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Original Research Paper

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A STUDY OF COMMONLY USED ANTIBIOTICS IN THE POST-OPERATIVE SURGICAL WARDS IN A TERTIARY CARE TEACHING HOSPITAL.

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ABSTRACT Surgery without sepsis remained an unfulfilled goal since Lister's introduction of antiseptics first in 1867 which made it a realistic objective. Surgical site infections are the most common hospital-acquired infections among surgical patients and are frequent & serious complications of surgical procedures. Surgical site infections are associated with increased antibiotic usage, increased costs, prolonged hospitalization, re-admissions, re-interventions, permanent disability or even death of the patient. Although adequate antibiotic prophylaxis can reduce the risk of surgical site infections, this favours the emergence of antimicrobial resistance. We conducted this study to analyze the pattern of commonly used antibiotics in the Post-operative Surgical Wards in a tertiary care teaching Hospital.

KEYWORDS : post-operative, antibiotic, pattern.

INTRODUCTION:

Surgery without sepsis remained an unfulfilled goal since Lister's introduction of antiseptics first in 1867 which made it a realistic objective. The subsequent development of asepsis with emphasis on prevention of bacterial contamination of surgical wounds by skin disinfection, efficient sterilization of instruments, wearing sterile protective clothing, and improved theatre sterilization made further significant impact on sepsis rates. In 19th century with the discovery of antibiotics and their introduction into clinical Practice in 1940s, things must have appeared to every surgeon that abolition of surgical sepsis was near at hand.

Antibiotic prophylaxis came into vogue and was used indiscriminately to prevent post surgical infections but with disappointing results.

Rationale use of antibiotics as prophylaxis before surgery and as therapeutic after surgery will not only heal the wound faster, but also reduce the duration of stay in hospital as well as complications that result from wound infections.[1,2]

There are several factors influencing the antibiotic prophylaxis prescribed by a surgeon including lack of awareness of available guidelines, lack of adherence to these guidelines, personal choices, influence from medical school training and colleagues and lack of implementation of antibiotic policy in the hospital.3 Lack of proper microbiology facilities and unwillingness of patients to undergo culture-sensitivity tests all are additional factors.[4]

All these aspects add to the problem of antibiotic misuse, resulting in bacterial resistance, which is a serious threat to patient's health. Additionally, very few novel antibiotics are currently being developed because of which the only way resistance can be delayed is by an appropriate and frugal use of this group of drugs.5,6

Hence present study was done to analyze the pattern of commonly used antibiotics in the Post-operative Surgical Wards in a tertiary care teaching Hospital.

MATERIALS AND METHODS

This is a hospital-based prospective study, conducted in patients for whom major surgical procedures were done in a tertiary care teaching hospital. All the patients who had been operated during october to december (3months) and fulfilling inclusion criteria were selected. Necessary permission was obtained from the institutional ethical committee (IEC) prior to the study.

A total of 75 male patients undergone major surgical procedures were included in the study. Females were not included as they did not fit to the inclusion criteria.

Information about drug (generic name of the drug, dosage form, route of administration and duration of therapy), type of use (Prophylactic or Treatment), basis of prescription (empirical or definitive) were collected in pre-designed Case Record Form (CRF). Master charts prepared for analysis.

Inclusion Criteria :-

1. All the patients undergoing major surgeries in tertiary care teaching hospital.
2. Willing to sign informed consent form.
3. Age within 18 – 67 years.

Exclusion Criteria:-

1. Not willing to sign consent form.
2. Any form of complication, prior, during & after operation.
3. Critically ill patients.
4. History of Diabetics, Chronic Alcoholism and History of other organ disorders.

RESULTS:

Out of the 75 patients analysed, the incidence of surgical operations was more in younger (28 – 37 yrs) & (38 – 47 yrs) groups, less in middle age (48 – 57 yrs). The occurrence was rare after 58 yrs as depicted below.

- Age Distribution

Age (In Years)	Total No. (%)
18-27	12 (16%)
28-37	28 (37.3%)
38-47	15 (20%)
48-57	13 (17.3%)
58-67	07 (9.3%)

Table – 1 shows the commonly encountered diagnosis for which antibiotics were prescribed include Miscellaneous (19 cases), Inguinalhernia repair (17 cases), Laparotomy (12 cases), Hydrocelectomy (12 cases), Fistulectomy (10 cases), Apendicectomy (4 cases) & Hemicolectomy (1 case).

Table – 1 also shows the average hospitalization period was 7 days for fistulectomy, 8 days for Apendicectomy, 14 days for Hemicolectomy, 7 days for Hydrocelectomy, 9 days for Inguinal hernia repair, 8 days for laparotomy & 13 days for miscellaneous cases.

Table – 1 Different Surgeries

Name of Surgery	Total No.	Duration of Hospital stay (Days)
Laparotomy	12	8
Hemicolectomy	1	14
Apendicectomy	4	8
Hydrocoelectomy	12	7
Inguinal hernia repair	17	9
Fistulectomy	10	7
Miscellaneous	19	13

Antimicrobials prescribed for prophylaxis (monotherapy) in 53 patients & prophylaxis (combinations) in 22 patients and antimicrobials prescribed for therapeutic (monotherapy) in 53 patients & therepautic (combinations) in 22 patients as depicted below.

