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ASSESSMENT OF PRESCRIPTION PATTERN OF ANTIBIOTICS AMONG PATIENTS IN TERTIARY CARE HOSPITAL

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ABSTRACT

Background: To assess prescription pattern of antibiotics among patients in tertiary care hospital. **Material and Methods:** we selected 140 patients admitted in tertiary care hospital. Parameters such as average number of drugs per encounter, percentage of encounters with antibiotics, percentage of encounters with injection, percentage of drugs prescribed by generic name, percentage of drugs from essential drug list and diagnosis etc. was recorded. **Results:** Age group <18 years had 8 males and 4 females, 18-28 years had 12 males and 8 females, 28-38 years had 16 males and 10 females, 38-48 years had 20 males and 18 females and 48-58 years had 24 males and 20 females. Number of drugs per encounter was one drug in 75, two drugs in 30, three drugs in 20 and four drugs in 15. The difference was significant (P< 0.05). Average number of drugs per encounter was 1.7%, percentage of encounters with antibiotics was 70.2%, percentage of encounters with injection was 6.4%, percentage of drugs prescribed by generic name was 96% and percentage of drugs from essential drug list was 95%. Commonly prescribed antibiotics was amoxicillin in 65, ciprofloxacin in 20, azithromycin in 18, metronidazole in 12, ceftriaxone in 15, cephalexin in 8 and clarithromycin in 7. The difference was significant (P< 0.05). **Conclusion:** Commonly prescribed antibiotic was amoxicillin, ciprofloxacin and azithromycin.

Keywords: Antibiotics, azithromycin, ciprofloxacin.

Introduction

Antibiotics have been used widely in the prevention and management of infections since the discovery of penicillin in the 1920´s.[1] This discovery, among others, has changed the course of medicine and reduced infection-related mortality. In recent times, however, there have been concerns over the inappropriate use of antibiotics which has partly contributed to the development of resistance in disease-causing microorganisms.[2]

ISSN: 0975-3583, 0976-2833 VOL13, ISSUE 05, 2022

The consumption of antibiotics has increased worldwide with most of this occurring in low- and middle-income countries.[3] Antibiotics play a pivotal role in combating disease and maintaining health especially in developing countries where infectious diseases are still a big challenge. However, in recent years their benefit is facing a great challenge due to the emergence of antibiotic resistance.[4] Currently, it is found that many microbes have become resistant to the most commonly available and effective first line agents mainly due to inappropriate prescribing practices.[5]

Antibiotic resistance poses a significant threat to global public health and was given special mention as a serious threat to public health, economic growth, and global economic stability. Increased antibiotic resistance rates may lead to prolonged hospitalization and duration of treatment, as well as increased treatment costs and mortality.[6] The present study assessed prescription pattern of antibiotics among patients in tertiary care hospital.

Material & Methods

After considering the utility of the study and obtaining approval from ethical review committee of the institute, we selected 140 patients admitted in tertiary care hospital.

Data such as name, age, gender etc. was recorded. Parameters such as average number of drugs per encounter, percentage of encounters with antibiotics, percentage of encounters with injection, percentage of drugs prescribed by generic name, percentage of drugs from essential drug list etc. was recorded. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

Results

Table I: Patients distribution

Age group (years)	Male	Female
<18	8	4
18-28	12	8
28-38	16	10
38-48	20	18
48-58	24	20
Total	80	60

Table I shows that age group <18 years had 8 males and 4 females, 18-28 years had 12 males and 8 females, 28-38 years had 16 males and 10 females, 38-48 years had 20 males and 18 females and 48-58 years had 24 males and 20 females.

Table II: Assessment of number of drugs per encounter

Number of drugs per encounter	Number	P value
One drug	75	0.05
Two drugs	30	
Three drugs	20	
Four drugs	15	

ISSN: 0975-3583, 0976-2833 VOL13, ISSUE 05, 2022

Table II shows that number of drugs per encounter was one drug in 75, two drugs in 30, three drugs in 20 and four drugs in 15. The difference was significant (P< 0.05).

Table III: Report of prescribing indicators

Prescribing indicators	Average
average number of drugs per encounter	1.7%
percentage of encounters with antibiotics	70.2%
percentage of encounters with injection	6.4%
percentage of drugs prescribed by generic name	96%
percentage of drugs from essential drug list	95%

Table III shows that average number of drugs per encounter was 1.7%, percentage of encounters with antibiotics was 70.2%, percentage of encounters with injection was 6.4%, percentage of drugs prescribed by generic name was 96% and percentage of drugs from essential drug list was 95%.

Table IV: Commonly prescribed antibiotics

Antibiotics	Number	P value
Amoxicillin	65	0.01
Ciprofloxacin	20	
Azithromycin	18	
Metronidazole	12	
Ceftriaxone	15	
Cephalexin	8	
Clarithromycin	7	

Table IV, graph I shows that commonly prescribed antibiotics was amoxicillin in 65, ciprofloxacin in 20, azithromycin in 18, metronidazole in 12, ceftriaxone in 15, cephalexin in 8 and clarithromycin in 7. The difference was significant (P< 0.05).

