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A PROSPECTIVE STUDY ON ANTIBIOTIC PRESCRIBING PATTERN AMONG HOSPITALIZED PATIENTS IN TERTIARY CARE HOSPITAL

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ABSTRACT

The aim of the study is to evaluate the antimicrobial drug use and knowledge of prescribing pattern among hospitalized patients. The primary objective of this study is to describe the prescribing practice of antibiotics in hospitalized patients. To verify some selected variables like risk factors, patient age, sex, route of administration, combination therapy are affecting the therapeutic choice. During the study period we observed that female patients are more consuming antibiotics during hospitalization. Cephalosporin antibiotics with parenteral route were mostly prescribing than other drugs. And combination therapy is not giving frequently. Culturing of the patients' specimens and their identification was performed according to standard microbiological procedures.

KEYWORDS

Antibiotics, In-Patients, Patient Proforma, Prescription Practices, Cephalosporins and Parenteral Route.

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INTRODUCTION

Antibiotics are most commonly prescribed group of drugs and the problem of their overuse is a global phenomenon. It has been estimated that up to third of all patients received at least one antibiotic during hospitalization[1, 2]. The cost involved is therefore correspondingly high and up to 40% of hospital's

drug expenditure may be devoted to purchase of antibiotics[1, 3]. Excessive and irrational use of antibiotics is one of the important factors for the development and spread of resistance. Antibiotics become one of the highly abused drugs[4]. In addition to its potential to increase mortality, antibiotic resistance increases costs by increasing the length of stay in the hospital[3, 4, 5]. Slowing the spread of resistance requires changes in the pattern of antibiotic use. Confirming a bacterial infection, selecting the appropriate antibiotic for an infection and educating the patients about the importance of taking therapy exactly as prescribed are considered areas for improvement needed[6]. The common reasons for developing antibiotic resistance is skip doses, fail or delay start of medicine intake, take extra doses early in the treatment, stop medication when patient symptom relief or before completing the full course of treatment[5, 6].

METHODS

The present study was hospital based prospective study which was conducted at the 900 bedded hospitals (PSG hospital, Coimbatore) for a period of 6 months (from Jan 2011-june 2011) after obtaining approval from the institutional ethical committee. Patients admitted to the internal ward who were prescribed antibiotics were included in the study. The out patients, ICU patients, pregnant women and nursing mothers were excluded in the study. A standard Performa was designed for collecting patient details such as name, age, sex, IP number, date of admission, clinical diagnosis, and lab investigations.

DISCUSSION

Total 100 prescriptions were analysed during the study period. Table No.1 shows sexwise distributions of patients were taking antibiotics during hospitalization. Out of 100 prescriptions, 44 were males and 56 were females. The number of female patients was comparatively more than the number of male patients. Table No.2 shows the different age groups of patients were taking antibiotics during hospitalization. Patients were subdivided into eight age groups. In which, 11 were <10 years, 4 were (10-20) years, 19 were (20-30) years, 11 were (30-40) years, 18 were (40-50), 17 were (50-60) years, 4 were (60-70) and 16>70 years. The maximum cases were observed in the age group 20-30 year then followed by 40-50 years and 50-60 years.

Table No.3 shows culture summary. Test is carried out in 75 patients. The results were negative in 49 patients, 30 patients had single specimen, 37 patients had two specimens and 08 patients had more than two specimens. Table No.4 shows the different clinical diagnosis treated with antibiotics. Totally 25 different clinical diagnoses were treated with antibiotics. Among all patients prescribed with antibiotics, Pseudophakia (7%) was most common clinical diagnosis and followed by UTI (6%), viral fever (4%), and pneumonia (4%). Table No.5 shows drug allergy report. Out of 100 only one prescription was found to have a drug allergy i.e. Sulphonamide and Penicillin.

Table No.6 shows the various departments of hospital prescribing antibiotics. Gastroenterology (40%) department had maximum number of encounters with antibiotics, then followed by ophthalmology (11%) department. Table No.7 & 8 shows monotherapy and combination therapy of antibiotics in prescriptions. A total of 24 different antibiotics alone and in 3 different combinations were prescribed. Out of 100 prescriptions, 93% of prescriptions were monotherapy, another 7% of prescriptions were combination therapy. Ceftrioxone is most frequently prescribed antibiotic then followed by Ofloxacin, Levofloxacin, and Ciprofloxacin. Table No.9 shows the distribution of antibiotics based on the route of administration. Parenteral route is prescribed highest proportion of the drugs prescribed with 63% of total drugs.

