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A Spectrum of Urological Emergency Reported at a Tertiary Care Teaching Hospital

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Abstract
The majority of urological admissions are emergency patients, with a significant percentage being urologist emergency referral cases. There have been few research on this topic, although there are regional variances in the presentation of urological crises. As a result, this research examined a variety of urological emergency presentations and associated therapies. To estimate the percentage of urological crises and analyze the various types of urological emergencies with the necessary treatment. A total of 11,139 patients were admitted to the urology department, with a considerable number (21.05%) coming via the emergency room. The Department of emergency Medicine accounted for the majority of cross references (22.59%). Renal colic (24.2%) was the most prevalent presentation in the emergency department, followed by acute urine retention (14.7%). Hematuria was the most common presentation in referred patients, accounting for 17.75%, followed by traumatic catheterization (11.97%). The most prevalent urological intervention in referred patients was suprapubic catheterization (27.20%), but in directly admitted cases, Urological crises account for a large fraction of all urology admissions (27.18%). In our analysis, renal colic was the most prevalent non-traumatic damage, followed by traumatic catheterization. Percutaneous nephrostomy was the most prevalent surgical technique in direct admitted emergency patients, whereas suprapubic catheterization was used in intrahospital emergency referral cases.

INTRODUCTION

Although emergency cases are uncommon in urology, they may be challenging when they occur[1]. However, emergency cases account for a significant percentage of urological patients at our tertiary care facility. Urological cross references from other departments of the institution add to the emergency case burden. The most common presentation of emergency urology cases is urine retention[2]. However, there are geographic variations in the distribution of urological emergencies, so the current study was conducted to analyze the various urological presentations of emergency cases and the necessary interventions.

Aims and Objectives:

- To estimate the proportion of urological emergencies out of all emergencies reported at the center.
- To describe the different types of urological emergencies reported and their required management.

MATERIALS AND METHODS

This hospital based observational descriptive study was done in the Department of Urology, sree mookambikai college of medical sciences. This hospital is the largest tertiary referral center in the state with wide catchment area. There were 35,35,639 Outpatient Department (OPD), 3,31,931 Inpatient Department (IPD), nearly 4,36,220 emergency IPD patients and 2,86,433 number of operations done at this centre in the year 2022. Although being a tertiary referral teaching hospital, direct urological emergency admissions are also entertained on regular basis. The number of emergency admissions are out of proportion of available beds. So it is the true reflection of urological emergencies which are being faced by physicians on regular basis. Total 2,345 urological emergencies that reported directly to emergency department and 5310 emergency referral within hospital for urological cross consultations were considered for the study. Patient data enlisting age, sex, referral status, clinical presentation, duration of hospital stay and management provided were collected from patient records on Arogya online registered referral system. This is an advanced hospital management system connected to mobile network of doctors and staff for faster communication and timely care of patients. It also facilitates maintenance of patient records for future references and data analysis (Table/Fig-1a and b).

Sample Size: A sample of 2345 urological emergency cases is required at 95% confidence interval and 15% relative error to verify the minimum 7% proportion of different types of urological emergencies (ranges 7-73%)[3].

Sampling Procedure: We scrutinized consecutive 39,994 emergency case records from August 2013 to September 2014 to obtain 2345 urology emergency cases. All 5310 urological cross referral cases reported during this period were also analysed for the study.

RESULTS AND DISCUSSIONS

Urology cases constituted 5.84% (2345/39,994) of all surgical emergency admissions (Table/Fig-1). Total 11,139 cases were admitted in the urology department during the study period, of which 8111 (72.8%) were routine outpatient department (OPD) admissions, 2345 (21.05%) were emergency admissions and 683 (6.13%) were transferred cases from other departments (Table/ Fig-2). Thus, emergency workload in urology department constituted27.18% of total admissions. The age profile range of directly admitted emergency cases is as shown in (Table/Fig-4). The most prevalent presentation of emergency urology patients was renal colic (24.2%), followed by acute retention of urine (14.7%), obstructive uropathy (14.7%), haematuria (9.9%) and Lower Urinary Tract Symptoms (LUTS) with Urinary Tract Infection (UTI) (9.8%). (Table/Fig-5). The Department of Medicine provided the most (22.59%, 1200/5310) of the references, followed by the common polytrauma unit (20.65%), Nephrology (17.5%) and Surgery (13.7%). References from other departments, including cardiology, neurology, obstetrics and gynecology and the rehabilitation center, totaled 25.6%. On average, there were 14 (14.54+2.46) urological cross referrals each day from other departments. Haematuria was the most common presentation (17.75%) among the referred patients, followed by traumatic catheterization (11.97%), LUTS with UTI (10.05%) and Pelvis Fracture Urethral Distraction Defect (PFUDD) (9.15%). [Table/Fig 3]. There were 356 instances of obstructive uropathy, with 224 cases presenting as anuria and 132 cases as bilateral renal calculus with CRF. Out of the 224 anuric cases, 148 had bilateral ureteric calculus and 76 had a single functioning kidney with ureteric calculus.

