

A Study on the Pattern of Antibiotic Use in Surgery Patients at a Rural Hospital

B.A. Joshi*, Arjun C.*, Udayashankar*, Jayanth D.H.*, Bhavya**

*Post Graduate, Department of General Surgery, **Intern, M.V.J. Medical College and Research Hospital, Hoskote, Bangalore, Karnataka, India.

Abstract

The aim of the present study is to observe patterns of antibiotic use in surgical conditions and also the effectiveness of antibiotics in the prevention and treatment of post-operative infections. The antibiotic use will be studied in patients admitted for various surgical procedures from Sep 2015 to Nov 2015. This study is planned to observe the pattern of antibiotic use for general surgeries, both pre-operatively as well as post-operatively and to assess the outcome. The settings and design of this study was tertiary care teaching hospital, prospective study. The antibiotics used pre-operatively and post-operatively were noted down and also any change in the antibiotic administration. Antibiotic prescription is a major concern in terms of public health, since infections are the most frequent cause of disease. The aim of this a hospital-based study was to assess the pattern of antibiotic use in the surgery ward of a rural hospital, Southern-India. From the result of the study, the frequency and percentage of antibiotic prescriptions identified.

The most frequently prescribed single antibiotic was Taxim (Cefotaxime).

While the most commonly prescribed multiple antibiotic prescriptions was Xone inj plus Metronidazole inj. From the result we can conclude that, there was a significant oral and inject able antibiotic utilization in the study area compared to similar studies conducted in other part of the world.

Corresponding Author: Arjun C., Post Graduate, General Surgery, M.V.J. Medical College and Research Hospital, Hoskote, Bangalore, Karnataka 562114, India.
E-mail: dr.arjun.c001@gmail.com

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Introduction

Antibiotics are powerful and effective drugs in the fight against infectious diseases caused by bacteria and have been frequently used for decades worldwide for effective treatment of a variety of bacterial infections. Antibiotics have saved millions of lives since their first appearance about fifty years ago. Antibiotics are an essential part of modern medicine and play a major role both in the prophylaxis and treatment and are among the drugs most commonly prescribed.

The issues of their availability, selection, and proper use are of critical importance to the global community. Though Inappropriate use of antimicrobial agents has been found that common in various parts of the world, but there have been few studies in developing countries. Antimicrobial agents are the most commonly used and misused of all the drugs. The majority of hospitalized patients receive antibiotics for therapy or prophylaxis during their inpatient stay.

Aims

To observe and study the pattern of Antibiotic Use in the surgical ward of rural hospital in Southern India.

To assess antibiotics prescribing practice of prescribers in terms of age and sex difference, percentage of inject able prescription,

To know the most commonly prescribed drugs and drug combinations.

Materials and Methods

Study Area

A rural based tertiary care hospital providing health services to 100 plus villages.

Study Period

The study was conducted from Oct 10, 2015 up to Dec 10, 2015.

Study Design

A hospital-based observational study.

Source Population

Patients admitted in Surgery ward.

Study Population

Patients who were put on antibiotic therapy.

Inclusion and Exclusion Criteria

All patients who were put on antibiotic therapy included in the study.

Patients managed without antibiotics were excluded.

Data Collection and Management

Sample Size

The Sample size of 100 patients.

Source of Data

Patient chart, prescription orders.

Sampling Technique

Systematic sampling technique was followed for data collection technique.

Data Analysis Procedures

The collected data was entered to and analyzed by Microsoft excel.

Demographic Data

Of the total (n=100) patients who were admitted and put on antibiotics in Surgery ward of rural Hospital during October 2015/Dec 2015, 71 were male and 29 were females [Table 1]. Of the 100, 32 were between 18-35 yrs, 27 were between 36-50, 34 patients between 50-65 and 9 above 65 years [Figure1].

