Retrospective evaluation of urological admissions to emergency service of a training and research hospital

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ABSTRACT

Objective: Many patients consult emergency services with urological complaints. The aim of this study was to investigate the epidemiology, clinical presentation and treatments of urological emergency cases in a training and research hospital.

Material and methods: We retrospectively evaluated urological emergency patients referred to the emergency unit between July 2012 and July 2013 according to age, gender, affected organ, radiological imaging techniques and treatment.

Results: Among 141.844 emergency cases, 3.113 (2.19%) were urological emergencies and 53.2% of the patients were male (mean age: 49.1), and 46.8% of them were female (median age: 42.8). The most frequent illness was genitourinary infection constituting 41.2% of the cases followed by renal colic (36.9%). Among the urological emergencies 483 (15.5%) patients were hospitalized and 152 surgical operations were performed. The mostly performed procedure was the placement of a suprapubic catheter in 34 patients constituting (22.3%) of the cases. Totally eight patients were referred to another experienced health center due to different reasons.

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. Therefore the doctors working in emergency services must be heedful of urological emergencies.

Key words: Emergency department; epidemiology; urological emergency.

Introduction

Emergency services are the most important units of the hospitals where health care services, and treatment modalities are ensured for every emergency patient, and wounded for 24 hours a day, and 7 days a week. Although urological emergencies do not constitute majority of patients consulted to emergency services, apart from iatrogenic injuries, they are generally seen in emergency services of the hospitals. Approach to patients in the emergency service carries utmost importance as for diagnosis, treatment, and referral of the patients. During their stay in the emergency service they are consulted to the urology department in case of need. In recent years, because of heavy patient circulation in the emergency services in our country, number of urological cases are increasing gradually. In a study performed in our country, incidence of urological cases among all referrals to the emergency services was reported as 2.67 percent.^[1] Urological emergencies may frequently include blunt traumas

as traffic accidents, falls from a height, sport injuries, or open wounds caused by penetrating, and perforating instruments as firearm injuries or stab wounds. They can occur in association with iatrogenic interventions, drug intoxications, urinary system stones, and tumors.^[2] Among all cases of emergency, these urological cases should be carefully, and meticulously examined. Generally urological emergencies seen in emergency services can be listed as patients with acute scrotal diseases, priapism, acute urinary retention, acute renal colic, massive macroscopic hematuria, urinary tract infections, genitourinary traumas, and paraphimosis.^[3] As far as we know, a large-scale epidemiological study encompassing urological emergencies has not been performed in our country. We retrospectively evaluated urological emergencies among patients referred to the emergency service of our hospital as for their stages of diagnostic workup, and treatment, demographic, and epidemiological characteristics with the intention to contribute to the relevant data of our country.

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Material and methods

Among 141.844 patients who referred to the Emergency Service of Diyarbakır Gazi Yaşargil Training and Research Hospital between July 2012, and July 2014, 3113 (2.19%) cases of emergency were evaluated by the emergency medicine specialist or practitioner on duty in the emergency service, and consulted to the urologist. Medical files of the cases referred as urological emergencies were retrieved from archives of emergency services, and urology department, and retrospectively analyzed regarding their demographic features, established diagnoses, treatments applied, and their outcomes. Eighty-four (2.6%) cases were not real urological emergencies, they were detected to be elective urological cases as varicocele, hydrocele, urinary incontinence, and very superficial genital abrasions. In injuries involving abdomen, and bony pelvis, and in hematuric cases whole abdominal ultrasonographic (US) images were obtained. Cases with suspect genitourinary infections were priorly evaluated with whole blood counts, and complete urinalysis. In patients complaining of renal colic were firstly evaluated with complete urinalysis, direct urinary system radograms (KUBs), and US. In patients with urinary system stone disease, non-contrasted spiral whole abdominal computed tomograms (CT) were requested. In blunt or penetrating scrotal traumas, and in suspect cases with testicular, and appendix testis abnormalities, and epididymo-orchitis, scrotal colour Doppler US was requested. Cystograms of all patients with suspect bladder traumas were obtained, while all cases with suspect urethral traumas underwent uretrographic examinations. Cases with suspect upper urinary system injuries were evaluated with contrast-enhanced CT. Visible hematuria was evaluated as macroscopic, and invisible hematuria (more than 5 RBCs on each microscopic field under 40 x magnification) was considered as microscopic hematuria.

