
- Urinary retention was the commonest urologic emergency, though urethral catheterization was successful in most patients.
- Suprapubic cystostomy was the commonest emergency operative procedure performed.

Introduction

Emergency services are some of the most important functions of any hospital. Emergency conditions are common and they cut-across all specialties. They are not infrequent in Urology but less common when compared to some other surgical specialties [1]. Reassuringly, they are predominantly not life threatening but require prompt and expedient

response to prevent long term complications and to achieve a satisfactory outcomes. Majority require some form of surgical intervention as definitive management.

The first point of contact is the General practitioner or emergency physician. Some conditions are striking such as acute urinary retention while others can pose diagnostic challenges. A high index of suspicion and early referral to the Urologist is essential in order to prevent complications, which might be devastating to the patient. Diligent patient evaluation, availability of appropriate equipment facilitates early diagnosis and consequently successful outcomes.

Some general urological emergencies seen in emergency units include acute scrotal conditions, priapism, acute urinary retention, acute renal colic, massive macroscopic hematuria, urinary tract infection, genitourinary trauma and paraphimosis [2]. Fall et al. [3] in a retrospective review spanning over 20 months, they observed that of all urological emergencies admitted to university teaching hospital

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Aristide-Le-Dantec, Dakar, urinary retention was the commonest (53%) and insertion of suprapubic catheter was the commonest procedure. Talreja et al. [4] in a prospective study carried out over a 1 year period at SMS Hospital Jaipur, they identified renal colic as the commonest urological emergency (24.2%).

Traumatic urologic injuries are commonly seen in association with road traffic accidents and urinary tract involvement accounts for <1% of the multiple injuries [5]. However, in this era of terrorism, there is a surge in the incidence of penetrating and blunt injuries affecting the genitourinary tract. Northern Nigeria, particularly the north-east, has experienced several terrorists` attacks and these resulted in significant Urologic injuries [6–8].

This study aimed to evaluate the spectrum of Urologic emergencies seen in a tertiary hospital in Nigeria. The available data would guide health care planning, financing, training of doctors and also contribute to available data in our country.

Methods

This was a retrospective study of records of patients who presented with Urological emergencies to our institution, over a 6 year period (from January 2011 – January 2017). This study was approved by the Health research ethics committee (HREC) of Ahmadu Bello University Teaching Hospital Zaria. (Reference number: ABUTHZ/HREC/CL/05). Only patients with urinary retention and those that had surgical intervention were included. Those urological emergencies that were managed non operatively were excluded (due to incomplete and missing data). The variables extracted include age, sex, diagnosis and surgical procedure. Data obtained were analyzed using Statistical Package for Social Scientist version 20 and displayed using descriptive statistics, tables and charts.

Results

A total of 681 patients who were managed within the study period. The age range was between 2 and 90 years with a mean of 41.3 ± 21.6 years. Six hundred and fifty three were males (95.9%) and 28 females (4.1%). The causes of Urological emergencies in our institution are displayed in Table 1.

Urinary retention was the commonest emergency occurring in 352 patients (51.7%) with an age range between 3 and 90 years and a mean of 44.7 ± 22.9 years. Two hundred and ninety patients (42.6%) had acute urinary retention while 62 patients (9.1%) had chronic urinary retention. Majority of the patients with urine retention (59.1%) had successful urethral catheterization while the remaining (41.9%) had suprapubic cystostomy (SPC). The peak incidence of urinary retention was in the 7th decade (37.3%) (Fig. 1 and Table 3).

Suprapubic cystostomy was the commonest emergency procedure

Table 1
Causes of urological emergencies in our institution.

| Diagnosis | Frequency | Percentage |
|--------------------------------|-----------|------------|
| Testicular Torsion | 68 | 10.0 |
| Priapism | 36 | 5.3 |
| Chronic Urinary Retention | 62 | 9.1 |
| Acute Urinary Retention | 290 | 42.6 |
| Epididymoorchitis | 16 | 2.3 |
| Scrotal Abscess | 12 | 1.8 |
| Fournier’s Gangrene | 12 | 1.8 |
| Penile Fracture | 6 | 0.9 |
| Acute paraplegia | 26 | 3.8 |
| Bladder injury | 11 | 1.6 |
| Penile injury | 5 | 0.7 |
| Urethral injury | 38 | 5.6 |
| Bilateral Ureteric Obstruction | 37 | 5.4 |
| Others | 62 | 9.1 |
| TOTAL | 681 | |

Table 2
Causes of urinary retention.

| Causes of UR | Number of patients | Percentage |
|-----------------------|--------------------|------------|
| BPH | 198 | 64.9 |
| Urethral stricture | 60 | 19.7 |
| Prostate cancer | 2 | 6.6 |
| Urethral injury | 38 | 12.5 |
| Bladder neck stenosis | 2 | 6.6 |
| Vulval cancer | 1 | 3.3 |
| Fowler’s syndrome | 1 | 3.3 |
| Meatal stenosis | 2 | 6.6 |
| Uterovaginal prolapse | 1 | 3.3 |
| Total | 305 | |