Table No.10 shows the prescribing frequency of different classes of antibiotics. 7 different categories of antibiotics were prescribed. Among which cephalosporins (67%) were most frequently prescribed classes of antibiotics followed by fluoroquinolones (37%) and aminoglycosides (11%). Table No.11 shows the number of

antibiotics prescribed per prescriptions. Out of all the prescriptions analyzed, 64 patients were prescribed with one antibiotic per prescription, 29 prescriptions contained 2 antibiotics, 5 prescriptions contained 3 antibiotics, and 2 prescriptions contained 4 antibiotics. Table No.12 shows distribution of antibiotics by generic and brand name. Drugs prescribed by generic 42%, brand 39% respectively. 19% prescriptions were contain both generic and brand antibiotics.

Table No.1: Sex Wise Distribution

Sex	No. of Patients	%
Male	44	44
Female	56	56

Table No.2: Age Distribution

Age	No of Patents	%
<10	11	11
10-15	3	3
15-30	19	19
30-40	11	11
40-50	18	18
50-60	17	17
60-70	4	4
>70	16	16

Table No.3: Culture Summary

No of Specimens/Patients	No of Patients	Culture Name	+VE	-VE
One Specimen	30	Blood	1	33
		Urine	7	35
Two Specimens	37	Sputum	12	2
		Pus	4	4
More Than Two Specimens	8	Serum	2	4
		Pleural Fluid	Nil	1

Table No.4: Clinical Diagnosis of Patients Prescribed With Antibiotics

Diagnosis	No. of Patients
Diabetis + UTI	6
Renal Dysfunction	3
Systemic Hypertension + Rheumatic Heart Disease	3
Diabetis +Systemic Hypertension + COPD	2
Dengue Fever	4
UTI+COPD	5
Bronchial Pneumonia	2
Systemic Hypertension + Lung Disease	3
Tb	5
Viral Fever	6
Inflammatory Bowel Disease + Ulcerative Colitis	1
Immature Cataract + POAG	1
Immature Cataract	2
Liver Disorder+ Systemic Hypertension	2
UTI	4
Pneumonia	2
Obstructive Airway Disease	4
Acute Gastro Enteritis	2
Inflammation	4
Dysentery	1
Para Pneumonic Effusion	1
Celluritis	1
Ano Vestibular Fistula	1
Malarial Fever	1

Table No.5: Antibiotics Allergy Report

S.No	Name of Antibiotics	No of Patients (%)
1.	Sulphonamide	1(1%)
2.	Penicillin	1(1%)

Table No.6: Department Usage of Antibiotics

S.No	Department	No of Prescriptions
1	Gastroenterology	40
2	Pulmonology	9
3	Ophthalmology	11
4	Psychiatry	1
5	Dermatology	5
6	TBCD	8
7	Nephrology	3
8	Surgery	10
9	Neurology	1
10	Cardiology	2
11	Gynecology	1
12	Pediatrics	9

Table No.7: Frequencies of Individual Antibiotics

S.No	Name of Antibiotics	No. of Prescriptions
1	Ciprofloxacin	14
2	Ceftrioxone	28
3	Cefalexin	4
4	Cefazoline	3
5	Cefixime	2
6	Cefuroxime	6
7	Cefipime	1
8	Cefotaxime	5
9	Ofloxacin	16
10	Cefidime	1
11	Metronidazole	5
12	Cefdiel	1
13	Levofloxacin	16
14	Norfloxacin	4
15	Amikacin	7
16	Cloxacillin	2
17	Coxycycline	4
18	Streptomycin	3
19	Neomucin	3
20	Azithromucin	6
21	Amoxicillin	1
22	Cotrimoxazole	1
23	Nitrofurantoin	2
24	Mupirocin	1

