

**A STUDY OF PRESCRIBING PATTERNS OF ANTIBIOTICS FOR SURGICAL
PROPHYLAXIS IN TERTIARY CARE TEACHING HOSPITAL****¹*Nabeel Abdul Rasheed, ¹Karthikeyan V., ¹Ajisha, ¹Parvathy Rajeev, ¹Akash Simon and Abdul Jaleel²**¹Department of Pharmacy Practice, Grace College of Pharmacy, Palakkad – 678004.²Department of Surgery, Karuna Medical College and Hospital.***Corresponding Author: Nabeel Abdul Rasheed**

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ABSTRACT

Objective: The objective of the study was to audit the prescribing pattern of surgical antibiotic prophylaxis in departments of general surgery, orthopaedics. **Methods:** A prospective observational study was conducted over a 6 months period in a tertiary care teaching hospital. The main outcome measure of the study was the use and administration of prophylactic antibiotics for surgeries. **Results:** A total of 110 patients were collected during study period. Out of the patients for whom prophylaxis was recommended and was given, cephalosporins (56.9%) and Aminoglycosides (18.9%) were prescribed the most. The most common surgery carried out was cortical mastoidectomy, hernioplasty, appendectomy followed by orthopedics procedures. Ceftriaxone, cefuroxime and cefotaxime was the most commonly used cephalosporins. **Conclusion:** Aminoglycosides (Amikacin and Gentamycin), Nitro Imidazoles (Metronidazole) and Fluoroquinolones (Ciprofloxacin and Ofloxacin) are the most used anti-microbial for prophylactic therapy following Cephalosporins.

KEYWORDS: Prescribing pattern, Surgical prophylaxis, Antibiotics.**1. INTRODUCTION**

Surgical site infections (SSIs) are the second most common cause of nosocomial infections.^[1,6,7] Antibiotics administered prior to the contamination of previously sterile tissues or fluids are deemed prophylactic antibiotics.^[8] Major pathogens in surgical wound infection are *Staphylococcus aureus*, *Enterococci*, *Escherichia coli*, *Pseudomonas aeruginosa* etc.^[12] It is important to select an antimicrobials with the narrowest antibacterial spectrum required to reduce the pathogens.^[9] The irrational use of drugs is a major problem of present day medical practices and most commonly, the antibiotic is either given at the wrong time or continued for too long.^[10] It leads to, development of resistance to antibiotics, adverse effects and economic burden on patients and society.^[14,15] Despite of the effectiveness of prophylactic antimicrobials to prevent SSIs, the use of antibiotic prophylaxis is often inappropriate. Regular patient card review, reducing the spectrum of coverage, and monitoring response as well as duration of therapy can contribute to rational use of antibiotics.^[5,11] Therefore the present study was aimed to evaluate prescribing patterns of antimicrobial agents in various surgery department at a tertiary care teaching hospital.

2. MATERIALS AND METHODS

This study was the kind of a prospective observational study that was conducted in the Department of Surgery at

the Karuna Medical College Teaching Hospital, located at Chittur, Palakkad, and Kerala. Which is a 300 bedded hospital located in rural South India. The study period was 6 months Starting from September 2016 to March 2017. The study protocol was approved by Institutional human ethical committee of the Karuna medical college. The inclusion criteria based on that patient age group between 18 to 75 years, admitted to surgical wards and who are receiving antimicrobial prophylaxis prior the surgery. Exclusion criteria include lack of desire and continue the cooperation in this study, contaminated surgical procedures, pregnant women and patients with insufficient data. Patient demographic details, social history, socio economic status, past medical and medication history, patients known allergic to food and drugs were collected using suitable data collection which was designed for the study.

3. RESULT AND DISCUSSION

A total 110 patients were enrolled and documented. The patient medical record and prescription were reviewed, among the study population (n = 110) female patients were more in number 57.2% (n = 63) when compared with male patients 42.7% (n = 47).

TABLE 1: GENDER BASED DISTRIBUTION

S. No.	GENDER	NUMBER OF PATIENTS	PERCENTAGE (%)
1.	MALE	47	42.7
2.	FEMALE	63	57.2

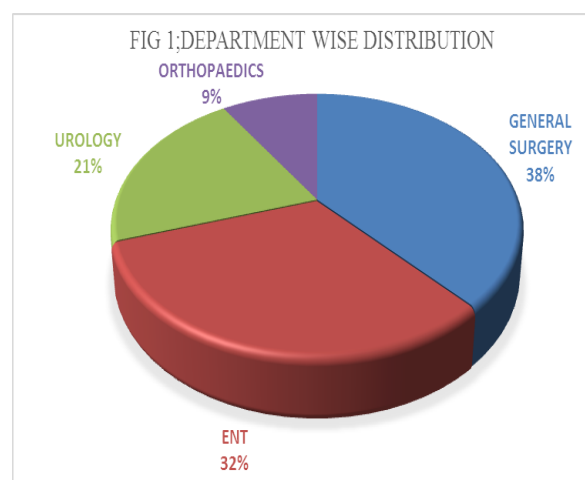
The ages of the patients were in the range as follows 32 patients 51-60 years (29%) among that 14 patients were males and 18 patient's females. Followed by age group of 18-30 years (20%) among them 09 patients were males and 14 patients were females, 61-75 years

(18.18%) among them 13 patients were males and 07 patients were females and 31-40 years (17.2%) among them 07 patients were males and 12 patients were in females..