Results

A total of 3.113 patients (male, n=1.658; 53.2%, and female, n=1.455; 46.8%) were consulted as cases with urological emergencies. Mean ages of male, and female patients were 49.1 (range, 5 mos-96 yrs), and 42.8 (range, 10 mos-97 yrs) years, respectively. Patients aged less than 7, and more than 70 years constituted 3.2% (n=102), and 18.1% (n=564) of the patient population, respectively. Distribution of urological cases who referred to the emergency service according to their clinical diagnoses are shown in Tables 1, 2, and 3. When all cases were reviewed, most frequently (total n=1285; 41.2%) diagnosis of genitourinary infection (female, n=792; 61.6%, and male, n=493; 38.4%) was detected. One hundred and eleven (8.6%) patients were hospitalized for treatment. Diagnosis of acute renal colic was made for 1150 (36.9%) patients (male, n=682; 59.3%, and female, n=468, 40.7%), and 61 (36.9%) patients were hospitalized for treatment. Diagnosis of acute urinary retention

Table 1. Distribution of clinical diagnoses of urological emergencies

Diagnosis	Patients, n	%
Genitourinary system infections	1.285	41.2
Cystitis	882	28.3
Urethritis, and vaginitis	268	8.6
Pyelonephritis	135	4.3
Acute renal colic	1.150	36.9
Acute urinary retention	292	9.3
Massive macroscopic hematuria	95	3.05
Acute scrotum	91	2.9
Elective cases (hydrocele, varicocele etc.)	84	2.6
Genitourinary system traumas	49	1.5
Phimosis	19	0.6
Paraphimosis	12	0.3
Scrotal abscess	10	0.3
Priapism	10	0.3
Urethral stone	7	0.2
Penile fracture	7	0.2
Fournier's gangrene	2	0.06
Total	3.113	100

Table 2. Distribution of trauma cases

Diagnosis	Patients, n	%
Minor renal trauma	15	30.6
Urethral injuries	10	20.4
Penile, and scrotal injuries	8	16.3
Bladder injury	7	14.2
Major renal injury	6	12.2
Ureteral injury	3	6.1
Total	49	100

was detected in 292 (9.3%) patients (male, n=282; 96.5, and female, n=10; 3.5%). Urethral Foley (n=267; 91.4%) 9 or percutaneous cystostomy (n=25, 8.5%) catheters were inserted to relieve urinary retention of the patients. Macroscopic hematuria was disclosed in 95 (3.05%) cases (male, n=63; 66.3%, and female n=32, 43.7%), while 68 (71.5%) cases were hospitalized for treatment. Most frequently renal injury was observed in 21 (0.6%) out of 49 (1.5%) patients (male, n=23; 65.7%, and female, n=12; 34.3%) who experienced genitourinary traumas. All cases with renal trauma were hospitalized for treatment, and 4 patients with major renal trauma were explored, and only one patient was nephrectomized. Percutaneous cystostomy catheter was implanted in 9 out of 10 patients with suspect urethral traumas. The other patient was catheterized through urethral route.

Table 3. Distribution of cases with acute scrotum

Diagnosis	Patients, n	%
Epididymo-orchitis	63	69.2
Testicular torsion	14	15.3
Penoscrotal edema	12	3.1
Torsion of the appendix testis	2	2.1
Total	91	100

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

Type of the surgical intervention	Patients, n	%
Percutaneous cystostomy	34	22.3
Clot evacuation, and bladder irrigation	23	15.1
Testicular detorsion and/or fixation	16	10.5
Reduction of paraphimosis	12	7.8
Drainage of the scrotal abscess	10	6.5
Priapism (distal shunts)	10	6.5
Emergency ureterorenoscopy	9	5.9
Repair of scrotal cuts	9	5.9
Urethral stone extraction	7	4.6
Repair of penile fracture	7	4.6
Circumcision	5	3.2
Repair of bladder rupture	4	2.6
Renal exploration	4	2.6
Debridement of Fournier's gangrene	2	1.3
Total	152	100

Fourteen cases of acute scrotum were diagnosed as testicular torsion who underwent surgical (n=8), and manual detorsion, and orchiectomy (n=3).