Table No.8: Combination of Antibiotics

S.No	Combination of Antibiotics	No. of Prescriptions
1	Amoxicillin+clavulinic acid	2
2	Piperacillin+tazobactam	2
3	β-methasone sodium phosphate +neomycin sulphate	3

Table No.9: Distribution of Antibiotics based on Route of Administration

S.No	Route of Administration	No of Prescriptions (%)
1	Oral	65
2	Parentral	73
3	Ointments	4

Table No.10: Therapeutic Classification of Prescribed Antibiotics

S.No	Antibiotics	No of drugs
1	Cephalosporins	67
2	Fluoroquinolones	37
3	Aminoglycosides	11
4	Tetracyclines	4
5	Macrolides	8
6	Pencillines	3
7	Carbopenems	1
8	Miscellaneous	2

Table No.11: Number of Antibiotics per Prescription

S.No	Antibiotics	No of drugs
1	Cephalosporins	67
2	Fluoroquinolones	37
3	Aminoglycosides	11
4	Tetracyclines	4
5	Macrolides	8
6	Pencillines	3
7	Carbopenems	1
8	Miscellaneous	2

Table No.12: Distribution of Antibiotics by Generic and Brand Name

S.No	Distribution of Antibiotics	No. of Prescriptions
1	Generic name	39
2	Brand name	42
3	Both	19

