

Research Article

ISSN 2320-4818
JSIR 2014; 3(2): 139-142
© 2014, All rights reserved
Received: 19-02-2014
Accepted: 15-04-2014

Safila Naveed

Department of Pharmacy, Jinnah
University for Women, 5C,
Nazimabad, Karachi – 74600,
Pakistan

Asra Hameed

Department of Pharmacy, Jinnah
University for Women, 5C,
Nazimabad, Karachi – 74600,
Pakistan

Neelam Sharif

Department of Pharmacy, Jinnah
University for Women, 5C,
Nazimabad, Karachi – 74600,
Pakistan

Ammarah Urooj

Department of Pharmacy, Jinnah
University for Women, 5C,
Nazimabad, Karachi – 74600,
Pakistan

Ramsha Mehak

Department of Pharmacy, Jinnah
University for Women, 5C,
Nazimabad, Karachi – 74600,
Pakistan

Correspondence:

Dr. Safila Naveed

Associate Professor
Department of Pharmacy, Jinnah
University for Women, 5C,
Nazimabad, Karachi – 74600,
Pakistan

E-mail: safila117@yahoo.com

Use of 3rd generation cephalosporins in different age groups in tertiary health care centers of Karachi

Safila Naveed*, Asra Hameed, Neelam Sharif, Ammarah Urooj, Ramsha Mehak

Abstract

Prescription writing is the key part in healthcare provision. The caution use of antibiotics is very important as their resistance can be life threatening. Our study aims to find out the current prescribing practice of the antibiotics, specially the use of cephalosporins for Pediatric in tertiary health care centres situated in Karachi. Cross sectional, random sampling method was used to collect data of patients from different hospitals & health cares in the city of Karachi from September to November 2013. Antibiotics are most commonly prescribed drugs. On the other hand Antibiotics are available and sold throughout the whole city without the prescription of a registered medical practitioner, which is one of the causes for overuse of antibiotics resulting in becoming the bacteria & other microbes resistant to antibiotics. Our result shows that altogether 50 patients, 13 males and 14 females (54 %), were using third generation cephalosporins.

Keywords: Antibiotics, Prescribing, Pediatric, Cephalosporin.

Introduction

Antibiotics also known as antibacterial medications that inhibits or slows down the growth of bacteria. The Greek word anti means "against", and the Greek word bios means "life" (bacteria are life forms). Antibiotics are used for those infections caused by bacteria. Bacteria are microscopic organisms and the word bacteria are the plural of bacterium. Diseases caused by bacteria are syphilis, tuberculosis, salmonella, and meningitis. Before bacteria can multiply and cause disease symptoms the body's immune system can usually destroy them. We have special white blood cells that attack harmful bacteria. Even if symptoms do occur, our immune system can usually cope and fight off the infection. There are occasions, however, when it is all too much and some help is needed from antibiotics. Antibiotic therapy is growing more complex, thus making appropriate antibiotic prescribing increasingly challenging. Antibiotics-related problems (ARPs) are a major safety issue for hospitalized patients. Children and Infants represent a large part of the population in the developing countries.¹ Paediatric population is prone to suffer from recurrent infections of the GIT gastrointestinal system and respiratory tract. Lower respiratory tract infections are the leading cause of death in children below the age of 5 five years.² Acute RTI respiratory tract infection, acute diarrhea and viral fever are the most common illnesses accounting for the major proportion of pediatric visits.³ Several studies focusing on antibiotic prescribing attitudes in hospitalized children indicate that children admitted to hospitals receive antibiotics and widespread misuse has been reported.⁴ Most upper respiratory tract infections, such as the common cold and sore throats are generally caused by viruses.

Antibiotics do not work against these viruses.

If antibiotics are overused or used incorrectly there is a chance that the bacteria will become resistant - the antibiotic becomes less effective against that type of bacterium. Therefore it is very important to use of antibiotics rationally.

Methodology

For the collection of data about antibiotics prescribing practice, we survey different pediatric wards of public and private sector hospitals and health cares. The Patients were belonging to different age groups from 0 to 15 years. Patient admitted in these wards due to different diseases are treated by antibiotics. We studied their files and records to check out their basic information (e.g. Name, age, and gender), their diseases and treatment of the diseases with different medications. We collected all data of the patients from there and gathered all the data for

analysis of the prescribing practice of antibiotics. Data of 50 pediatric patients was collected for analysis (n=50). We have statistically analyzed our result and plotted graphs of different types of antibiotics, especially different generations of cephalosporins in different age groups and genders suffering from different diseases and infections.

Results

Third generation cephalosporin is the antibiotic that is prescribed mostly in different age groups of male and females for the treatment of different diseases and infections. The most common antibiotics for pediatrics are ceftriaxone and cefixime in different brands.

