



ANTIBIOTICS UTILIZATION PATTERN IN SURGICAL PATIENTS WHO WERE ADMITTED IN THE DEPARTMENT OF SURGERY IN TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Antibiotics usage in surgery department are essential to prevent hospital acquired infection and to prevent surgical site infection that is nosocomial infection. Hence proper use of antibiotics are important in both pre-operative and post-operative patients. This study was undertaken to evaluate the current scenario of prescribing pattern of antibiotics as prophylaxis and to prevent surgical wounds in patients admitted in surgery department. **Methods:** This prospective observational study was carried out for a period of six month at surgery department in government cuddalore medical college and hospital. **Results:** A total of 120 patients enrolled in this study, of which 76 were male and 44 were female. 177 antibiotic and 269 antibiotics were used in pre operatively and post operatively patient among 120 patient. Cephalosporins were the highly utilized antibiotic in both pre operatively (54.8%) and post operatively (37.92%). Both IV and oral route are highly utilized in patients. Combined therapy of antibiotics class are highly used. **Conclusion:** Cephalosporin were predominant antibiotic used and both IV and oral route are highly utilized. However irrational and overuse of antibiotic may leads to antibiotic resistance. Therefore, development of prescribing pattern of antibiotics guideline is necessary in India.

KEYWORDS : Antibiotic therapy, nosocomial infection, prescription pattern, surgical patients

INTRODUCTION

Antibiotics are the most commonly prescribed medications in patients who were admitted in the hospital to prevent nosocomial infections. They are not only prescribed to treat infectious disease. Most of the infectious disease are caused by bacteria in inpatients, which can be prevented, managed and treated by wide range of antibiotic(2). Hence proper use of antibiotics are essential. Irrational use of antibiotics can leads to antibiotic resistance which may also reason for the development of further infection.

Antibiotics are frequently used in surgical patients as approximately 30% of patients undergoing surgery will develop post-operative surgical site infections (SSI). Antibiotics being the most commonly prescribed group of drugs, the problem of it's over use is a global phenomenon(2). Inappropriate use of broad spectrum antimicrobial agents by clinicians for treatment of infections has caused emergence of antibiotic resistance opportunist pathogens. In past few years nearly half of antibiotic drug prescriptions were found to be poorly selected or inadequate [6].

The selection of a rational choice and appropriate use of antibiotics and to recognize their potential problems in the patient are the main challenges prescribing antibiotics. Monitoring of prescription and drug utilization patterns should be done periodically to increase the therapeutic efficacy and decrease the adverse effects (2).

This study evaluates the prescribing pattern of antibiotics in patients which are used for both prophylaxis and to prevent nosocomial infection.

METHODOLOGY

Study Design: This is a hospital based prospective observational study

Study Site: This study was conducted at the surgery department in government cuddalore medical college and hospital.

Study Period: This study was conducted over a period of six months from November 2023 to April 2024.

Study Subjects: Patients who fulfill inclusion and exclusion criteria were enrolled into the study.

Inclusion Criteria

- Patients who are undergoing surgery admitted in the surgery department.
- Patient who were above 18 age.

Exclusion Criteria

- Patients who are diagnosed with cancer
- Pregnant and lactating women

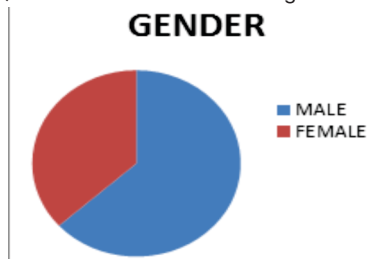
Study Procedure

Demographic information such as patient name, age, and antimicrobial therapy before and after the surgery will be gathered from the case sheets based on inclusion and exclusion criteria. The collected data will then be analyzed using appropriate descriptive statistical tools, with Microsoft Excel being utilized for this purpose. Following analysis, the results will be interpreted based on the data collected, providing insights of prescribing pattern of antibiotics before and after the surgery.

RESULTS

A. Distribution Of Patient According To Gender:

A total of 120 patient's data were collected from inpatients of surgery department. Among them 76 (63.34%) were male and 44 (36.67%) were female. The results are given below.



