



Surgery

DRUG UTILIZATION STUDY OF ANTIMICROBIAL AGENTS IN SURGICAL WARDS OF TERTIARY CARE TEACHING HOSPITAL.

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ABSTRACT **Objective:** To study prescription pattern of commonly used antimicrobial agents in surgical wards of tertiary care teaching hospitals.

Materials and Methods: A retrospective observational study was conducted during 6 month period at GMCH Akola. The case papers of patients who satisfied eligibility criteria were included in the study (n=250).

Result: Soft tissue injuries found most common disease condition followed by Cellulitis and abscesses, followed by appendicitis in 19.2%, 14.8%, and 12.8% of patients respectively. Cefotaxime was most common antibiotic prescribed in 48.4% of patients followed by Ciprofloxacin in 36% of patients, followed by Metronidazole in 35.6% of patients respectively.

Conclusion: Drug utilization study provides useful information about the use of antimicrobial agents. As antimicrobial resistance is emerging problem in many developing countries, this information will be helpful for formulation of antimicrobial policy and rationale use of antimicrobial agents.

KEYWORDS : Prescription pattern, Antimicrobial agents.

INTRODUCTION:

Drug utilization (DU) studies are very important factor of almost all therapeutic drugs such as antibiotics or other constitutes which has a strong therapeutic outcome. The World Health Organization (WHO) addressed Drug utilization as the marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences (WHO Expert Committee, 1977).¹ During the postoperative period the prevalence of infection is high in the South East Asian region and therefore antimicrobials are frequently used empirically.² Antimicrobials are valued 20–30% of hospital pharmacy budget and nearly 30–50% of these antimicrobials are given for surgical antimicrobial prophylaxis (SAP). Prophylactic antimicrobials are used when the risk of postoperative infection outweigh its risk; and antimicrobials are selected based on spectrum of activity, susceptibility of pathogens, duration of action, cost and other parameters. Yet, 30–90% of these SAPs are inappropriate; most antimicrobials are either given at the wrong time, wrong dosage and wrong strength which results in increased antibiotic usage, increased costs, prolonged hospitalization, super infection, and antimicrobial resistance.³

Moreover antimicrobial prescription is largely based on the needs of individual patient, taking into account the type of surgical procedure patient will be subjected to, clinical condition and the causative micro-organisms.⁴ Pattern of antimicrobial use in patients during the pre and post-operative period is lacking in our hospital. This study was undertaken to evaluate prescription pattern of commonly used antimicrobials in surgical ward of GMCH Akola as to play an important role in formulating practical guidelines for their rational use of antimicrobial agents.

AIM AND OBJECTIVE:

To study prescription pattern of commonly used antimicrobial agents in surgical wards of tertiary care teaching hospitals.

MATERIALS AND METHODS:

This is a retrospective observational study, carried out in collaboration of Department of Pharmacology and Surgery at Government Medical College Akola between January and June 2017. Total 250 case papers were assessed and enrolled during 6 month of study. To evaluate the drug prescribing pattern a specially designed proforma containing relevant details such demographic data, diagnosis, type of surgery, dosage schedule, route of administration, frequency, duration of stay length of stay antimicrobials prescribed were assessed daily and recorded in proforma.

Inclusion Criteria: Patients aged above 18 years of either sex, undergoing surgical procedures and receiving in-patient care in the

departments of Surgery were included in the study

Exclusion Criteria: Patients undergoing cardiothoracic, orthopaedic, ophthalmological, paediatrics, obstetric and gynaecological surgeries, and those undergoing surgery on day care basis were excluded.

Statistical analysis: The data was subjected to descriptive analysis using Microsoft Excel.

Results:

Table 1: Gender wise distribution of patients.

Sex	No. of patients	Percentage(%)
Male	140	56%
Female	110	44%
Total	250	100%

Table 2: Age wise distribution of patients

Age group (years)	No. of patients	Percentage (%)
18-30	45	18%
31-40	85	34%
41-50	48	19.2%
51-60	40	16%
> 60	32	12.8%

Out of 250 patients included in the study, 140 (56%) were males and 110(44%) were females as mentioned in **table 1**. Out all patients maximum number of patients i.e. 85(34%) were in an age group of 31-40 years, followed by 48(19.2%) patients were in age group of 41-50 years, subsequently 45(18%) patients were in an age group of 18-30 years, 40(16%) patients were in an age group of 51-60 years and 32(12.8%) patients were in an age of above 60 years as shown in **Table 2**.