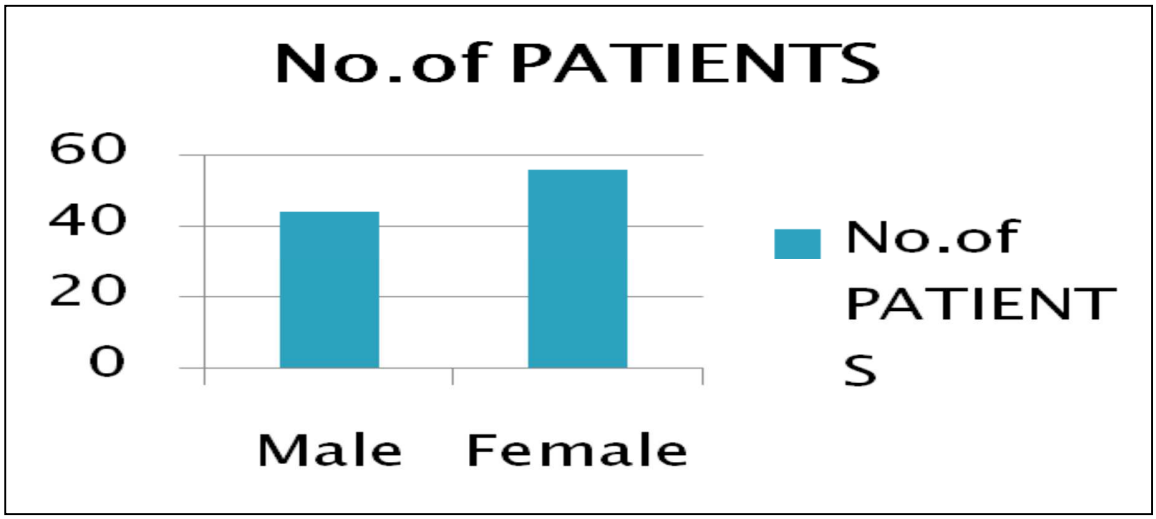

Figure No.1: Sex Wise Distribution

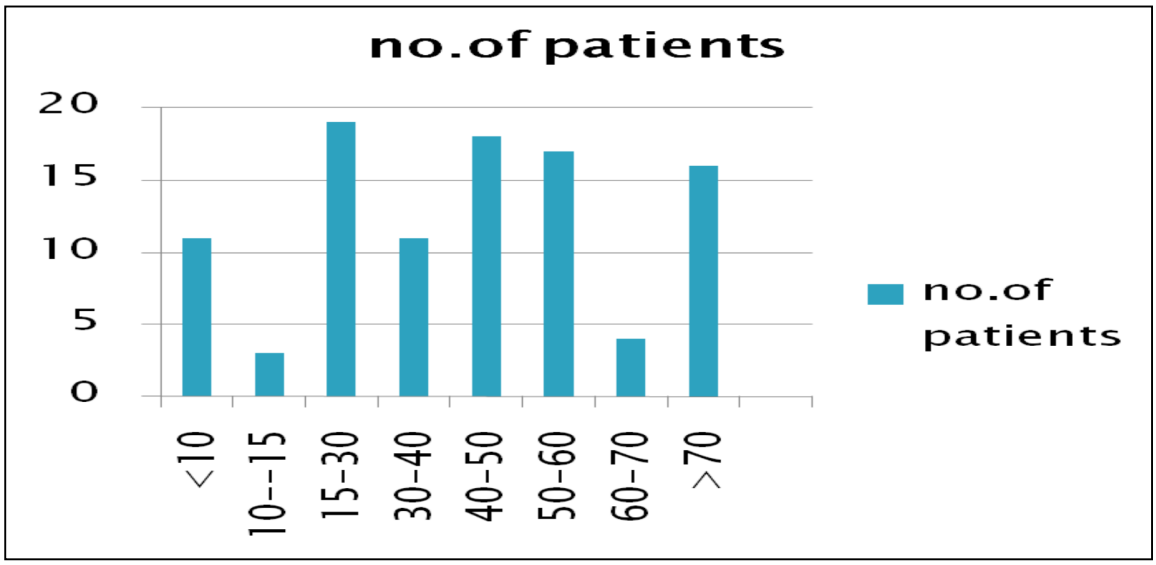

Figure No.2: Age Wise Distribution

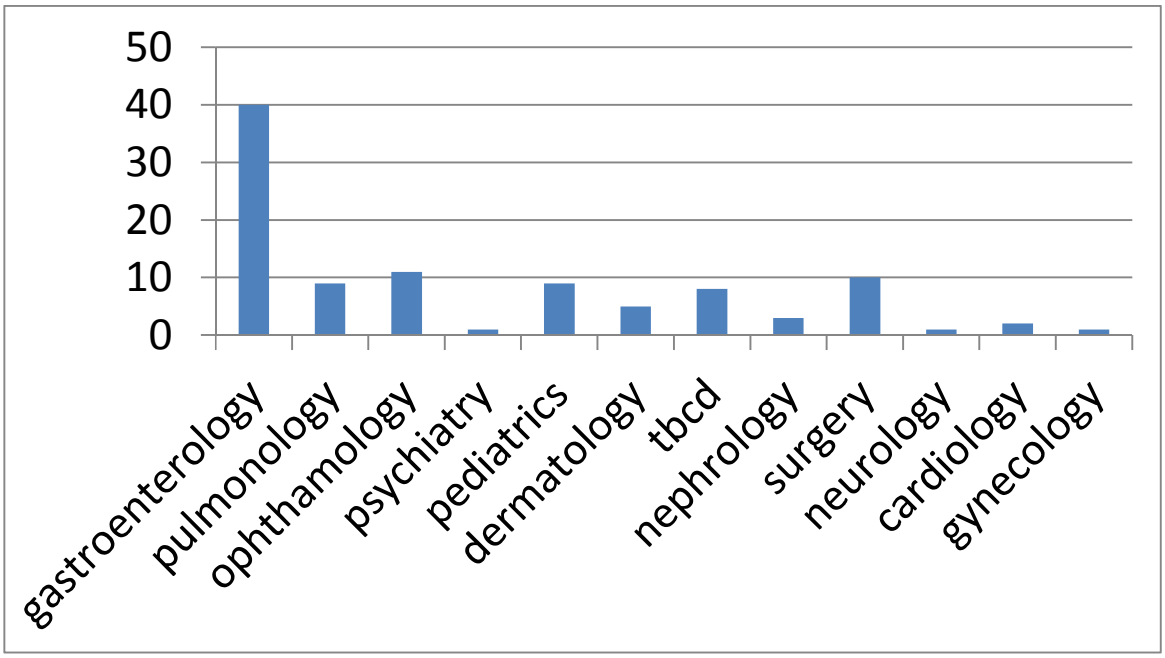

Figure No.3: Department Usage of Antibiotics

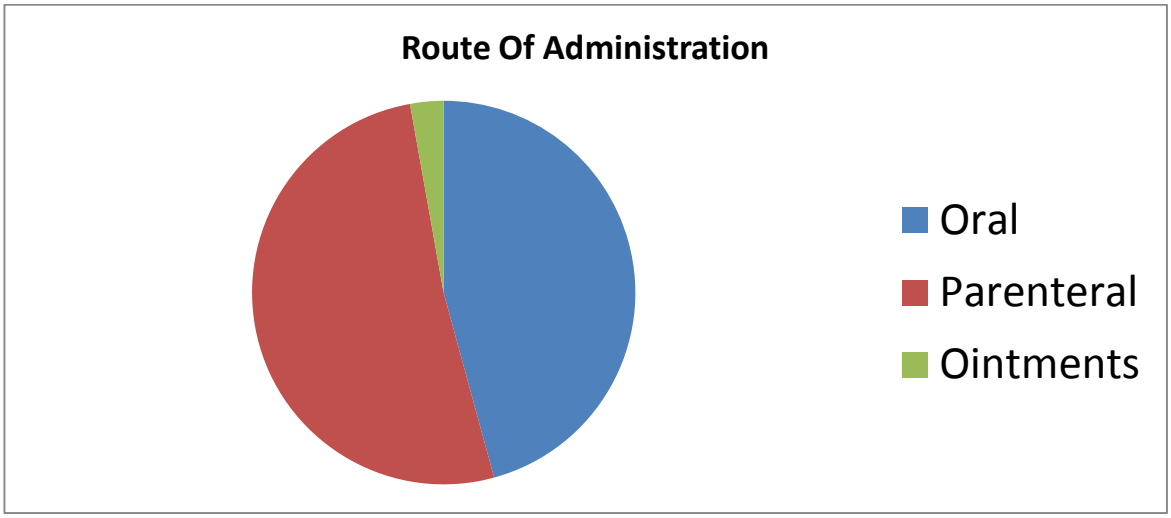

Figure No.4: Distribution of Antibiotics based on Route of Administration

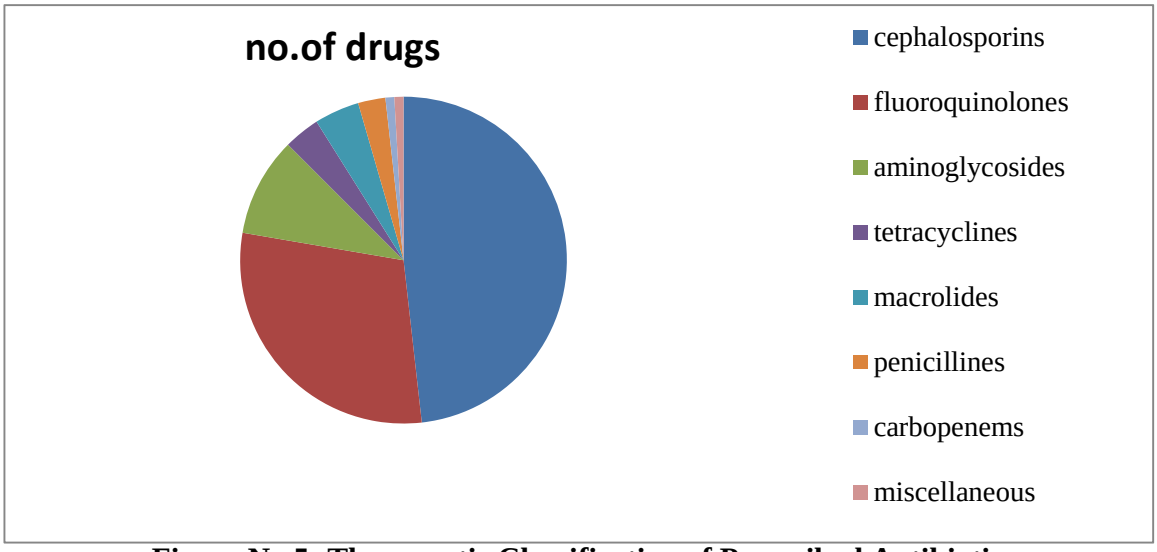

Figure No.5: Therapeutic Classification of Prescribed Antibiotics

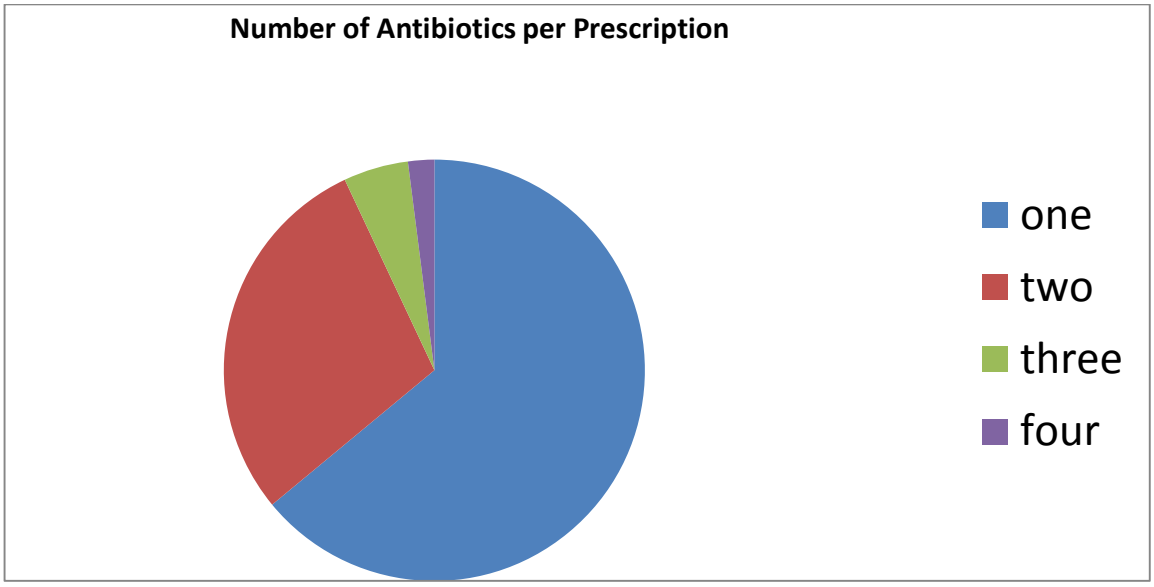

Figure No.6: Number of Antibiotics per Prescription

CONCLUSION

It is necessary to develop a system to rapidly detect and report resistant organism in individual patients and should be in a place to ensure a rapid response by health professionals. Development of antibiotic use policy is very essential. Decreasing