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A Prospective Study on Drug Utilization Evaluation of Antibiotics for Surgical Prophylaxis

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ABSTRACT:

BACKGROUND: Surgical prophylaxis is essential for all surgeries sutures insertion of devices etc. Rational use of these antibiotics can minimize the post-operative nosocomial infections. The selection of these antibiotics should clearly be different from regular usage including time of administration.

METHODOLOGY: All inpatients subjected for surgery is the surgery ward is included in the study. Patient details such as patient demographics (age, sex, diagnosis), nature of surgery, timing, antibiotics, type and class of antibiotic were noted. The study was conducted after obtaining informed consent from the patient,

RESULTS: There is more use of Gentamycin in patients subjected for surgery. Appropriateness has been evaluated in correction with ASHP guidelines for management of antimicrobials for surgical prophylaxis and almost 90% appropriateness is seen with the therapy.

CONCLUSION: Surgical prophylaxis is an essential part of surgery with this study, we can help is designing apart of surgical kit necessary antibiotic for prevention the related nosocomial infection.

KEYWORDS: Surgical Prophylaxis, Antibiotics, Nosocomial Infections.

INTRODUCTION:

Surgery is one of the most common site for the manifestation of infections.[1] These infections are pretty serious as they tend to be a direct infection on the systemic circulation. Hence the prevention of infections plays a major role in the safety of patient's hospital stay.[2]

Surgical prophylaxis is essential for all surgeries sutures insertion of devices etc. Rational use of these antibiotics can minimize the post-operative nosocomial infections.[3] The selection of these antibiotics should clearly be different from regular usage including time of administration.

The selection of these antibiotics for surgical prophylaxis should be based completely on patient specific factor such as allergy status, tolerability, pathogen nature etc.[4]

It is important to select antibiotic that could be ideal and not be resistant to the pathogen.[5] The usually preferred route of administration for surgical prophylaxis is intravenous bolus or intra venous infusion route.[6] The timing of administration also plays a major role in the prophylaxis.[7] Usually preferred is within 1hour before the insertion of needle.[8] Rectal and oral route can be also be given but it is based on the patient's state.

Sayer I al-azzam et al conducted the study on preoperative antibiotic prophylaxis and guideline adherence in Jordan : a multi-center study in Jordanian hospitals. Concluded that this study shows that physicians are aware of the importance of antimicrobial prophylaxis before surgical procedures.

However further efforts are needed to ensure the implementation of the of the standard SAP guidelines in Jordanian hospitals.[9]

V Goede et al conducted the study on Evaluation of prophylactic antibiotic administration at the surgical ward of a major referral hospital, Islamic republic on Iran, concluded that of 155 patient included in the analysis ,98%received prophylactic antibiotic before surgery :according to ASHP guidelines, prophylaxis needed in only 106 (68.4%) of these 106,only 8 patient s received the correct antibiotic regimen. the commonest regimens administered were cefazolin + gentamycin (47.6%), cefazolin (20.5%) and cefuroxime (8.5%). Antibiotic prophylaxis was continued in 83% of cases, while this was necessary in only 1 surgical procedure were all evaluate parameter correct.[10]

The aim and objectives are to analyze and assess the useof prophylactic antibiotic usage prior to surgery.

MATERIALS AND METHODS:

Sample size: 150 patients

INCLUSION CRITERIA:

- Patient of both sex above 18 years of age subjected for surgery.
- Patient undergoing surgery in departments like orthopedic, surgery, ophthalmology, dentistry, gynecology, ENT.

EXCLUSION CRITERIA:

- Patient on long term antibiotic therapy.
- Patient known case of antibiotic allergy.
- Pregnant and lactating women.

STUDY DESIGN:
Prospective, single centered study.

DURATION:
12 months.

All inpatients subjected for surgery is the surgery ward is included in the study. Patient details such as patient demographics (age, sex, diagnosis), nature of surgery, timing, antibiotics, type and class of antibiotic were noted. The study was conducted after obtaining informed consent from the patient, This study was approved by the ethics committee **IEC/DOPV/2015/17.**

RESULTS:

The following results were obtained where the date were collected from the patient profiles.

TABLE 1: GENDER DISTRIBUTION

GENDER	NUMBER OF PATIENS	PERCENTAGE
MALE	94	62
FEMALE	56	38

Table 1 shows that around 62% of patients who undergone surgeries are male.

TABLE 2: AGE GROUP

AGE	NUMBER OF PATIENTS	PERCENTAGE
18-35	30	20
35-50	42	28
50-65	49	33
65-80	29	19

Table2 shows that more patients who undergone surgery are between 35-50 years age.

TABLE 3: TYPE OF SURGERY

SURGERY	NUMBER OF PATIENTS	PERCENTAGE
Appendectomy	34	23
Hernia	32	21
Fibro adenoma	23	15
Fistula in anus	12	8
Cataract	12	8
Cholelithiasis	16	11
Cellulitis	21	14
Total	150	100

Table 3 shows that appendectomy and hernia are most common surgeries undergone by patients.

TABLE 4: ANTIBIOTIC CLASSIFICATION

Antibiotic class	Number of patients	Percentage
Cephalosporins	58	39
Penicillins	35	23
Fluro quinolones	46	31
Macrolides	31	21
Aminoglycosides	79	53
Metronidazole	17	11

Table 4 shows that aminoglycosides and beta lactam antibiotic are the commonly used antibiotics for surgical prophylaxis.

