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PRESCRIBING PATTERNS IN UROLOGY DEPARTMENT AT A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Background: Urology department is less focused or given least importance in many hospital settings and is merged with general surgery department. This is because number of cases getting admitted is very less i.e. not more than 20 in a month. To the best of our knowledge, no study has been conducted to determine the prescribing patterns in entire urology department. This study is mainly focused to obtain the information on demographics and prescribing patterns in urology department and compare the usage with National List of Essential Medicines (NLEM) and Essential Drug List (EDL). **Method:** The study was carried out over a period of 6 months (December to May 2107) at SVRRGGH, a tertiary care teaching hospital in Tirupathi. Mean number of drugs prescribed per prescription was calculated. Prescriptions were analyzed for the antibiotic use and percentage of drug prescribed from the essential lists was enumerated. **Results:** Out of 50 patients admitted, males 45 (90%) were predominant compared to females 5 (10%). Totally, 278 drugs were prescribed in all prescriptions, with an average of 5.56 per admission. 48 (96%) of patients were prescribed with antibiotics, where single antibiotic is most commonly used (60%). Among all the drugs prescribed, vitamin supplements were the most common. 87.41% of drugs were prescribed from EDL, wherein only 70.41% of drugs were prescribed from NLEM. **Conclusion:** Parenteral use of antibiotics was high. Route conversion protocol should be properly followed and antibiotic prophylaxis should be initiated after organism isolation and if necessary, standard guidelines for empirical antibiotic use should be followed.

KEYWORDS: Prescribing patterns, Urology, Antibiotics, National List of Essential Medicines, Essential Drug List.

INTRODUCTION

Medical audit determines the standards of medical care at all levels of healthcare. The study of prescribing patterns is a part of the medical audit and seeks to monitor, evaluate, and if necessary, suggest modifications in prescribing practices to make medical care rational and cost-effective.[1]

Urology is a surgical specialty which deals with diseases of the male and female urinary tract and the male reproductive organs. Although urology is classified as a surgical specialty, knowledge of internal medicine, pediatrics, gynecology, and other specialties is required by the urologist due to the wide variety of clinical problems in patients. Hence, it becomes hectic burden to the physicians.[2] Among different cases that appear in urology department, most commonly observed are Benign Prostatic Hyperplasia, Prostatomegaly, Cystitis, Renal calculi, Phimosis, Hydronephrosis and Gallstones. All these cases require antibiotic prophylaxis before and after surgery, where in most of the cases require surgical intervention. All these diseases are associated with some complications that increase the necessity of antibiotic prophylaxis even after surgery. All these cases can affect the patients of any age group and there is no increase in risk with increased age pattern.

Existing data describes that commonly prescribed drugs for different cases in urology include antibiotics for infections, hormone treatment for prostate cancer, phosphodiesterase 5 inhibitors like tadalafil for erectile dysfunction,[3] chemotherapy drugs for cancers, bladder relaxants for urinary incontinence like Oxybutynin, tolterodine, darifenacin, fesoterodine.[4]

Previously, many studies have been conducted on prescribing patterns for benign prostatic hyperplasia, urinary incontinence, renal calculi and urinary tract

infections individually.[5-8] All these studies indicated that antibiotics was the major category of drug prescribed. The present study was conducted to obtain data on prescribing patterns among patients admitted in urology department at a tertiary care teaching hospital.

The main objectives of the study are to:

i) Obtain details including age, sex and illness of the patients getting admitted in urology department during the study period.
ii) Obtain information on prescribing patterns of drugs.
iii) Calculate the average number of drugs per admission.
iv) Calculate the percentage of drugs prescribed from Essential Drug list and National List of Essential medicine.

METHODOLOGY

This cross sectional study was conducted from December to May 2017 for a period of 6 months, in a tertiary care teaching hospital, SVRRGGH at Tirupathi. All patients were selected according to the inclusion criteria including their consent for participation in the study, inpatients of all age groups admitted in urology department during the study period. The data was collected using a specially designed proforma including demographic details, diagnosis, medicines prescribed, laboratory investigations performed and whether or not surgical intervention performed. Data from the patients who were unconscious or unavailable was collected from their care takers. Appropriateness of drugs prescribed was determined using the NLEM (National List of Essential Medicines) and Essential Drug list (EDL).

RESULTS AND DISCUSSION

Out of 50 inpatients of urology department, 45 (90%) were male and 5 (10%) were female indicating that male were more prone to urology related diseases. This may be because of improper hygiene habits, personal habits like smoking and alcoholism, tobacco chewing which are not commonly observed in females. Majority of the patients were above 60years (40%), followed by 45 to 60years (28%), 30 to 45 years (28%) and 15 to 30years (4%).