A total of 483 (15.5%) cases received either inpatient or day-case treatment. Detailed information about 15 (4.8%) of these cases who received surgical treatment are given in Table 4. Two patients with renal traumas in addition to multiple organ injuries, a patient with suspect arteriovenous fistulas who had undergone percutaneous nephrolithotomy operation in an external center whose severe renal colic, and hematuria did not regress, a patient who required radiological intervention because of renal artery thrombosis, two cases with priapism in whom distal shunts failed, and required proximal shunts, in other words a total of 8 (0.25) cases were transferred to a center with more sophisticated facilities.

Discussion

In emergency services, many patients who are exposed to unexpected medical emergencies which require urgent intervention

and multidisciplinary approach are evaluated. Although urological emergencies are less frequently seen compared with emergencies of other disciplines, they are mostly observed in emergency services of the hospitals apart from iatrogenic injuries. Scarce number of epidemiological studies have been performed about urological emergencies in our country. Frequently seen urological emergencies include acute renal colic, genitourinary system infections, urinary retention, trauma, acute scrotum, penile fracture, priapism, paraphimosis, and macroscopic hematurias.^[4]

Urinary system infection is an important health problem in the whole world, and in our country, and they are especially encountered in emergency services. It has been estimated that one-third or one half of the human beings contract urinary system infection once in their lives.^[5] In a study reported from our country, *Escherichia coli* was determined as the most frequently seen community-acquired urinary system pathogenic agent.^[6] Advanced age, gender, pregnancy, diabetes, and catheterization are known risk factors for urinary system infections.^[7] Genitourinary system infections are generally observed in adults, and more often seen in women which are at the same time the most frequent cause of referrals to emergency services.^[8] Still in our study, genitourinary system infections were the most frequently encountered entities in the emergency services, and 61.6% of the cases were female patients. However in the studies by Akıncı^[1], and Mondet^[9] the cases with genitourinary system infections who consulted to the emergency services were reported to constitute 19.2, and 54.1% of all emergency service referrals, respectively. Generally uncomplicated urinary system infections are cured with medical treatment, while complicated, and serious infections as pyelonephritis should be treated on an inpatient basis. In our study 8.6% of the cases with urinary tract infections were hospitalized for their treatment.

As an urological emergency, renal colic attacks people with a probable risk of 1-10% in their lifetimes.^[10] Renal colic generally occurs in association with stone disease, and manifests itself with severe pain.^[10] Renal colic which is frequently seen in men aged between 20, and 50 years construes 1% of emergency service referrals.^[4,11] Typically the pain is felt at the costovertebral angle as blunt, continuous, and writhing pain. This pain radiates from subcostal region towards umbilicus or lower abdominal quadrants. In an epidemiological study performed by Akıncı et al.^[11] in a state hospital in our country, the authors reported that the renal colic patients formed the second most frequently seen patient population among urological cases that consulted to emergency service. Also, in our study, acute renal colic which is the second most frequently encountered disease group in the emergency service was detected more frequently (59.3%) in male patients. We think that this higher incidence is related to increased frequency of urinary system stone disease in our region.

Urinary system catheterization, and percutaneous cystostomy are frequently resorted interventions performed in emergency services. Urethral catheter is generally inserted by emergency service physicians. In patients in whom urethral catheterization is not applicable, because of the presence of benign prostatic hyperplasia, traumatic urethral wounds, urethral strictures, and urethral stones, percutaneous cystostomy can be required which necessitates consultation to a urologist.^[4] Fall et al.^[12] reported incidence of percutaneous cystostomy as 59.8%, while in our study among emergency urological cases, percutaneous cystostomy was the most frequently applied intervention with an incidence rate of 22.3 percent.

