

A Prospective Study of Prescribing Patterns of Antibiotics in Post-Operative Patients of Surgery Department

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ABSTRACT:

Aim and Objectives: The purpose of the study is to evaluate the prescription pattern of antibiotics in post operative patients.

Materials and Methods: Study was carried out in a 300 bedded tertiary care hospital. It is a prospective study. The department selected for the study was surgery. A patient information form has been prepared to inform the patient of the care givers about the purpose and necessity of the study. During data collection patients were informed about the study using patient information format. A regular ward round into the study department was carried out. The medical charts of the patients were screened for appropriateness in all possible ways. The obtained data were analyzed and was categorized based on the age, diagnosis and its treatment. Rationality of prescription is also been calculated.

Result and Discussion: A total of 50 patients were screened. In our study males (72%) and females (28%) are involved in the study. Most common antimicrobial administered was cephalosporin's (40%). Respectively amino glycosides, other new category antibiotic drugs, macrolides, fluoroquinolones, tetracyclines and pencillins.

Conclusion: As per "Clinical Practice guidelines for Antimicrobial Prophylaxis in surgery", antibiotics prescribed in each surgery was not found to be major problem. 86% of prescriptions are found to be appropriate as per guidelines.

KEYWORDS: Antibiotics, Post-operative, Quality of life, Cephalosporins, Aminoglycosides.

INTRODUCTION:

Infections

The entry and development or multiplication of an infectious agent in the body of man and animal is known as infections. It also implies that the body responds in some way to defend itself against the invader, either in the form of an immune response or disease. An infection does not always cause illness. Such illness as TB, Salmonella, Syphilis and some forms of Meningitis are caused by bacteria. Some bacteria are not harmful, while others are good for us⁽¹⁾.

There are several levels of infection: colonization (e.g., *S. aureus* in skin and normal nasopharynx); subclinical or in apparent infections (e.g., polio); latent infections (e.g., virus of herpes simplex); and manifest or clinical infections⁽²⁾

Types

- i. Infectious disease: A clinically manifest disease of man or animals resulting from an infection.
- ii. Contagious disease: A disease that is transmitted through direct contact, such as STD and Leprosy.
- iii. Communicable disease: An illness due to a specific infectious agent, which is transmitted directly or indirectly transmitted from man to man, animal to animal, or from an animal to man, (e.g., water, food, etc.) to man or animal.⁽³⁾

Treatment

An antibiotic is given for the treatment of an infection caused by bacteria. Antibiotics target microorganisms such as bacteria, fungi and parasites. However, they are not effective against viruses.⁽⁴⁾

Antibiotics

An antibiotic is a chemical substance produced by one organism that is destructive to another. The word antibiotic comes from the Greek anti means 'against' and bios means 'life' (a bacterium is a life form). Antibiotics are also known as antimicrobials, and they are drugs used to treat infections caused by bacteria.

Antibiotics are among the most frequently prescribed medications in modern medicine. Antibiotics cure disease by killing or injuring bacteria. The first antibiotic was penicillin, discovered accidentally from a mold culture. Today over 100 different antibiotics are available to doctors to cure minor discomforts as well as life threatening infections.

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Although antibiotics are useful in a wide variety of infections, it is important to realize that antibiotics only treat bacterial infections (for example, the common cold) and fungal infections (such as ringworm).⁽⁵⁾

History

- Louis Pasteur was one of the first recognized physicians who observed that bacteria could be used to kill other bacteria.
- In 1929 Sir Alexander Fleming, a Scottish bacteriologist, went on a vacation and left a petri dish of staphylococci bacteria uncovered. When he returned, he noticed that there was mold growing on it. Upon further examination, he found that the area around the mold had no bacteria growing. He named penicillin, which is the first substance recognized as an antibiotic.
- Almost immediately after penicillin was introduced, resistance in certain strains of staphylococci was observed.⁽⁶⁾
- In 1935, Domagk discovers synthetic antimicrobial chemicals (Sulphonamides).
- During World War II, because of need for antibiotic agents, Penicillin was isolated and further tested by injection into animals. It was found to be extremely useful in curing infections, and to have extremely low toxicity to the animals. Because of these findings, use of penicillin greatly increased. This also spurred a search of other chemical agents of similar use.
- In the late 1940's through the early 1950's Streptomycin, Chloramphenicol, and Tetracycline were discovered and introduced as antibiotics.
- In 1953, during a Shigella outbreak in Japan, a certain strain of dysentery bacillus was found to be resistant to Chloramphenicol, Tetracycline, Streptomycin and the Sulfanilamide.
- By the 1950's it was apparent that tuberculosis bacteria was rapidly developing resistance to Streptomycin, which had commonly been used to treat it.⁽⁷⁾