TABLE 5: PATTERN OF ANTIBIOIC USE

Pattern	Number of prescription	Percentage
Mono therapy	62	41
Two drug combination	60	40
Three drug combination	28	19

Table 5 shows that combination therapies are also used for the prophylaxis

TABLE 6: ANTIBIOTIC DISTRIBUTION

Name of anti biotic	Number of patients	Percentage
Cefotaxim	34	23
Ceftriaxone	24	16
Amoxicillin+clavulanate	24	16
Metronidazole	17	11
Gentamycin	79	52
Ciprofloxacin	29	19

Norfloxacin	17	11
Azithromycin	31	21
Piperacillin+Tazobactam	11	7

It can be seen that table 6 shows that gentamycin is highly used for surgical prophylaxis.

TABLE 7: ANTIBIOTIC FREQUENCY

ANTIBIOTIC	PRE-OPERATIVE	POST-PERATIVE
Cephalosporin	34	24
Penicillin	29	06
Fluroquinolones	20	26
Macrolides	69	02
Aminoglycosides	63	16
Nitromidazole	17	00

Table 7 shows that use antibiotic for surgical prophylaxis pre and post surgery.

TABLE:8 EVALUATION OF PRESCRIPTION PATTERN

Parameter	Frequency	PERCENTAGE
Correct Dose	216	81
Under dose	24	9
Over dose	26	10
Dosage form Adequate	230	86
Inadequate	36	14
Duration optimal	242	91
Early	11	4
Late	15	6

Table 8 shows that appropriateness of antibiotics for surgical prophylaxis.

DISCUSSION:

Sayer I al-azzam et al quoted that there is more male patient subjected for surgery which is similar to our report which shows that around 62% of patients who undergone surgery are male.[9]

V Goede et al quoted that there is more 50-65 age patient subjected for surgery which is similar report.shows that more patients who undergone surgery are between 50-60 years age.[10]

Shasin SK et al quoted that there is more appendectomy patients subjected for surgery which is similar to our report which shows that appendectomy and hernia are most common surgeries undergone by patient.[11]

PA Ongom et al quoted that there is more aminoglycosides used in patients subjected for surgerywhich is similar report which shows that aminoglycosides and beta lactam antibiotic are the commonly used antibiotics for surgical prophylaxis.[12]

Our study showsthat there is more mono therapy patients subjected for surgerywhich is similar report.PA ongom et al quoted that there is more Gentamycin used in patients subjected for surgery which is similar to our report .[12]

Appropriateness have been evaluated in correction with ASHP guidelines for management of antimicrobials for surgical prophylaxis and almost 90% appropriateness is seen with the therapy.

CONCLUSION:

Surgical prophylaxis is an essential part of surgery with this study, we can help is designing apart of surgical kit necessary antibiotic for prevention the related nosocomial infection. We recommended for further research to classify specific antibiotics for specific pathogen

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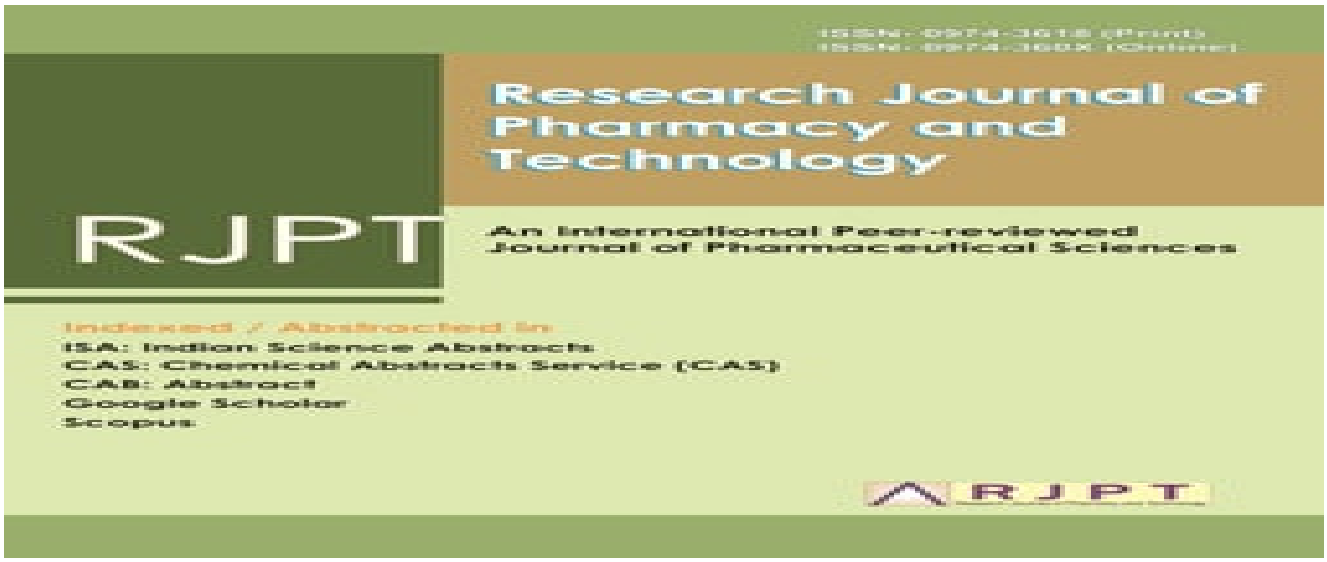

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