Table 1: Distribution of Surgical Cases Admission in Routine and Emergency OPD

Surgical department	Routine OPD admissions	% of total admissions	Emergency admissions	% of total emergency admission
Surgery	18624	39.61%	1367	34.1%
Neurosurgery	3889	8.27	1128	27.82%
Orthopaedic	8412	17.89	586	14.6%
Cardiothoracic	2669	5.67	408	10.2%
Plastic surgery	5309	11.29	290	7.2%
Urology	8111	17.25	2345	5.84%
Total	47014		39994	

Table 2: Presentations in Emergency and % of Total Cases

Presentations in emergency	No. of cases	% of total cases
Renal colic	567	24.17
Acute retention of urine	330	14.71
Obstructive uropathy	344	14.66
Haematuria	231	9.85
Lower urinary tract symptomswith UTI	230	9.8
Bilateral renal calculus with CRF	128	5.45
Pyonephrosis	128	5.45
Others	387	16.50

Table 3: Distribution of Department and No. of References

Distribution of department	No. of referen ces (n-5310)	% of all references
Medicine	1200	22.59
Common polytrauma unit	1097	20.65
Nephrology	933	17.57
Surgery	729	13.7
Others departments	1351	25.44%

Table 4: Profile of Urological References for Cross Consultation

Presentations of urological	No. of referen references	% of all references ces (n-5310)
Haematuria	943	17.75
Traumatic catheterisation	636	11.9
Lower urinary tract symptomswith UTI	534	10.05
Fracture pelvis with urethralinjury	486	9.15
Retention of urine with difficultcatheterisation	445	8.38
Obstructive uropathy	356	6.7
Paraphimosis	331	6.23
Pyonephrosis	273	5.14
Renal abscess	256	4.82
Neurogenic bladder	245	4.61
Renal trauma	236	4.44
Others	569	10.71

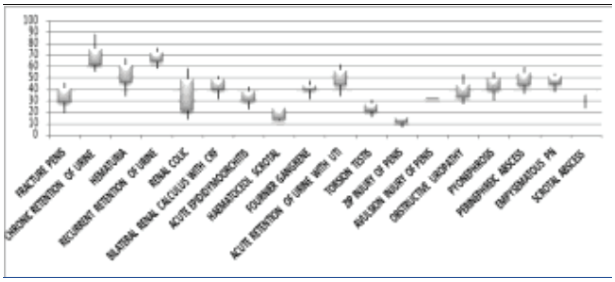

Fig. 1: A "Box and Whisker" Plot for Age Profile of Directly Admitted Emergency Cases

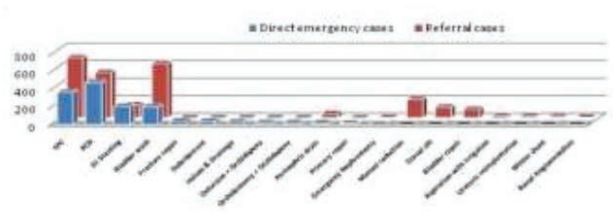

Fig. 2: Urological Interventions in Emergency Admitted (1448) and Cross Referral Cases (2536)