Antibiotics were first used in the 1940's and are certainly one of the great advances in medicine. The first antibiotic used was Penicillin. Such Penicillin and related antibiotics such as Ampicillin and Benzyl Penicillin are widely used today to treat a variety of infections.⁽⁸⁾

Types of Antibiotics

Although there are 100 antibiotics, the majority of antibiotics come from only a few types of drugs. The main classes of antibiotics include

- Penicillins such as penicillin and Amoxicillin.
- Cephalosporins such as Cephalexin (Keflex)
- Macrolides such as Erythromycin (E-Mycin), Clarithromycin (Biaxin), and Azithromycin (Zithromax)
- Fluoroquinolones such as Ciprofloxacin (Cipro), Levofloxacin (Levofloxacin)
- Sulphonamides such as Co-trimoxazole (Bactrim) and Trimethoprim
- Tetracyclines such as Tetracycline (Sumycin, Panmycin) and Doxycycline (Vibramycin)
- Aminoglycosides such as Gentamycin (Garamycin) and Tobramycin (Tobrex).⁽⁹⁾

MATERIALS AND METHODS:

Study was carried out in a 300 bedded tertiary care hospital. It is a Prospective study. The department selected for the study was surgery. A patient information form has been prepared to inform the patient of the care givers about the purpose and necessity of the study. During data collection patients were informed about the study using patient information format. A regular ward round into the study department was carried out. The medical charts of the patients were screened for appropriateness in all possible ways. The obtained data were analyzed and was categorized based on the age, diagnosis and its treatment. Rationality of prescription is also been calculated.

RESULTS AND DISCUSSION:



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In our study male preponderance was seen. Majority of patients were adults, one of the major reason for this is that, it is the productive age group that is actively involved in socioeconomic activities, and this might be making them vulnerable to disease, which may need surgical interventions. In our study population male (72%) and females (28%). Diabetic foot (34%) was affecting majority of cases in our study. Hemorrhoids(26%) are also prevalent. Hernia (14%), Renal stones (12%), others (10%), Lump in the breast (4%). Most common antibiotics administered was cephalosporins (40%), aminoglycosides (24%), Macrolides (8%), Fluroquinolones (8%), Tetracyclines (4%), Penicillins (4%) and others (10%).

Countless lives have been enhanced and saved with the use of antibiotics. Improper use or excessive use of antibiotics leads to bacterial resistance to the drugs and thus leading to ineffective therapy. Hence it is very essential for observing and evaluation of appropriate use of antibiotics in population. Awareness regarding the appropriate use of antibiotics may be a useful method to reduce misuse or excessive intake of antibiotics.

TABLE NO: 1- GENDER DISTRIBUTION OF THE STUDY POPULATION

GENDER	NO. OF PATIENTS (n=50)	% OF PATIENTS
Male	36	72%
Female	14	28%

TABLE NO: 2 - AGE DISTRIBUTION OF STUDY POPULATION

Age group	NO. OF PATIENTS (n=50)	% OF PATIENTS
Pediatrics	2	4%
Adults	30	60%
Geriatrics	18	36%

TABLE NO: 3- COMMON DIAGNOSIS THE STUDY POPULATION

S.NO	DIAGNOSIS IN STUDY POPULATION	NO. OF PATIENTS (n=50)	% OF PATIENTS
1.	HEMORRHOIDS	13	26%
2.	LUMP IN THE BREAST	2	4%
3.	DIABETIC FOOT	17	34%
4.	HERNIA	7	14%
5.	RENAL STONES	6	12%
6.	OTHERS	5	10%

TABLE NO: 4- PRESCRIBING PATTERN OF ANTIBIOTICS

S.NO	DRUGS PRESCRIBED	NO. OF PATIENTS (n=50)	% OF PATIENTS
1.	PENCILLINS	2	4%
2.	CEPHALOSPORINS	20	40%
3.	AMINOGLYCOSIDES	12	24%
4.	TETRACYCLINES	2	4%
5.	MACROLIDES	4	8%
6.	FLUROQUINOLONES	4	8%
7.	OTHERS	6	12%

CONCLUSION

As per “Clinical Practice Guidelines for antimicrobial Prophylaxis in surgery”, which were developed jointly by the American Society of Health-system Pharmacists (ASHP), the Infectious diseases Society of America (IDSA), the Surgical infection society (SIS) and the society for Healthcare Epidemiology for America (SHEA), antibiotics prescribed in each surgery was found to be major problem, 86% of prescriptions are found to be appropriate as per guidelines.

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