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# Urological Emergencies Seen at a Tertiary Hospital in Central Region of Ghana

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## Abstract

**Background:** Although rarely fatal, urological emergencies are somewhat common, and they must be managed immediately and properly to avoid long-term effects. Many patients consult emergency services with urological complaints. The aim of this study is to investigate the spectrum of urologic emergencies and the treatment options provided at Cape Coast Teaching Hospital (CCTH). **Methods:** A five-year retrospective evaluation of the electronic folders of urological emergency patients selected at random who reported to the hospital between 2017 to 2022 according to age, gender, diagnosis, and treatment. SPSS version 26.0 and Microsoft Excel 2016 were used to examine the data that was obtained from the study. **Results:** The records of 500 patients were retrieved and they spanned across age range of 2 - 93 years. Males comprised 51.2% of the patients and 48.8% of them were females with a mean age of 46.6 years. The most common disease was genitourinary infection constituting 66.2% of the cases followed by retention of urine accounting for (10.6%). Among the urological emergencies 48 (9.6%) patients were hospitalized and 51 (10.6) emergency interventions were performed. The mostly performed procedure was the placement of a suprapubic catheter in 15 patients constituting (29.4%) of the cases. Totally post-interventional follow up rate was 49.0%. **Conclusion:** Most of the urological emergency patients do not require emergency surgical interventions; however, timely identification and management of urological emergencies with in-depth clinical evaluation are important to prevent late complications.

**Keywords**

Urology, Emergencies, Priapism, Urinary Retention, Haematuria

## 1. Background

Urological emergencies, though less common than other surgical emergencies, require urgent attention due to their potential to increase morbidity and mortality if treatment is delayed [1]. These unexpected conditions, which can be traumatic or non-traumatic and affect any age or gender, present variably by geographic region [2]. Examples necessitating surgical intervention include testicular torsion, urethral injuries, renal lacerations, pyonephrosis, acute urine retention, and obstructive renal calculi. Common presentations in emergency settings encompass acute scrotal issues, priapism, renal colic, macroscopic haematuria, urinary tract infections, genitourinary trauma, and paraphimosis [3]. Urinary retention is frequently reported, accounting for 53% of cases in one study, with suprapubic catheterization as a common procedure [2]. Pediatric emergencies include acute scrotum, penile issues, hematuria, retention, abdominal masses, and genital abnormalities [4]. Urologic trauma, often from auto accidents, constitutes under 1% of multiple injuries [5].

While diverse urological emergencies are managed at institutions like Cape Coast Teaching Hospital (CCTH), research on their spectrum, management options, and outcomes in Ghana remains limited. Existing Ghanaian studies, such as one focusing solely on adult urinary retention at Komfo Anokye Teaching Hospital [6], highlight this gap. Prompt diagnosis and intervention are critical as these conditions can be life-threatening. Specific treatments include catheterization or cystostomy for retention, corporal aspiration for refractory priapism, orchidopexy for testicular torsion, antibiotics/debridement for Fournier's gangrene, and clot evacuation for hematuria [7].

In busy teaching hospitals like CCTH, understanding the range, causes, and optimal management of urological emergencies is vital. As significant contributors to morbidity and mortality, their accurate and timely management—often initiated in the emergency department—profoundly impacts patient outcomes. This study will therefore provide essential insights into emergency urological care, including influencing factors for presentation and management at CCTH.

## 2. Methods

### 2.1. Setting and Study Design

The study was conducted at Cape Coast Teaching Hospital (CCTH) in the Central Region of Ghana. It is the largest tertiary referral center in the Central Region. A quantitative retrospective approach was employed to collect information from hospital records of patients who presented with urological emergencies to the Cape Coast Teaching Hospital to retrieve data. The target population included all

inpatients who were diagnosed with urological emergencies between the five years from 2017-2022.

Inclusion criteria: All patients who attended CCTH from the year 2017-2022 who were available/alive/within reach and mentally healthy to consent to the use of their data.

Exclusion criteria: Patients with incomplete folders were excluded from the study.

### 2.2. Data Collection Instrument

The study employed the use of a data abstraction form to solicit information from the electronic folders of patients. It captured variables such as demographic information demographics (age, sex, occupation), diagnosis, modality, the type of procedure requested, treatment and management strategies and treatment outcomes.

#### 2.2.1. Data Collection

Relevant medical records of patients treated for urological emergencies at CCTH were identified and retrieved by staff at the biostatistics department by searching electronic medical records using appropriate keywords. A data abstraction form was developed to capture key variables such as demographic information demographics (age, sex, occupation), diagnosis, modality, and the type of procedure requested. The data was then sent via email to the investigator for sampling. A temporal large account was created for the retrieval of data on treatment, management strategies, and treatment outcomes.