Results are given in table 1- 4 about the use of cephalosporin in different age group and gender and also show in figure 1 and 2. Results indicate most commonly used generation is third and gender wise we cannot differentiate it is used almost all genders frequently.

Table1: Use of cephalosporin in different age group

| | | Age | | | | | Total |
|----------------|------------------|-----------|-----------|-----------|------------|-------------|-------|
| | | 0-2 Years | 3-5 Years | 6-8 Years | 9-12 Years | 13-15 Years | |
| Cephalosporins | No of Antibiotic | 5 | 3 | 2 | 1 | 1 | 12 |
| | 1st Gen | 1 | 0 | 0 | 1 | 1 | 3 |
| | 2nd Gen | 2 | 2 | 2 | 1 | 1 | 8 |
| | 3rd Gen | 10 | 7 | 4 | 6 | 0 | 27 |
| Total | | 18 | 12 | 8 | 9 | 3 | 50 |

Table 2: Chi-Square Tests for different age group

| | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|--------------------|----|-----------------------|
| Pearson Chi-Square | 9.516 ^a | 12 | 0.658 |
| Likelihood Ratio | 10.285 | 12 | 0.591 |
| Linear-by-Linear Association | 0.030 | 1 | 0.862 |
| No of Valid Cases | 50 | | |

a: 18 cells (90.0%) have expected count less than 5. The minimum expected count is 18.

Table 3: Use of cephalosporins in different gender

| | | Gender | | Total |
|----------------|------------------|--------|--------|-------|
| | | Male | Female | |
| Cephalosporins | No of Antibiotic | 9 | 3 | 12 |
| | 1st Gen | 2 | 1 | 3 |
| | 2nd Gen | 2 | 6 | 8 |
| | 3rd Gen | 13 | 14 | 27 |
| Total | | 26 | 24 | 50 |

Table 4: Chi-Square Tests for different gender

| | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|--------------------|----|-----------------------|
| Pearson Chi-Square | 5.299 ^a | 3 | 0.151 |
| Likelihood Ratio | 5.529 | 3 | 0.137 |
| Linear-by-Linear Association | 2.467 | 1 | 0.116 |
| No of Valid Cases | 50 | | |

a: 4 cells (50.0%) have expected count less than 5. The minimum expected count is 1.44.