Table 1: Gender Predisposition

Gender	Total 100
Male	71
Female	29

Antibiotics were prescribed for patients on empirical basis on admission to the ward. However, the antibiotic choice was made on the basis of

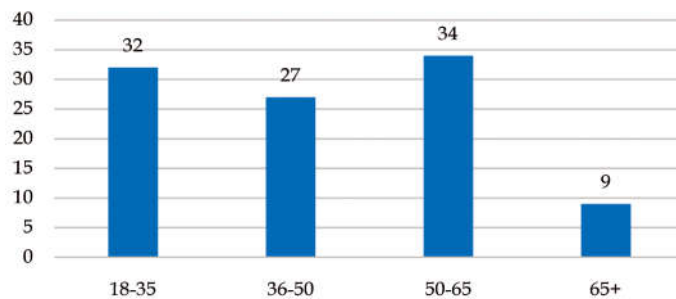


Fig. 1: Age distribution

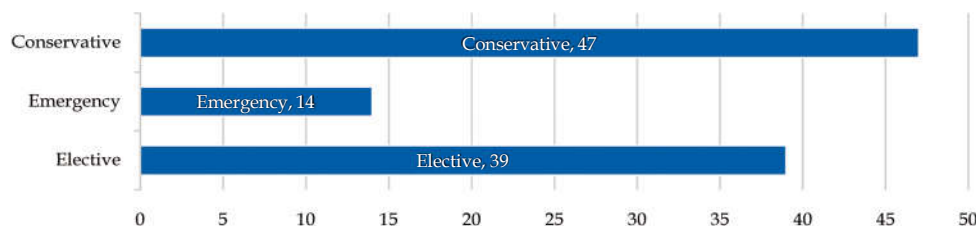


Fig. 2: Case distribution

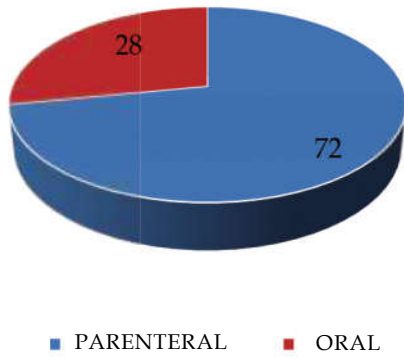


Fig. 3: Mode of drug Administration

presentation and early clinical diagnosis. As the patient usually presents late to a tertiary centre, most Surgeons preferred to use parenteral antibiotic than Oral [Figure 3].

Single antibiotic therapy was used for 50 patients, in 42 patients a second drug was added and third antibiotic was used in 8 cases based on the clinical response to previous two antibiotics.

Results

Of all the antibiotics Xone (Ceftriaxone 1gm IV BD)) was most commonly used followed by Taxim (Cefotaxime 1gm IV BD and Augmentin (1.2gm IV BD)

Injection Metronidazole was the most commonly preferred 2nd antibiotic in addition to Taxim and Xone. Some Surgeons used newer combinations like Ceftriaxone-S, Cefotaxime-S, PipTaz post operatively. Monocef was used with amikacin for urological cases post operatively [Figure 4].