#### 2.2.2. Data Analysis

Data was entered into IBM SPSS Statistics for Microsoft version 26.0 and Microsoft Excel 2016. Data was cleaned up and crosschecked before analysis was done. The data in the Excel was then exported to SPSS Version 26.0 and the variables were coded. Descriptive statistics was used to summarize demographic frequencies, percentages, and means. Inferential statistics were also employed to analyze outcome differences among patient subgroups using appropriate statistical tests (e.g., F-tests, and chi-square tests). Statistical estimates were expressed with 95% confidence intervals (CIs) and a p-value less than 0.05 was considered statistically significant in the chi-square test. The results were presented using charts and tables.

### 2.3. Ethical Considerations

This study was approved by the Cape Coast Teaching Hospital Ethical Review Committee (CCTHERC/EC/2023/159) and it adhered to ethical guidelines and data confidentiality while patient identities were kept anonymous.

## 3. Results

### 3.1. Demographic Characteristics

The records of 500 patients were retrieved and they spanned across all ages with

a range of 2 - 93 years. The age distributions were: <30 years 137 (27.4%), 30 - 59 years 206 (41.0%) and 60 years and above 157 (31.4%) (Table 1). The age distribution had a mean of 46.6 years with a standard deviation of 22.8. Most of the patients with urological emergencies were between 18 - 39 years followed by patients either 60 years or above. Distributions of different urological emergencies due to sex were: 256 (51.2%) males and 244 (48.8%) females (Table 1).

Table 1. Demographic data of patients with different urological emergencies.

| Age groups (Years) | Frequency | Percent |
|---|---|---|
| <30 | 137 | 27.4% |
| 30 - 59 | 205 | 41.0% |
| 60≥ | 157 | 31.4% |
| Total | 500 | 100% |
| **Gender** | | |
| Male | 256 | 51.2% |
| Female | 244 | 48.8% |
| Total | 500 | 100% |

### 3.2. Proportions of Clinical Diagnosis of Different Urological Emergencies at CCTH

Out of the 500 patients, the different urological emergencies were: UTI 331 (66.2%), urinary retention 53 (10.6%), haematuria 28 (5.6%), renal colic 21 (4.2%), epididymo-orchitis 19 (3.8%), Fournier gangrene 11 (2.2%), scrotal pain 11 (2.2%), priapism 10 (2.0%) cystitis 6 (1.2%), obstructive and reflux uropathy 6 (1.2%), injury of the bladder 3 (0.6%) and injury of urethra had 1 patient representing 0.2% (Figure 1).

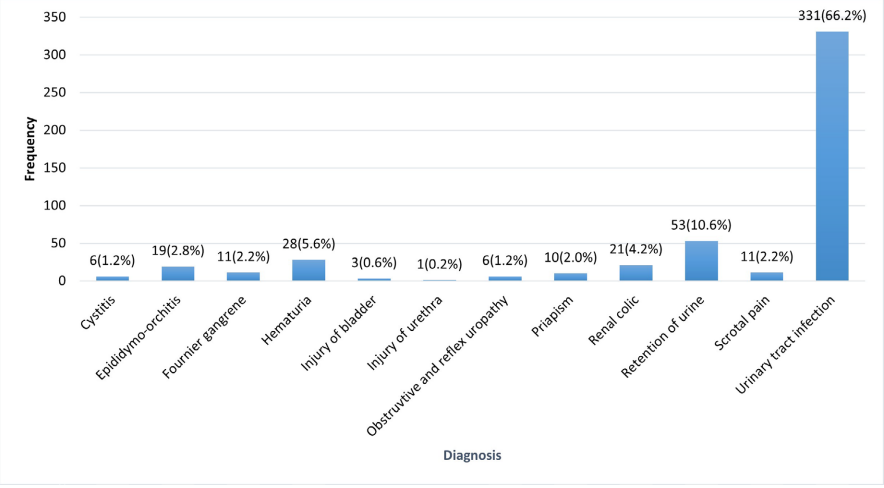


Figure 1. Proportions of different types of urological emergencies at CCTH.

### 3.3. Distribution of Different Urological Emergencies among the Different Age Groups

In this study, the most common urological emergency among patients in all age groups was urinary tract infections accounting for 110 (79.7%) in-patients aged less than 30 years, 138 (67.3%) in-patients aged 30 - 59 years and 83 (52.9%) in-patients aged 60 years and above. It was followed by urinary retention 20 (9.8%) in-patients aged 30 - 59 years and 30 (19.1%) in-patients aged 60 years and below (Table 2).