Hematuria was frequently seen clinical symptom in the population which worries the patient, and his/her family with a prevalence varying between 2.5, and 20 percent.^[13,14] Visible amount of blood (1 mL blood in 1000 mL urine) in urine which prompts the patient to consult urgently to a physician, and generally points to an important underlying abnormality is termed as macroscopic hematuria.^[15] Hematuria manifest itself in emergency services, and routine clinical practice as microscopic, and macroscopic hematuria. Patients with macroscopic hematuria should undergo a detailed urological evaluation.^[16,17] At this stage, as a critically important issue, differential diagnosis of the patients presented to emergency services should be made by emergency service physicians, and request urological consultations for the diagnosis, and treatment of hematuric patients. In emergency services, urinary retention caused by clot impaction should be disclosed, and in case of urinary retention clot(s) should be evacuated with urethral catheterization or using endoscopic methods. In our study, urinary retentions of cases who consulted to emergency services with massive hematuria were relieved with vesical irrigation, and clot evacuation either in the operating room (n=6) or in the emergency service (n=17).

Acute scrotum is an urological emergency manifesting with scrotal pain of varying degrees, scrotal tenderness, and swelling. It should be urgently diagnosed, and surgical intervention should be performed if deemed necessary. Entities causing manifestations of acute scrotum include acute epididymo-orchitis, scrotal, and testicular trauma, torsion of testis, and its appendages, strangulated hernia, varicocele, and testicular tumors. Although patients with acute epididymo-orchitis constitute the great majority among cases with acute scrotum who resorted to the emergency services, this pathology can be cured with medical treatment. Also in our study, it comprised the most frequently seen group among acute scrotal pathologies. Torsion of the testis, and its appendages are the most important, and unique pathologies which require emergency surgery. In 30% of the patients who refer with acute scrotum testicular torsion is seen.^[18] Testicular torsion should be evaluated rapidly, and using noninvasive methods considering that the treatment success

inversely correlates with duration of pain, and delay in diagnosis. In our study, 3 out of 14 (15.3%) cases with testicular torsion underwent orchiectomy, while in 2 cases, colour-Doppler US detected torsion of appendix testis with suspect testicular torsion necessitating surgical exploration which confirmed the Doppler US diagnosis of torsion of appendix testis.

Traumas constitute a general health problem of the population. They are responsible for 14% of all-cause mortality, and they are the most frequent causes of mortality seen before 40 years of age.^[19] Nearly 10% of all trauma cases involve genitourinary system, and 90-95% of them are the consequences of blunt traumas.^[20] Most frequently, renal injuries are seen, and less than 10% of them require surgical intervention.^[3,21] Ureteral injuries are less frequently seen, and comprise 1% of urogenital traumas being mostly of iatrogenic origin.^[19] Although vesical, and urethral traumas are rarely seen, since they are associated with other organ injuries, they have higher mortality rates (12-22%).^[21] In our study, renal traumas were most frequently seen with an incidence rate of 42.8% among genitourinary traumas, and only one case underwent nephrectomy.

Priapism is a rarely seen urological emergency which requires early evaluation, and effective treatment so as to preserve erectile function.^[22] Two out of our 10 cases with priapism did not respond to distal shunting methods, and our remaining 8 cases improved with penile aspiration, and irrigation. Scrotal abscess, and Fournier's gangrene are rarely seen urological emergencies which require surgical treatment, and can be encountered in emergency services, and at every age.^[9] In our 2 cases with Fournier's gangrene, a generous surgical wound debridement which forms the basis of its treatment, was performed with an multidisciplinary approach in collaboration of departments of general anesthesia, and plastic-reconstructive surgery.

In conclusion, emergency service physician who evaluates the patient presented to the emergency service for the first time can request and/or carefully perform necessary examinations, and analyses which can elucidate complicated cases which will require urgent urological interventions. This first evaluation by emergency service physician, and consultation of the patient to the relevant discipline may be sometimes lifesaving, and occasionally will prevent development of late complications which will effect the future life of the patient.

Ethics Committee Approval: Due to retrospective nature of the study, ethics committee approval was not required.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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