Table 1: Gender wise distribution of patients.

S. No	Gender	No. of Patients
1.	Male	45 (90%)
2.	Female	5 (10%)
Total		50

Table 2: Age wise distribution of patients.

S.No	Age Group	No. of Patients
1.	15 – 30	2 (4%)
2.	30 – 45	14 (28%)
3.	45 – 60	14 (28%)
4.	Above 60	20 (40%)

Most of the patients were admitted for Benign prostatic hyperplasia (20%), followed by urethral stricture (16%), prostatomegaly (12%), vesico vaginal fistula (6%), Vesicle calculus, Hydronephrosis, testicular tumor, Bladder outlet obstruction (4% each), renal calculi (2%), cystitis (2%), phimosis (2%), urethral rupture (2%), renal abscess (2%) and perinephric abcsess (2%).

Total number of drugs used in 50 prescriptions was 278 with an average number of 5.56 drugs per admission, out of which 197(70.86%) were tablets, 77 (27.69%) were injections and 4 (1.44%) were syrups.

Table 3: Prescribing pattern of all drugs.

S. No.	Category	Number of prescriptions
1.	Vitamin supplements	77 (27.69%)
2.	Antibiotics	73 (26.25%)
3.	Analgesics and Anti inflammatory	48 (17.26%)
4.	Antacids	36 (12.94%)
5.	IV Fluids	7 (2.5%)
6.	Anti diabetic	4 (1.43%)
7.	Enzymes	3 (1.07%)
8.	Bronchodilators	2 (0.72%)
9.	Antihypertensives	2 (0.72%)
10.	Others (Anti emetic; Laxative, Mucolytic agent and Anti epileptic agent)	1 (0.36%)

Vitamin supplements including B.Complex, vitamin C, IFA (Iron Folic Acid) and calcium contributed to the highest percentage (27.69%), followed by Antibiotics(26.25%), Analgesics and Anti inflammatory agents (17.26%), Antacids (12.94%), IV Fluids (2.5%), Anti diabetic agents (1.43%), Enzymes (1.07%), Bronchodilators (0.72%), Antihypertensives (0.72%), Anti emetic, Laxative, Mucolytic and Anti epileptic agent (0.36% each). Vitamin supplements were prescribed to improve wound healing, to decrease bruising, inflammation and discomfort like itching and pain. Some of the drugs were prescribed for treating co morbid conditions like Antihypertensives, Anti diabetic and Anti epileptic agents. Remaining drugs were prescribed as symptomatic therapy.

Among all these prescribed medicines, 196 (70.5%) were from NLEM (National List of Essential Medicine),[9] whereas 82 (29.49%) were not from this list indicating that most of the drugs prescribed were appropriate. Similarly, 243 (87.41%) were appropriate according to Essential Drug List (EDL),[10] while remaining 35 (12.58%) were inappropriate.

Table 4: Most commonly used individual drugs.

S.No	Drugs	Number of Prescriptions
1.	B complex	40
2.	Paracetamol	36
3.	Pantoprazole	34
4.	Vitamin C	27
5.	Ciprofloxacin	26

Health care associated infections are increasing day by day, especially Health care associated urinary tract infections (HAUTIs). Resistant micro organisms causing HAUTIs and the high level of antibiotic use are the major concern (Mete C). Hence, antibiotic usage and prophylaxis is a major concern. Almost all the cases were prescribed with antibiotics. Number of antibiotics used was categorized based on pre operative, post operative usage and cases without surgery as mentioned below.

Table 5: Antibiotic prescribing pattern.

S.NO	Number of antibiotics	Number of prescriptions
1.	1	30
2.	2	13
3.	3	5
4.	>3	1
5.	No antibiotic	2

Only 2 (4%) prescriptions were not prescribed with antibiotics, while remaining 48 (96%) prescriptions contained antibiotic. Among these 48 prescriptions, more number of prescriptions contained single antibiotic (60%), followed by 2 antibiotics (26%), 3 antibiotics (10) and >3 antibiotics (2%).

Table 6: Distribution of Antibiotics.