In 27.14% of haematuric patients, no particular cause was established., however, radiation cystitis (19.4%), bleeding condition (13.89%) and benign prostatic hyperplasia (10.07%) were plausible explanations. Approximately 50% of renal trauma patients are grade I, whereas 25% are grade II. Out of 1097 patients referred from the common polytrauma unit, 106 suffered bladder rupture, with 71.7% being extra peritoneal and 28.3% being intraperitoneal. Eight of them had unilateral ureteric damage, while two sustained bilateral ureteric injury in addition to bladder trauma. Ninety patients had an accompanying pelvic fracture. There were 73 demands for intra-operative consultation for bladder and ureteric damage, with the majority occurring after abdominal hysterectomy for postpartum haemorrhage (22), endometriosis (21), caesarian section (19) and radical hysterectomy (11). Percutaneous Nephrostomy (PCN), Supra Pubic Catheterization (SPC) and DJ stenting were the most common procedures required for emergency urological patients (in decreasing order of frequency) [Table/Fig-8], whereas supra-pubic catheterization, bladder wash and percutaneous nephrostomy were the most common procedures required for intra-hospital urological cross consultation (in decreasing order of frequency) [Table/Fig-8]. Our analysis found 3,333 surgical emergency cases reported every month, which is much greater than the 400 surgical emergency admissions documented by Sharma[2]. Similarly, 3028 (2345+683) urological emergency cases recorded in our research are substantially greater than Fall B *et al.,* (1237 instances at Dakar university), Sharma RK *et al.,* (78 cases), Bobo Diallo A *et al.,* (757 cases), Martin L as al., (1257 cases), and Moby MH *et al.,* (291 cases)[2-6]. [Table/Fig-6]. 9.9% of emergency admissions in our research were comparable to 9.6% and 10.6% in studies conducted by Sharma et al. and Bobo Diallo A *et al.,* respectively[2,3]. The majority of genitourinary trauma patients were referred to our urology department rather than presented directly. Traumatic catheterization (11.97%), fracture pelvis with urethral injury (9.15%) and renal trauma (4.44%) were major cross-reference emergencies, while torsion testis (2.04%), fracture penis (1.19%), zipper (lacerated) and penis avulsion injury were direct emergency urological presentations in our study. Urogenital injuries were the most common traumatic cases in Fall[4] and Bobo Diallo[3] research. Circumcision accidents were also prevalent in this community. Early referral to specialist departments and early care by the relevant unit minimizes patients' average length of stay in the hospital and overall hospitalization costs, as well as the anguish, sorrow and despair of the patient's family and relations[2]. Due to the increasing number of intra-hospital referrals, patients' average time to reach the Department of Urology was much longer. With the implementation of the Aarogya online referral system, this time was significantly reduced, with the additional benefits of having patient data entered in the system, records kept for future reference and an online track service used by other departments. The adoption of this technology for within-hospital referrals significantly decreased labor requirements, serving as a step toward health-care reform. Suprapubic catheterization was necessary in 1058 instances in our investigation, compared to 59.8% in the Fall B *et al.* study[4] and 24.14% in the Bobo Diallo A *et al.* study[3]. According to Bobo Diallo[3], the most prevalent intervention was urethral catheterization (55.25%). In our analysis, emergency percutaneous nephrostomy was done in 997 patients, with obstructive renal colic

being the most prevalent emergency presentation (24.2%). This is similar to studies by Parra Muntaner L *et al.* and Mondet F *et al.* (44.54%)[7,8]. Renal colic was seen in 77.5% of ureteric calculi in our investigation, although Sharma *et al.* reported only 14.66% renal colic patients in their study[2]. In our study, the most common cause of acute urine retention was urethral stricture and the most common cause of chronic urinary retention was benign prostatic obstruction, followed by neurogenic bladder, whereas Fall B *et al.* and Bobo Diallo A *et al.* reported prostatic tumors and urethral strictures as the main causes in their studies[3,4]. Sharma *et al.* reported a similar result of 20.55% urine retention related with spinal cord injury and 17.81% owing to prostatomegaly/stricture[2]. At our institute, haematuria patients were associated with uropathy and pyonephrosis. Our hospital's geographic position places it in India's stone belt, hence renal colic was the most common emergency urological presentation (24.2%) in our research.

CONCLUSION

Urological crises account for about 6% of all surgical emergency admissions and 27% of all urology admissions at this tertiary care facility. In our analysis, renal colic was the most prevalent non-traumatic presentation, followed by traumatic catheterization. Percutaneous nephrostomy was the most frequent surgical intervention required in directly admitted emergency patients, whereas suprapubic catheterization was used in hospital emergency referral cases. The current research additionally includes data from within-hospital cross-referred patients, making it the first of its sort to our knowledge. This research additionally includes results from intraoperative consultations for urological experts that were not included in earlier investigations.

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