Table 2. Distribution of the different urological emergencies among the different age groups.

| Diagnosis | Age (Years) | | | Total |
|---|---|---|---|---|
| | <30 | 30 - 59 | 60≥ | |
| Cystitis | 3 (2.2%) | 2 (1.0%) | 1 (0.6%) | 6 |
| Epididymo-orchitis | 2 (1.4%) | 8 (3.9%) | 9 (5.7%) | 19 |
| Fournier gangrene | 1 (0.7%) | 3 (1.5%) | 7 (4.5%) | 11 |
| Haematuria | 5 (3.6%) | 11 (5.4%) | 12 (7.6%) | 28 |
| Injury of bladder | 0 (0) | 2 (1.0%) | 1 (0.6%) | 3 |
| Injury of urethra | 0 (0) | 0 (0) | 1 (0.6%) | 1 |
| Obstructive and reflux uropathy | 0 (0) | 0 (0) | 6 (3.8%) | 6 |
| Priapism | 5 (3.6%) | 5 (2.4%) | 0 (0%) | 10 |
| Renal colic | 4 (2.9%) | 11 (5.4) | 6 (3.8%) | 21 |
| Urinary retention | 3 (2.2%) | 20 (9.8%) | 30 (19.1%) | 53 |
| Scrotal pain | 5 (3.6%) | 5 (2.4%) | 1 (0.6%) | 11 |
| Urinary tract infection | 110 (79.7%) | 138 (67.3%) | 83 (52.9%) | 331 |
| Total | 138 | 205 | 157 | 500 |

### 3.4. Distribution of Urological Emergencies with Gender

Males presented with broader spectrum of urological emergencies 12 (100%) than females 8 (66.7%) (Table 3). In males, the frequent urological emergency was retention of urine making up 41.7% (n = 133), followed UTI which had a rate of 22.9%. Others such as hematuria, priapism and Fournier gangrene accounted for 8.8%, 7.8% and 6.6% respectively. In females, UTI was the dominant urological emergency with a rate of 89.6%. Urinary retention and cystitis, the next frequent urological emergencies combined to make up only combined to make only 14 (7.7%) of all cases in females (Table 3).

### 3.5. Distribution of Patients Who Had Undergone Surgical Interventions

A total of 51 (10.2%) of the total number of patients underwent surgical interventions. Out of the 51 patients who received emergency urological interventions,

**Table 3.** Gender distribution of urological emergencies.

| Diagnosis | Gender | | Total |
|---|---|---|---|
| | Female | Male | |
| Cystitis | 5 (2.0%) | 1 (0.4%) | 6 |
| Epididymo-orchitis | 0 (0) | 19 (7.4%) | 19 |
| Fournier gangrene | 1 (0.4) | 10 (3.9%) | 11 |
| Haematuria | 4 (1.6%) | 24 (9.4%) | 28 |
| Injury of bladder | 2 (0.8%) | 1 (0.4%) | 3 |
| Injury of urethra | 0 (0) | 1 (0.4%) | 1 |
| Obstructive and reflux uropathy | 0 (0) | 6 (2.3%) | 6 |
| Priapism | 0 (0) | 10 (3.9%) | 10 |
| Renal colic | 9 (3.7%) | 12 (4.7%) | 21 |
| Urinary retention | 3 (1.2%) | 50 (19.5%) | 53 |
| Scrotal pain | 0 (0) | 11 (4.3%) | 11 |
| Urinary tract infection | 220 (90.1%) | 111 (43.4%) | 331 |
| Total | 244 | 256 | 500 |

15 (29.4%) of the patients received suprapubic catheterization, 10 (19.6%) received urethral catheterization, 6 (11.8%) of the patients received excisional debridement, 5 (9.8%) had open prostatectomy, 4 (7.8%) constituted operation on the urethra. Other cases that received surgical intervention are listed in Table 4.

**Table 4.** Distribution of patients who had undergone surgical interventions.

| Type of surgical intervention | Frequency | Percentage |
|---|---|---|
| Excision biopsy | 2 | 3.9% |
| Excisional debridement | 6 | 11.8% |
| Fistula Repair-Complex and repair of anus | 1 | 2.0% |
| Genitourinary surgery | 1 | 2.0% |
| Nephrotomy for renal abscess | 1 | 2.0% |
| Open prostatectomy | 5 | 9.8% |
| Operation on the urethra | 4 | 7.8% |
| Suprapubic catheterization | 15 | 29.4% |
| Surgery on scrotum and tunica vaginalis | 1 | 2.0% |
| Urethral catheterization | 10 | 19.6% |
| Others | 5 | 9.8% |
| Total | 51 | 100.0% |

## 4. Discussion

The research conducted documented several urological emergencies, ranked by

their frequency of occurrence. These emergencies included urinary tract infection, urine retention, hematuria, renal colic, epididymo-orchitis, Fournier gangrene, scrotal pain, priapism, cystitis, obstructive and reflux uropathy, bladder injury, and urethral injury. Among the cases, majority were males and while were females formed the minority.