the prescribing of parenteral antibiotics and an early switch to oral antibiotics will significantly reduce the expenditure incurred. Pharmacist responsible for dispensing medicines and should take every opportunity to inform patients about the rational use of drug. There is a need of elaborative research for alternative antimicrobial agents with high efficiency against microorganisms.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

REFERENCES

1. Jeetendra Kumar, Shaik M M, Kathi M C, Deka A, Gambhir S S. Prescribing Indicators and Pattern of use Antibiotics a of among Medical outpatients in a Teaching Hospital of Central Nepal, *Journal of College of Medical Sciences, Nepal,* 6(2), 2010, 7-13.
2. Palikhe N. Prescribing Pattern of antibiotic in Pediatric Hospital of Kathmandu valley, *Journal of Nepal Health Research Council,* 2(1), 2004, 31-36.
3. Norberto Krivoy, Wissam Abed El-Ahal, Yaron Bar-Lavie, Salim Haddad. Antibiotic Prescribing and Cost Patterns in A General Intensive Care Unit, *Pharmacy Practice*, 5(2), 2007, 67-73.
4. Shankar P R, Dubey A K, Rana M S, Mishra P, Subish P and Vijaya Bhaskar P. Drug utilization with special reference to Antimicrobials in a sub health post in Western Nepal, *Journal of Nepal Health Research Council*, 3(2), 2005, 65-69.
5. Linn V K E, Cheong Y M, Suleiman A B. Pattern of Antibiotic usage in hospitals in Malaysia, *Singapore Medical Journal,* 34(3), 1993, 525-528.
6. Wachter D A, Joshi M P, Rimal B. Antibiotic dispensing drug retailers in Kathumandu, Nepal, *Trop Med Int Health*, 4(4), 1999, 782-8.

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