Antimicrobials Used

Group No. of Antimicrobials ---------- No. of patients

Prophylactic Single 53
Combination (Two) 22

Therapeutic Single 53
Combination (Two) 22

Table – 2 shows Antimicrobials (monotherapy) prescribed for therapeutic. Cefotaxime was used for 25 cases, cefixime for 13 cases, cefaperazone for 4 cases, Amikacin for 2 cases, ciprofloxacin for 2 cases, Ampicillin plus cloxacillin for 2 cases, ceftriaxone for 1 cases, metronidazole for 1 cases, ofloxacin for 2 case and Amoxycillin plus clavulanic acid for 1 case.

Table – 2 also shows Antimicrobials (combinations) prescribed for therapeutic. Cefaperazone plus metronidazole was used for 6 cases, cefixime plus metronidazole for 5 cases, ceftriaxone plus metronidazole for 4 cases, cefotaxime plus metronidezole for 3 cases, cefotaxime plus Amikacin for 3 cases, cefixime plus Amikacin for 1 cases.

Table – 2 Therapeutic Antimicrobials Used (Monotherapy & Comb.)

Group	Antimicrobials	No. of Patients
MONOTHERAPY	CEFOTAXIME (CEFO)	25
	CEFIXIME (CEFI)	13
	CEFAPERAZONE (CEFA)	4
	AMIKACIN (AMIK)	2
	CIPROFLOXACIN (CIPRO)	2
	AMPICILLIN + CLOXACILLIN (AMPI)	2
	CEFTRIAXONE (CEFT)	1
	METRONIDAZOLE (MET)	1
	OFLOXACIN (OFLOX)	2
	AMOXYCILLIN + CLAVULANIC ACID (AMOX)	1
COMBINATION	CEFAPERAZONE+METRONIDAZOLE	6
	CEFIXIME+METRONIDAZOLE	5
	CETRIAXONE+METRONIDAZOLE	4
	CEFOTAXIME+METRONIDAZOLE	3
	CEFOTAXIME+AMIKACIN	3
	CEFIXIME+AMIKACIN	1

Table – 3 shows route of administration with antimicrobials (prophylaxis). Intravenous route was used in majority of cases (59), oral route for 11 cases. Both Intravenous route plus oral route for 5 cases.

Table – 3 also shows route of administration with antimicrobials (Therapeutic). Only Intravenous route was used in majority of cases (38 cases). Both intravenous plus oral route for 36 cases & only oral route for 1 case.

Table – 3 Route of Administration of Prophylactic Antimicrobials Used

Group	No.of Patients	Route of Administration
Prophylaxis	59	I.V only
	11	P.O only
	5	I.V + P.O.
Therapeutic	38	I.V. only
	36	I.V + P.O.
	1	P.O. only

Condition on Discharge

Out of 75 patients, 70 patients are cured & discharged, only 2 patients are referred to other department & 3 patients are discharged against medical advice.

DISCUSSION

The use of antibiotics in surgical patients both for the prophylaxis & treatment of infections is a justitiable practice that, however, requires a regular review of the chosen regimen on the grounds of efficacy toxicity, & other aspects to maximize the benefits to the patient.

The present study attempts to assess the general pattern as to how antibiotics are used in surgical wards rather than attempting to judge individual prescriptions as appropriate (or) inappropriate.

The study revealed that antibiotics (prescribed) for patients who undergo major operations in surgical ward with almost all patients taking antibiotics on empirical basis of prescription.

Out of 75 patients most of patients suffering from inguinal hernia repair & hemicolectomy are least effected & the average hospitalization period is more than 14 days (duration) in Hemicolectomy & 7 days in Hydrocoelectomy & Fistulectomy.

Antimicrobials which are used for prophylactic & treatment regimens in this study, were the same, except Amikacin & Ofoxacin are not used in prophylaxis & combinations of two (or) three antimicrobials were common. Although a simultaneous use of two (or) more antibiotics have a certain rationale, indiscriminate (or) routine combination of antibiotics may have several negative consequences, primarly to the patient.

The study revealed that 'cefotaxime' is most commonly used antibiotic in both prophylaxis & treatment. Amoxycillin plus clavulanicacid & ofloxacin are rarely used.

Cefaperazone usually combined with metronidazole in most of the cases, for both prophylaxis & treatment. Cefixime combined with metronidazone for prophylaxis & cefixime combined with Amikacin are rarely used.

CONCLUSION

The use of antibiotics on empirical basis was a routine prescribing practice. The rationale of some antibiotic combinations requires evaluation & establishment of antibiotic policy and treatment guidelines with periodic assessment of the sensitivity pattern of pathogenic organisms are recommended.
In my study, I have observed :

1. Cefotaxime is most commonly used antibiotic in both prophylaxis and treatment.
2. Intravenous route is commonly used to administer antimicrobials in both prophylaxis and post operative therapy.

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