Discussion

Antibiotic resistance is a global health crisis and is one of the greatest challenges for public health and affects both developing and developed countries.[7] Inappropriate prescribing habits lead to ineffective and unsafe treatment, worsening/prolongation of diseases and cost increments due to further complication of diseases and the need for further treatment. Inappropriate prescribing also reduces the quality of medical care and leads to wastage of resources.[8] In developing countries antibiotics are prescribed for 44% to 97% of hospitalized patients often unnecessarily or inappropriately. It is estimated that half of all medicines in Africa are used inappropriately including two third of antibiotics.[9] According to a Centers for Disease Control and Prevention report on "antibiotic resistance threats in the United States," it is estimated that antibiotic resistance is responsible for more than 2 million infections and 23 000 deaths each year in the United States, at a direct cost of $20 billion.[10]

ISSN: 0975-3583, 0976-2833 VOL13, ISSUE 05, 2022

The present study assessed prescription pattern of antibiotics among patients in tertiary care hospital.

We found that age group <18 years had 8 males and 4 females, 18-28 years had 12 males and 8 females, 28-38 years had 16 males and 10 females, 38-48 years had 20 males and 18 females and 48-58 years had 24 males and 20 females. Yimenu et al[11] assessed antibiotic prescribing patterns using World Health Organization prescribing indicators at the outpatient Pharmacy Department. A total of 968 drugs were prescribed from 600 patient encounters. The average number of drugs per encounter was 1.6. The percentage of encounters in which an antibiotics and injections were prescribed was 69.7% and 6.3% respectively. Amoxicillin (28.5%) followed by ciprofloxacin (12%) and metronidazole (11.1%) were the most commonly prescribed antibiotics. The percentage of drugs prescribed from essential drugs list and by generic name was 95.3% and 96%, respectively. Rate of antibiotics prescribing showed deviation from the standard recommended by World Health Organization whereas polypharmacy, injectable prescribing pattern, uses of brand names, and prescription of drugs from the National Essential Drugs List were not found to be a significant problem though there were slight deviations from the standard.

We found that number of drugs per encounter was one drug in 75, two drugs in 30, three drugs in 20 and four drugs in 15. Khadela et al[12] in their study prescription pattern of patients on antimicrobial agents for any infectious diseases was reviewed and assessed in ICU at a tertiary care hospital for 6 months. All the patients receiving at least one antibiotic except paediatric, pregnant, and lactating patients were included in the study. The prescriptions were also analysed in accordance with the indicators provided by WHO AWARE list. A total of 227 patients were enrolled in the study after obtaining their informed consent form. The majority of patients were in the age group 51 to 65 (33.48%) and males (54.18%). The most common pathological conditions for which patients admitted to ICU were acute gastroenteritis (21.68%), urinary tract infection (13.98), and viral fever (11.19%). Amongst all antimicrobial agents prescribed, cefoperazone along with sulbactam (20.29%) and ceftriaxone (18.84%) was most frequently prescribed followed by metronidazole (9.90%) and levofloxacin (6.76%). Broad-spectrum antibiotics were prescribed in 66% of the total enrolled patients, whereas only 9% of patients underwent a culture sensitivity test. As per the WHO AWARE list, 50% of antimicrobial agents were from the watch category followed by 20% and 17% from the access and reserve category, respectively. The high use of broad-spectrum antibiotics suggests that there is a need for more awareness amongst the health care professionals and communities about the emerging antibiotic resistance problem which is mainly due to over and inappropriate use of antibiotics.

We found that average number of drugs per encounter was 1.7%, percentage of encounters with antibiotics was 70.2%, percentage of encounters with injection was 6.4%, percentage of drugs prescribed by generic name was 96% and percentage of drugs from essential drug list was 95%. We found that commonly prescribed antibiotics was amoxicillin in 65, ciprofloxacin in 20, azithromycin in 18, metronidazole in 12, ceftriaxone in 15, cephalexin in 8 and clarithromycin in 7. Darkwah et al[13] a total of 184 patient prescriptions (286 antibiotics) were included in this study. Results showed that antibiotics were mostly prescribed for dental and dental-related conditions (20.7%) and obstetric post-delivery prophylaxis (18.1%). Appropriateness of indicators for antibiotics prescribed assessed ranged

ISSN: 0975-3583, 0976-2833 VOL13, ISSUE 05, 2022

between 89.2% to 97.6%. The most frequently prescribed antibiotics were metronidazole (25.9%), amoxicillin with clavulanic acid (22.0%), amoxicillin (16.4%) and ciprofloxacin (10.1%). Based on WHO "AWaRe" classification, the "access" group of antibiotics (74%) was the most prescribed, followed by "watch" group (24%). There were no antibiotics prescribed from the "reserve" group of antibiotics and another 2% that was not part of AwaRe classification.

The limitation of the study is small sample size.

Conclusion

Authors found that commonly prescribed antibiotic was amoxicillin, ciprofloxacin and azithromycin.

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ISSN: 0975-3583, 0976-2833 VOL13, ISSUE 05, 2022

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