S.No	Antibiotic used	Pre operative	Post operative	Cases without surgery	Total
1.	Ciprofloxacin	7	1	18	26 (35.6%)
2.	Piperacillin Tazobactam	2	8	3	13 (17.8%)
3.	Ceftriaxone	0	2	7	9 (12.32%)
4.	Metronidazole	2	4	2	8 (10.95%)
5.	Amoxicillin Clavulanic acid	2	2	2	6 (8.21%)
6.	Cefixime	0	1	4	5 (6.84%)
7.	Amikacin	1	1	0	2 (2.73%)
8.	Meropenem	0	0	2	2 (2.73%)
9.	Amoxicillin	0	0	1	1 (1.36%)
10.	Azithromycin	0	0	1	1 (1.36%)

Among all the antibiotics prescribed, Ciprofloxacin (35.6%) was most commonly used, followed by Piperacillin/Tazobactam (17.8%), Ceftriaxone (12.32%), Metronidazole (10.95%), Amoxicillin/Clavulanic acid (8.21%), Cefixime (6.84%), Amikacin (2.73%), Meropenem (2.73%) and Amoxicillin & Azithromycin with 1.36% each. Our findings were suggestive of the highest usage of Piperacillin/ Tazobactam post operatively, whereas ciprofloxacin was most commonly used in both cases without surgery and preoperative cases. Here, most of the antibiotics were prescribed for urinary tract infections, infections outside the urinary tract, suspected UTI and for prophylaxis purpose.

Ciprofloxacin is a first generation Quinolone antibiotic which is highly effective against gram negative bacteria like E.coli, Klebsiella, Salmonella, Shigella and Proteus mirabilis, Haemophilus influenzae, H. ducreyi, Legionella Pneumophila, Pseudomonas aeruginosa; some gram negative cocci such as Neisseria gonorrhoeae and N.meningitidis and gram positive bacilli i.e. Bacillus anthracis. As it has broad spectrum of activity against many micro organisms, it was prescribed both for cases requiring surgery and cases that do not require surgery.[11]

Piperacillin/ Tazobactam belongs to acid labile Piperacillin group of Penicllins that are active against many gram negative and gram positive bacteria like amino penicillin group. These are also effective against Pseudomonas aeruginosa and indole positive Proteus that are not generally inhibited by amino penicillin group. Hence, this drug is highly effective in UTI patients.[12]

Ceftriaxone is a broad spectrum third generation cephalosporin that is generally used in the treatment of otitis media, bacterial meningitis and musculoskeletal infections, gonorrhea, skin or subcutaneous tissue infections, abdominal infections, Lower Respiratory Tract Infections (LRTI), Pelvic Inflammatory Disease (PID), septicemia, UTI and for surgical prophylaxis. It can be used for prophylaxis only in case of bacterial endocarditis and STDs.[13,14]

Cefixime is generally used in treating various bacterial infections like Chronic Obstructive Pulmonary Disease (COPD), Gonorrhea, and otitis media, Pharyngitis, tonsillitis and UTI (Uncomplicated).[22,23] Amikacin is generally used in treating infections caused by pseudomonas and proteus mirabilis & Serratia species. Greater fluctuations in Cmax & Cmin occur with slight

dose alterations of Amikacin that requires close monitoring.[15,16]

Amoxyclav is generally used in the management of acute otitis media, community acquired pneumonia, impetigo, skin and subcutaneous infections, LRTI & UTI. It should not be used without susceptible test and can be used empirically only if the culture report is positive.[28,29]

Azithromycin is generally used in management of bacterial conjunctivitis and sinusitis, otitis media, community acquired pneumonia (mild to moderate), gonorrhea, skin &subcutaneous tissue infection; PID, Streptococcal Pharyngitis and tonsillitis. It can be used for prophylaxis of endocarditis and STD's.[30,31] Metronidazole is generally used in treating anaerobic infections like abscess, amebic dysentery; bacterial vaginosis and meningitis, bone & joint infections and Trichomoniasis. It can also be used as prophylaxis for postoperative infections and STD's.[32,33]

Meropenem is a carbapenams group antibiotic that is highly effective against gram negative rods like Pseudomonas aeruginosa, gram positive organisms and anaerobes, but are highly resistant to many β-lactamases. Hence, its use was considerately less. (731 – Sharma).

CONCLUSION

In our study 196 (70.41%) of drugs were prescribed from the NLEM. Drugs out of NLEM should be evaluated properly for their use in specific conditions. Parenteral use of antibiotics was high. Route conversion protocol should be properly followed. Antibiotic prophylaxis should be initiated only after the isolation of specific organisms and if necessary, standard guidelines for empirical antibiotic use should be followed. Surgical prophylaxis of antibiotics should also be based on the standard guidelines. Knowledge among the clinicians should be improved on guidelines available by providing continuing education on urology cases.

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