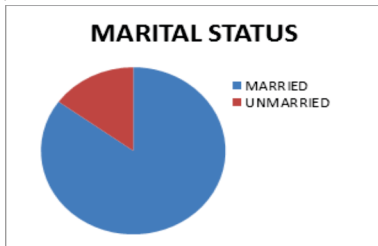
B. Distribution Of Patients According To Age:

Among 120 patients, 23.34% patients were belongs to age group of 26-35, followed by 21.67% were belongs to 46-55, 20% were belong to 36-45, 13.34% were belong to 66-75, , 10% were belong to 56-65, , 6.67% were belong to 18-25 and 5% were belongs to more than 75 years.

AGE GROUP	FREQUENCY	PERCENTAGE (%)
18-25	8	6.67
26-35	24	20
36-45	28	23.34
46-55	26	21.67
56-65%	12	10
66-75	16	13.34
More than 75	6	5
Total	120	100

C. Distribution Of Patient According To Marital Status:

Among 120 patients, 85% were married and 18% were unmarried.



D. Distribution Of Patients According To Diagnosis:

Among 120 study population, 26.67% were diagnosed with diabetic foot ulcer, 14.17% had hernia, 13.34% had cellulitis, 10.84% had fistula in ANO, 9.17% had appendicitis, 7.5% had abscess, 5.84% had lipoma and hydrocele, 4.17% had cholelithiasis and 2.5% had hematocele. The results are given below.

DIAGNOSIS	FREQUENCY	PERCENTAGE (%)
Diabetic foot ulcer	32	26.67
Appendicitis	11	9.17
Fitula in ANO	13	10.84
Lipoma	7	5.84
Hematocele	3	2.5
Celluliti	16	13.34
Abscess	9	7.5
Hydrocele	7	5.84
Cholelithiais	5	4.17
Hernia	17	14.17
Total	120	100

E. Pre-operative Data:

1. Prescription Pattern Of Antibiotics (n= 177):

DRUGS	FREQUENCY	PERCENTAGE (%)
Cephaloporins	97	54.8
Oxanidazoles	14	7.9
Flouroquinolones	4	2.26
Aminoglycosides	33	18.65
tetracyclines	8	4.52
Nitromidazoles	13	6.34
Others	8	4.26
Total	177	100

According to pre-operative data, the highly utilized antibiotic in pre operative patients is cephalosporins which is 54.8% followed by amininoglycoïdes 18.65%, oxanidazole 7.9% Nitromidazole 6.34%, tetracyclines 4.52% and other include 4.26%.

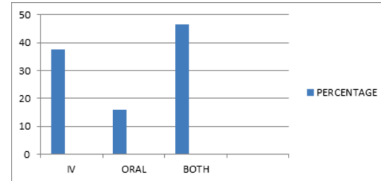
2. Prescribing Pattern Of Antibiotics Based On Subclass (n=177):

CLASS OF DRUG	DRUGS	FREQUENCY	PERCENTAGE (%)
Cephaloporins	Cefotaxim	97	54.80

Oxazolidiones	Linezolid	14	7.9
Flouroquinolones	Ciprofloxacin	4	2.26
Tetracyclines	Doxycycline	8	4.52
Aminoclycoïdes	Amikacin	11	6.21
	Gentamycin	22	12.43
Nitromidazoles	Metronidazole	13	6.34
Combination therapy	Piperacillin + Tazobactam	8	4.26
Total		177	100

3. Distribution Of Drug Baed On Route Of Administration:

In pre operative patients, 37.5% of patients receiving antibiotics through IV route, 15.84% were receiving through oral route and 46.67% receiving in both IV and oral route.



4. Distribution Of Patients Based On Monotherapy And Combination Therapy:

According to pre operative data, 46.67% of patients received monotherapy, 36.67% were received combination therapy and 46.67% receiving more than 2 antibiotic.