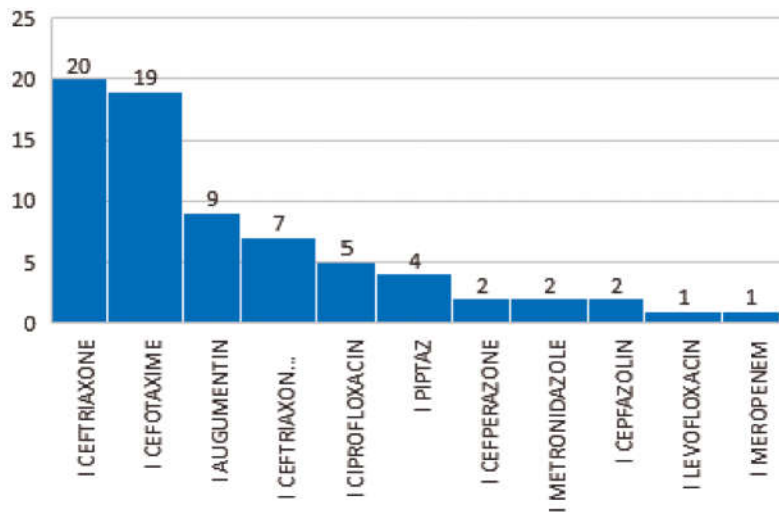


Fig. 4: Common Parenteral Antibiotics

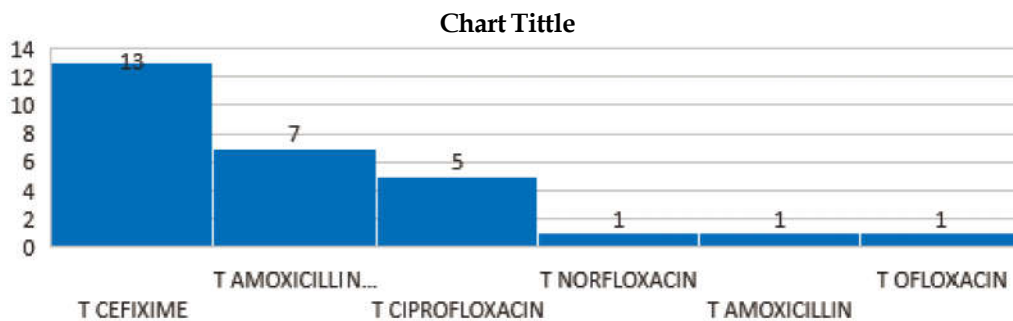


Fig. 5: Common Oral Antibiotics

However, for some cases only oral antibiotics were prescribed and taxim was the most commonly used oral antibiotic followed by Augmentin and Ciplox. [Figure 5].

However, the parenteral antibiotics were stopped and switched over to oral antibiotics while discharging the patient in almost all the cases.

Discussion

Antibiotics represent one of the most commonly used drugs and frequently used for decades worldwide for effective treatment of a variety of bacterial infections [1]. Their irrational use leads to a number of consequences in term of cost, drug interactions, hospital stay and bacterial resistance. Antimicrobial agents are the most commonly used and misused of all the drugs [2]. The majority of hospitalized patients receive antibiotics for therapy or prophylaxis during their inpatient stay. It has been estimated that at least 50% of patients receive antibiotics without clear indications [3].

In this study, it was found that there was higher incidence of antibiotic and injectable prescription compared to similar studies conducted in other part of the world [4-6]. However studies on prescribing patterns are rarely done in India. All most all the patients admitted to ward were prescribed with Antibiotics empirically. When compared to other studies around the world, our study revealed that the antibiotics and various combinations used by Indian surgeons do differ from the rest [7-9]. Learning the pattern of prescribing helps us in understanding the commonly used antibiotics in that particular setup and also gives us information regarding the availability and usage of drugs in the health care system. The WHO guidelines recommend 100% generic prescription [10].

Conclusion

This study gives an overview of the pattern of antibiotic use in the study area by age and sex distribution, frequency and percentage of single as well as combined drugs prescriptions and percentage of hospital stay with one or more antibiotics in pediatric population. Generally, we can conclude that there was: -

High percentage of Injectable antibiotic use.

Cefixime was the most frequently prescribed single oral antibiotic.

Ceftriaxone was the most frequently prescribed parenteral antibiotic.

'Xone inj+Metronidazole inj' was the most frequently prescribed combination.

However, combination of wide spectrum antibiotics like linezolid, piperacillin with common antibiotics like gentamycin, ciprofloxacin was also observed in the study.

The combination of Inj Piptaz+ Inj Metronidazole + Inj Linezolid was curious and rare was observed in the study.

The efficacy of individual drug could not be detected in the study. The rationale behind use of such drug combinations is unknown. As those drugs cost several times higher the basic drugs but still used.

If at all the basic and cheaper drugs are proven to be equally efficient in management of surgical conditions in comparison to costlier drugs, it can help millions of people belonging to poor section of the society and help reduce health related economic burden on them.

Overall there was variety of patterns in antibiotic prescriptions based on different surgical conditions and treating surgeons.

Conflict of Interest

No conflicts to disclose.

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