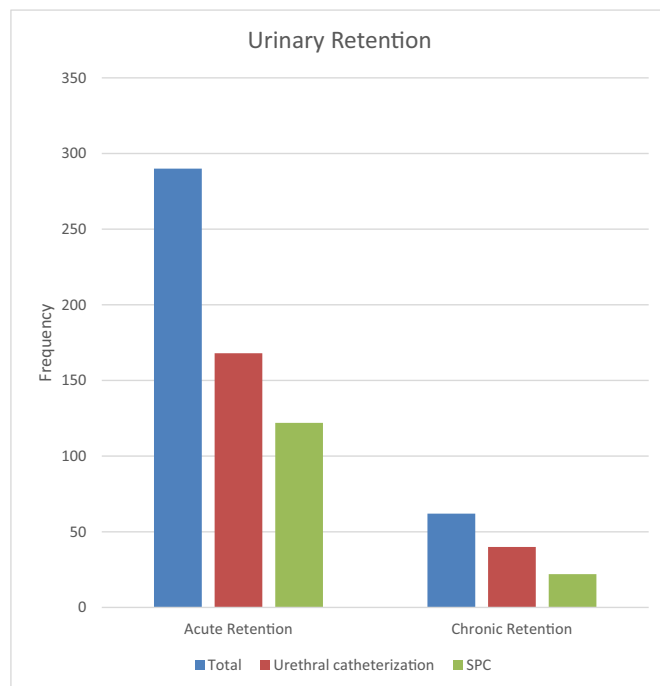


Fig. 1. The causes of urinary retention are displayed on Table 2 (n = 305).

Table 3
Summary of surgical procedures performed for urological emergencies.

| Procedure | Frequency | Percentage |
|-----------------------------------|-----------|------------|
| Suprapubic cystostomy | 171 | 37.6 |
| Al ghorab shunt | 35 | 7.7 |
| Orchidopexy | 50 | 11.0 |
| Bilateral orchidectomy | 26 | 5.7 |
| Scrotal exploration | 16 | 3.5 |
| Debridement/incision and drainage | 22 | 4.8 |
| Repair of bladder injury | 13 | 2.9 |
| Cystolithotomy | 8 | 1.8 |
| Cutaneous ureterostomy | 7 | 1.5 |
| Percutaneous nephrostomy | 35 | 7.7 |
| Open nephrostomy | 2 | 0.4 |
| Nephrectomy | 2 | 0.4 |
| Bilateral boari flap | 1 | 0.2 |
| Ileal conduit | 1 | 0.2 |
| Prostatectomy | 2 | 0.4 |
| Others | 64 | 14.1 |
| Total | 455 | |

performed (37.6%) as displayed in Table 3.

Testicular torsion constituted the second commonest urological emergency seen, accounting for 10.0% (n = 68) of the cases. The mean age of patients who presented with testicular torsion was 24 ± 6.8 years,

with a range of 11–44 years. 22 patients had right testicular torsion while 31 patients had torsion of the left testis while 3 patients had bilateral torsion. The peak age for presentation was 21–30 years (60%). Fifty patients had bilateral orchidopexy, achieving a salvage rate of 73.5% while 18 patients had ipsilateral orchidectomy and contralateral orchidopexy.

A total of 36 patients (5.3%) were managed for priapism. The mean age of the patients was 22.5 ± 9.6 years, with a range of 8–53 years. The peak incidence was 20–30 years (47.1%) and majority of them had sickle cell disease as the predisposing condition. Thirty five (35) patients had corporo-glandular (Al Ghorab) shunt while 1 patient had a proximal shunt.

Twenty six patients (3.8%) had acute paraplegia secondary to metastatic Ca Prostate. The age range was between 36 and 80 years, with a mean of 64.3 ± 9 years. 50% of them were within the age 60–70 years. They all had bilateral orchidectomy.

Thirty seven patients (5.4%) were managed for bilateral ureteric obstruction during the study period. Twenty two were females (59.5%) while 15 were males (40.5%). The age range was between 4 and 70 years with a mean of 45.8 years. Thirty five percutaneous nephrostomies were done in 26 patients, seven patients had cutaneous ureterostomy, 2 had open ureterostomy, 1 patient each had bilateral boari flap, ileal conduit and ureterolithotomy. The causes of bilateral ureteric obstruction are displayed in Table 4 ($n = 32$).

Sixty one patients (9%) were managed for urologic trauma. There were 38 urethral injuries (62.2%), 11 of bladder injuries (18.1%), 4 penile injuries (6.6%), 5 scrotal injuries (8.2%) and 3 blunt abdominal injuries (4.9%) involving urologic structures.