Urinary tract infection is a significant global health concern, particularly in emergency departments. Statistics indicate that approximately one-third to one-half of individuals experience a urinary tract infection at least once in their lifetime. This study found a higher prevalence of UTI in adults, with a greater proportion in women, which aligns with reports from other sources [8]. Urinary tract infections are commonly associated with factors such as advanced age, gender, pregnancy, diabetes, and catheterization, as these are well-established risk factors for such infections [9]. Although the specific causative organism(s) could not be identified, cefuroxime, a second-generation cephalosporin antibiotic, was the most commonly prescribed treatment for the infection.

Urinary retention is the condition where an individual is unable to pass a sufficient amount of urine, either acutely or chronically. The research revealed a urine retention rate which was determined to be the second most prevalent urological emergency in the study. Prostatic hyperplasia emerged as the leading cause of urinary retention in this study. Benign prostatic hypertrophy is believed to be the primary reason for urine retention [10]. The majority of urinary retention cases in this study involved males aged 60 and above. The likelihood of experiencing urinary retention increases with age, especially for individuals over 60 [11].

Haematuria showed a higher occurrence in males and individuals aged 60 years and older. This condition, characterized by blood in the urine, can manifest as either microscopic or macroscopic in both emergency and routine medical settings. Research suggests that approximately one in five patients seen by a urologist will have haematuria, with microscopic cases being more prevalent than macroscopic ones [12]. Haematuria can stem from various sources including infections, inflammation, cancers of the bladder, kidney, urethra, or prostate, trauma, urinary stones, catheter use, and benign prostatic hyperplasia. While there may be other factors at play, the surgical procedures listed in **Table 4** could potentially result in haematuria [13].

The occurrence of renal colic had a higher prevalence among men aged 30 - 59 years. Renal colic, which is commonly observed in men between the ages of 20 and 50, accounts for 1% of emergency service referrals. Typically associated with stone disease, renal colic presents as intense pain felt at the costovertebral angle. This pain is characterized as dull, persistent, and twisting in nature [14].

Epididymo-orchitis presents as an inflammatory condition affecting the epididymis and the corresponding testis in males. The condition typically initiates in the epididymis and may progress to involve the testis. Common causes include sexually transmitted infections (STIs) and the presence of urethral catheters [15], with a prevalence rate of 3.8% identified in our study. Treatment strategies for

epididymo-orchitis involve the administration of empirical antibiotics before confirming the specific microbial cause, followed by adjustments based on the identified pathogen. Surgical intervention may be necessary if conservative approaches fail. Risk factors for this condition include prostatitis, bladder outlet obstruction, history of trauma or instrumentation, and engaging in sexual activity with multiple partners [15].

Overall, Fournier gangrene made up 2.2% of all urological cases. Fournier gangrene is a rare and life-threatening urosurgical emergency caused by a polymicrobial infection in the perineal, genital, or perianal regions. Male patients, patients with alcoholism, and patients with immunocompromised conditions such as HIV and uncontrolled diabetes are more likely to develop FG [16]. Similarly, more males than females were harmed in our study.

Scrotal pain is the cause of about 2.5% to 5% of all urology consultations as reported elsewhere [17]. Only one case was as a result from iatrogenic cause as the other causes were not captured. It is worth noting that other conditions such as Epididymo-orchitis and Fournier gangrene observed in this study can present with scrotal pain.

Numerous studies have indicated that the prevalence of priapism among men with sickle cell disease (SCD) ranges from approximately 30% to 40% [18]. The precise etiology of priapism is often unknown or multifactorial, but generally results in the inflow of blood to the corpus cavernosum exceeding the outflow [19].

Emergency procedures were necessary for 10.2% of the patients in this study. The most frequently performed emergency procedure was suprapubic catheterization, accounting for 29.4% of all emergency procedures performed in the current study. This rate was required in 24.14% of emergency procedure cases in other studies [20].

## 5. Conclusion

Urological emergencies, although usually not posing an immediate threat to life, can result in severe outcomes if not promptly attended to. At Cape Coast Teaching Hospital, urinary tract infection emerged as the most frequently encountered emergency case. The majority of urological emergencies do not require immediate surgical interventions. Nevertheless, it is of utmost importance to promptly identify and address these emergencies through thorough clinical assessments to avoid potential complications in the future. Suprapubic catheterization was found to be the most commonly performed surgical procedure in such cases, followed by urethral catheterization.

## Conflicts of Interest

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

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