Table 3: Distribution of patients according to disease condition.

Diagnosis	No. of patients	Percentage (%)
Soft tissue injuries	48	19.2%
Cellulitis and Abscesses	37	14.8%
Appendicitis	32	12.8%
Hernia	30	12%
Breast Lumps	28	11.2%
Cholelithiasis	25	10%
Diabetic Foot	20	8%
Benign anorectal diseases	15	6%
Genitourinary diseases	10	4%
Thyroid swellings	5	2%
Total	250	100%

Out of total numbers of patients enrolled in the study most of the patients 48(19.2%) were suffering from soft tissue injuries, followed by 37(14.8%) patients had Cellulitis and abscesses, subsequently appendicitis, hernia, breast lumps, cholelithiasis, diabetic foot, benign ano-rectal diseases, genitourinary diseases, Thyroid swellings were found in 32 (12.8%), 30 (12%), 28 (11.2%), 25 (10%), 20 (8%), 15 (6%), 10 (4%), 5(2%) numbers of patients respectively as shown in **table 3**.

Table 4: Distributions of prescribed antibiotics in study population.

Antibiotic	No. of patients	Percentage (%)
Cefotaxime	121	48.4%
Ceftriaxone	67	26.8%
Metronidazole	89	35.6%
Ciprofloxacin	90	36%
Gentamycin	44	17.6%
Amikacin	29	11.6%
Amoxicillin + Clavulanic Acid	25	10%
Norfloxacin	49	19.6%
Piperacilin + Tazobactam	18	7.2%
Cefoperazone + sulbactam	15	06%
Imipenem	05	02%

Cefotaxime was most common antibiotic prescribed in 48.4% of patients followed by Ciprofloxacin in 36% of patients, followed by Metronidazole, Ceftriaxone, Norfloxacin, gentamycin, amikacin, Amoxicillin + Clavulanic Acid in 35.6%, 26.8%, 19.6%, 17.6%, 11.6%, 10% numbers of patients etc respectively.

DISCUSSION:

In the present study it was found that out of 250 patients 140(56%) were male and 90(44%) were female. This result corresponds to results obtained in **Sukhlecha et al⁵ (2015)** which shows that (53%) patients were men and (47%) were women. This result was consistent with our study.

Out of all patients included the study, maximum number of patients 85(34%) were in age group of 31-40 years, followed by 48(19.2%) patients were in age group of 41-50 years. In **Bhagwate et al⁶ (2017)** study it was found that most of the patients were in 110 (37%) patients belong to age group of 21-30 years, while 90 (30%) patients were in age group of 31-40.

In our study most of the patients i.e. 48.4% were suffering from soft tissue injuries, followed by Cellulitis and Abscesses in 14.8%, Appendicitis in 12.8%, Hernia in 12%, Breast Lumps in 11.2%, Cholelithiasis in 10%, Diabetic Foot in 8% of patients respectively. **Venkateswarlu et al⁷ study (2015)** found that hernia was most common disease condition in 14.5% patients followed by, Appendicitis 14% and subsequently Abscess, Fibro-adenoma of Breast, Cellulitis, Cholelithiasis, Diabetic Foot, Fistula in ano, Renal Calculi in 7%, 4%, 3.5%, 3%, 2.5% respectively.

Out of all patients enrolled in the study cefotaxime was most prescribed antibiotics in 48.4% of patients, followed by ciprofloxacin in 36% of patients, followed by Metronidazole, Ceftriaxone, Norfloxacin, Gentamycin, Amikacin in 35.6%, 26.8%, 19.6%, 17.6%, 11.6% of case papers of patients respectively. **Ghodki et al⁸ (2015)** study found that gentamycin was most common antibiotics prescribed in 12.28% patients followed by, Ceftriaxone 10.53% of patients, subsequently Piperacillin, Metronidazole, Amikacin, levofloxacin in 9.65%, 8.77%, 7.02%, 5.26% of patients respectively. The results come out in our study were not in consistent with other studies due to the difference area, socio-economic condition, disease condition and availability of commonly prescribed antibiotics in our set up.

CONCLUSION: Antibiotics resistance is emerging problem in developing countries. Drug utilization studies provide us valuable information about prescription pattern of commonly used antimicrobial agents in government institutions. To curb antimicrobial resistance formulation and proper implantation along with training of prescriber is need of present time.

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