TABLE 2: AGE WISE DISTRIBUTION

S.NO.	AGE IN YEARS	GENDER		TOTAL	PERCENTAGE (%)
		MALE	FEMALE		
1.	18 – 30	9	14	23	20.9
2.	31 – 40	7	12	19	17.2
3	41 – 50	4	12	16	14.5
4.	51 – 60	14	18	32	29.0
5.	61 – 75	13	7	20	18.18

The study data were collected from different departments, 38% of the cases were collected from general surgery, followed by 32% of cases were collected from ENT, 21% cases in Urology and 9% of patients from Orthopaedics. (Fig:1)

**TABLE NO 3: DIFFERENT CLASSES OF DRUGS**

S.NO.	ANTIBIOTIC	FREQUENCY	PERCENTAGE (%)
1	CEPHALOSPORINS(3RD)	53	72.6
2	CEPHALOSPORINS(2ND)	18	24.65
3	FLUOROQUINOLONE	1	1.03
4	PENICILLIN	1	1.03

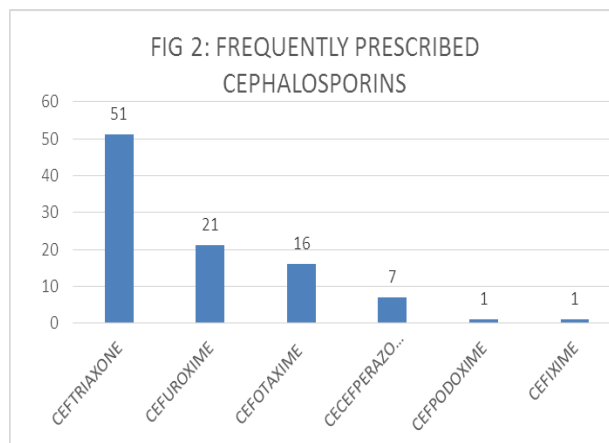
The result revealed that, out of 110 patients who underwent mono therapy for treatment of surgery, 72.6% (n= 53) patients were prescribed with cephalosporin's (3rd Generation), 24.65% (n=18) patients were prescribed

cephalosporin's (2nd Generation), followed by 1.03% (n=1) of patient were prescribed with Fluoroquinolones and penicillin derivative respectively.

TABLE NO 4: DUAL THERAPY

S.NO.	ANTIBIOTIC	FREQUENCY	PERCENTAGE (%)
1	CEPHALOSPORIN (3RD),AMINOGLYCOSIDES	16	59.2
2	CEPHALOSPORIN(3RD)+BETA LACTAM	2	7.4
3	CEPHALOSPORIN(3RD)+FLUOROQUINOLONES	3	11.1
4	CEPHALOSPORIN(3RD)+NITRO IMIDAZOLES	3	11.1
5	FLUOROQUINOLONE+AMINOGLYCOSIDES	1	3.7
6	FLUOROQUINOLONE+NITRO IMIDAZOLES	1	3.7
7	CEPHALOSPORINS(4TH) + NITRO IMIDAZOLE	1	3.7

Among 110 patients, 16 (59.2%) of patients were prescribed with cephalosporin (3rd generation) + aminoglycosides followed by 11.1% (n= 3) of patients were prescribed cephalosporin (3rd generation) with fluoroquinolones and nitro imidazoles derivatives. 7.4% (n= 2) of patients were prescribed with cephalosporin (3rd generation) + beta lactam. In our study most of the prescription containing 3rd generation of cephalosporin (cefotaxime, cefixime, ceftriaxone, cefpodoxime, cefoperazone)



Among the 110 prescriptions, most frequently prescribed cephalosporins during the study was ceftriaxone (51%) followed by cefuroxime (21%), cefotaxime (16%), cefperazone (7%), cefpodoxime (1%) and cefixime (1%).

Table No 5: MULTIPLE DRUG THERAPY

S.NO.	ANTIBIOTIC	FREQUENCY	PERCENTAGE (%)
1	CEPHALOSPORIN (3RD), AMINOGLYCOSIDES+BETA LACTAM	1	10
2	CEPHALOSPORIN (3RD)+AMINOGLYCOSIDES+FLUOROQUINOLONES	2	20
3	CEPHALOSPORIN(3RD)+BETA LACTAM+AMINOGLYCOSIDES	1	10
4	CEPHALOSPORIN(3RD)+NITRO IMIDAZOLES+AMINO GLYCOSIDES	5	50
5	CEPHALOSPORIN(3RD)+NITRO IMIDAZOLES+AMINO GLYCOSIDES+MACROLIDES	1	10

Among the total number of prescription 9 patient were treated with three antibiotics (Cephalosporin (3rd), Aminoglycosides+Beta Lactam, Cephalosporin (3rd) + Aminoglycosides + Fluoroquinolones, Cephalosporin (3rd)+Nitro Imidazoles+Amino Glycosides) and one patient treated with four drug combination (Cephalosporin(3rd) + Nitro Imidazoles+ Amino Glycosides + Macrolides). One major benefit of combination therapies is that they reduce development of drug resistance. In recent study about multiple therapies having a better control of disease progression.^[16]

4. CONCLUSION

The use of antibiotics prophylaxis has lead to the prevention of a large number and variety of infections and to substantial declines in the surgical site infections. Antibiotics prophylaxis should be limited to specific, well accepted indications to avoid excess cost, toxicity and antimicrobial resistance. Patients should understand the potential risks and benefits of any antibiotic regimen.

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