Discussion

Emergency urologic conditions are common and urinary retention is one of the commonest causes of urologic emergency consultation globally. The incidence increases with age, a man in his 70s has 10% chance and a man in his 80s has >30% chance of having an episode of acute urinary retention [9,10]. Urinary retention was the commonest Urological emergency in this study constituting 51.7%. In a comparable study, Atim et al. [11] at the University of Abuja Teaching Hospital, Gwagwalada reported urinary retention as the commonest Urological emergency accounting for 53%. Diallo et al. [12] in a study in Senegal also reported urinary retention as the commonest urological emergency though the percentage was much higher (73%). Ndubusi et al. [13] on the pattern of surgical emergencies at Federal Medical Center Makurdi reported acute urinary retention as the second most common non traumatic emergency after acute abdomen. There is geographical variation on the pattern of Urological emergencies. Talreja et al. in Jaipur, India, reported renal colic as the commonest urological emergency (24.2%) [4].

Testicular torsion refers to twisting of spermatic cord structures and subsequent loss of blood supply. Early diagnosis and treatment are vital to preserving the affected testicle. The rate of testicular viability (salvage) decreases after 6 h from onset of symptoms [14]. The mean age was 24 years in this series, which is comparable to the findings of Ibrahim et al. who reported 23 years in a 3 year retrospective review at

Table 4
Causes of bilateral ureteric obstruction.

| Causes of BUO | Number of patients | Percentage |
|------------------------------------|--------------------|------------|
| Cervical cancer | 17 | 53.1 |
| Bladder cancer | 8 | 25 |
| Rectal cancer | 1 | 3.1 |
| Iatrogenic | 2 | 6.3 |
| Bilateral impacted ureteric stones | 1 | 3.1 |
| PUV | 1 | 3.1 |
| Intraabdominal mass | 2 | 6.3 |
| Total | 32 | |

University of Maiduguri Teaching Hospital [15]. In developed countries, the peak incidence is around puberty [16], whereas in this environment, most patients with torsion (56.9%) were within 21–30 years, which is also comparable to the findings of Udeh et al. [17] Most patients had left sided testicular torsion (55.4%) which is comparable to the findings of Obi who also reported preponderance on the left side (53.3%) [18]. The testicular salvage rate of 73.5% is comparable to that of Udeh et al. (75%) and Dakum et al. (72%) [17,19]. Bilateral testicular torsion is extremely rare, although it occurred in three patient according our records. However this would be difficult to ascertain in a retrospective study.

Priapism remains an important urological emergency that requires prompt intervention in order to avert the dreaded sequelae of permanent erectile dysfunction [20]. It is described as persistent penile erection that continues for >4 h or is unrelated to sexual intercourse [21]. The commonest cause in our environment is sickle cell anemia while drug-induced priapism is commoner in the Western countries [21]. A total of 36 patients were managed during the study period, priapism accounted for 5.4% of all the Urological emergencies seen. The mean age in this study was 22.5 years, which is similar to that found by Muhammad et al. at UDUTH Sokoto (23.9 years). The closeness of the values can be explained by the similar geographical location in north western Nigeria [22]. Ugwumba et al. from South eastern Nigeria however reported a higher mean age of 30.5 years [23].

Twenty six patients (3.8%) presented with acute paraplegia from metastatic prostate cancer for which they had bilateral orchidectomy. This is partly attributed to the fact that most patients with prostate cancer in our environments present late [24], and partly because many patients in our environment cannot afford medical castration. Twenty five patients (96.2%) were older than 50 years but there was a 36 year old (3.8%) who was managed for metastatic disease. Prostate cancer is rare in younger patients. It has been observed from the available published data that undifferentiated or poorly differentiated adenocarcinoma is the commonest histology in the younger age group and majority present with metastatic disease at outset [25].

A total number of 61 patients (9.0%) had surgery for different kinds of urologic trauma. Majority of the injuries involved the urethra. The urethra was the commonest site affected (62.2%), which is also similar to the findings of Salako et al. (58.9%) [5].

The limitations of this study include being a retrospective study and a single center study.

Conclusion

Urinary retention was the commonest urologic emergency, though urethral catheterization was successful in most patients. Urethral catheterization was the commonest intervention while SPC was the commonest operative procedure performed. Other emergencies occurred sporadically with the second most common condition being testicular torsion. Urological emergencies are usually not life threatening, but may result in irreversible consequences if not promptly managed.

Dissemination of results

The findings of this study were presented at the Scientific conference of the Nigerian Association of Urologic Surgeons.

Authors' contribution

Authors contributed as follow to the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; and drafting the work or revising it critically for important intellectual content: BKH contributed 35%; MAh 25%; MAT and MAw 10%; and ATL, NO, AB and HTM contributed 5% each. All authors approved the version to be published and agreed to be accountable for all aspects of the work.

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B.K.H.: Project development, manuscript writing, data collection, data analysis, editing.

M.A (Ahmed): Project development, editing.

M.A.T: Data collection, data analysis, editing.

M.A (Awaisu): Data collection, editing.

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All authors have read and approved the manuscript.

Declaration of competing interest

The authors declared no conflicts of interest.

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