TYPES OF THERAPY	FREQUENCY	PERCENTAGE (%)
Monotherapy	56	46.67
Combined therapy	44	36.67
More than 2 drugs	20	46.67
Total	120	100

F. Post Operative Data:

1. Prescription Pattern Of Antibiotics (n=269):

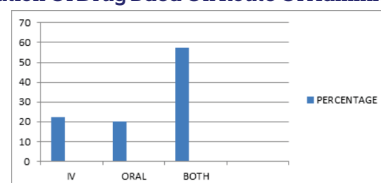
According to post operative data, the highly utilized antibiotics are cephalosporin (37.92%), followed by Oxazolidione (13.74%), piptaz (10.4%), penicillin (10.03%), Aminoglycosides and nitromidazoles (8.92%) and Amoxyclav (2.6%).

DRUGS	FREQUENCY	PERCENTAGE (%)
Cephaloporins	102	37.92
Oxanidazoles	37	13.75
Flouroquinolones	20	7.43
Aminoglycosides	24	8.92
Penicillins	27	10.03
Nitromidazoles	24	8.92
Others	35	13.01
Total	269	100

2. Prescribing Pattern Of Antibiotics Based On Subclass (n=269):

CLASS OF DRUG	DRUGS	FREQUENCY	PERCENTAGE (%)
Cephaloporins	Cefotaxim	102	37.92
Oxazolidiones	Linezolid	37	13.75
Flouroquinolones	Ciprofloxacin	20	7.43
Penicillin	Amoxicillin	27	10.03
Aminoglycosides	Gentamycin	24	8.92
Nitromidazoles	Metronidazole	24	8.92
Combination therapy	Piperacillin + Tazobactam	28	10.4
	Amoxicillin + Clavulanic Acid	7	2.6
Total		269	100

3. Distribution Of Drug Baed On Route Of Administration:



In post operative patients, 22.5% of patients receiving antibiotics through IV route, 20% were receiving through oral route and 57.5% receiving in both IV and oral route.

4. Ditrubition Of Patients Based On Monotherapy And Combination Therapy:

According to post operative data, 10.84% of patients received monotherapy, 54.17% were received combination therapy and 35% receiving more than 2 antibiotic.

TYPES OF THERAPY	FREQUENCY	PERCENTAGE (%)
Monotherapy	13	10.84
Combined therapy	65	54.17
More than 2 drugs	42	35
Total	269	100

DISCUSSION

This is a prospective observational study conducted among the surgical patients in a tertiary care teaching hospital. This study mainly focuses the prescribing pattern of antibiotics among the patients in both pre operatively and post operatively. Most hospital acquired infection are caused by the bacteria and hence antibiotics are very essential to administering in surgical patients to prevent the nosocomial infections. This study provides the overview of antibiotic utilization among patient in surgery department of tertiary care teaching hospital.

In this study, predominant were male patient (63.34%) than female (36.67%). Monotherapy (46.67%) is highly utilized in pre operative patient than combined therapy (36.67%), where as more than two drugs are used in patient of 16.67%. In post operative patient, combined therapy (54.17%) is highly utilized than monotherapy (10.84%), where a more than two drugs are used in patients of 35%. Similar results were obtained in the study conducted by kripa Sajan et al., Drug Utilization Pattern of Antibiotics in Surgery Department in a Tertiary Care Hospital.

The age group of the patients were divided into seven group. Among the subjects, the maximum number of subject were belongs to 36-45 age group (23.34%) and minimum number of subjects were belongs to more than 75 years (5%) followed by patients below 25 years (6.67%). Similar results were obtained in the study conducted by asawari raut et al., Antibiotic utilization pattern at the surgery department of a tertiary care hospital.

Among the group of antibiotics cephalosporins are the highly utilized drug in both pre operatively (54.80%) and post operatively (37.92%). Similar results were obtained in the study conducted by shahA et al., Atibiotic utilization for surgical prophylaxis in a tertiary care teaching hospital.

The usage of both IV and oral antibiotics are highly utilized in pre operative patient (46.67%), followed by IV route (37.5%) and oral route (15.84%). Similarly in post operative both IV route and oral route are highly utilized (57.5%), followed by IV route (22.5%) and oral (20%).

CONCLUSION

This study highlights the prescribing pattern of antibiotic in surgical patients. The third generation cephalosporins are highly utilized in both pre operatively and post operatively to prevent the hospital acquired infections. Both IV and oral route antibiotics are highly ued in patients followed by IV and oral route. Combined therapy of antibiotics are highly used among patient both pre operatively and post operatively.

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