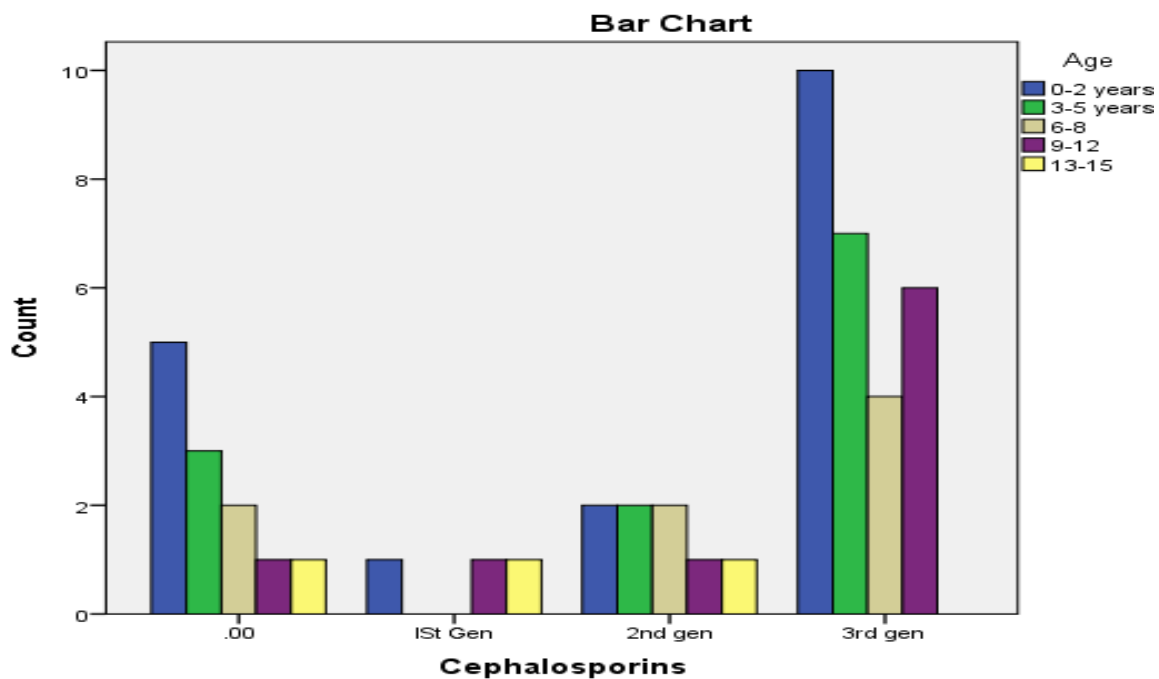


Figure 1: Use of cephalosporin in different age group

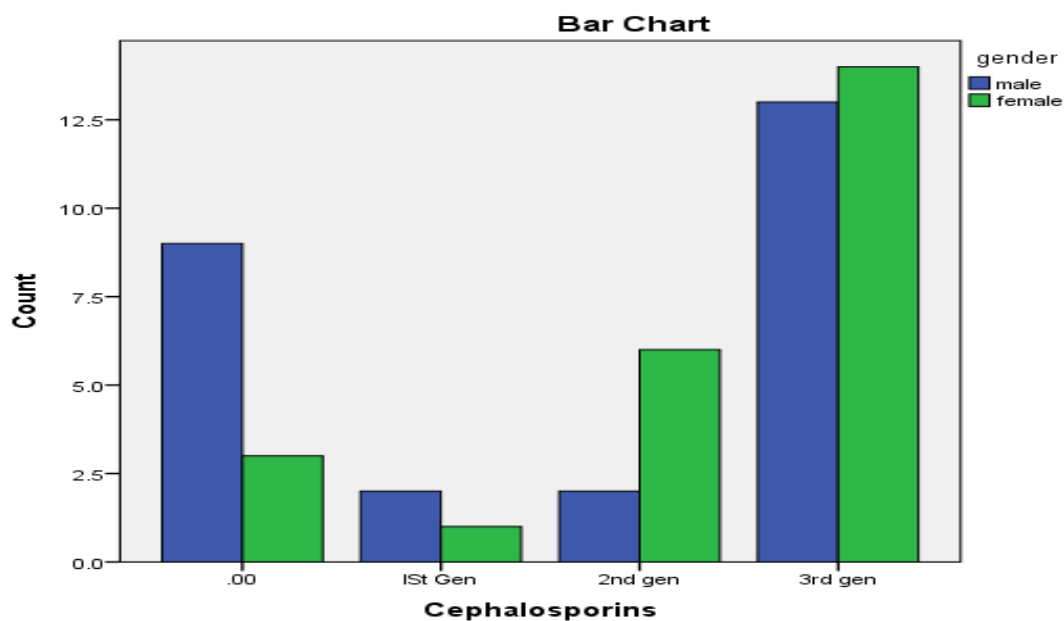


Figure 2: Use of cephalosporins in different gender

Discussion

Prescribing the correct antibiotic with correct dose, route of administration and adjunctive drugs is very necessary to obtain the benefits of antibiotic therapy. The most common antibiotics for pediatrics are ceftriaxone and cefixime in different brands, belonging to the 3rd generation of cephalosporin's by our survey, we conclude that the 3rd generation of cephalosporins is mostly prescribed in the age group 0-2years, after that in the age group of 3 -5 years, then in the age group of 9-12years of peds and at last in the age group of 6-8 years, and very less in the age group of 13-15 years of peds.

In the first age group, that is 0-2years, ceftriaxone and cefixime mostly are prescribed for different infections and diseases. Antibiotics other than cephalosporins are also prescribed, whereas the use of 1st and 2nd generation of cephalosporins is very less in this age group. In the second age group that is from 3 years to 5 years third generation cephalosporins (ceftriaxone and cefixime) are the drugs prescribing mostly. Uses of 2nd generation cephalosporins are also in practice, but antibiotics other than cephalosporins are also common practice in this group. In the third age group that lies in between 6 to 8 years, ceftriaxone and cefixime are the commonly prescribed antibiotics. 2nd generation of cephalosporins and use of antibiotics other than cephalosporins is also common practice in this age group.

In the 4th age group that is from 9 to 12 years use of antibiotics other than cephalosporins, use of 1st and 2nd generation of cephalosporins is a common practice, but the most prescribed antibiotics are the 3rd generation of cephalosporin (ceftriaxone and cefixime) in this age group too.

In the last age group of pediatrics, which is from 13 to 15 years, 1st generation of cephalosporins, 2nd generation of cephalosporins, and antibiotics other than cephalosporins are prescribed for different diseases and infections. The 3rd generation of cephalosporins is mostly prescribed in females after that are male pediatric patients.

In female, 3rd generation of cephalosporins is the antibiotics that are most commonly prescribed. After that 2nd generation of cephalosporins are also commonly prescribed, but the rate of prescription of antibiotics other than cephalosporins and the 1st generation of cephalosporins is very less in female pediatric patients. On the other hand, in male, third generation of cephalosporins are the most prescribed antibiotics, after that antibiotic

other than cephalosporins are prescribed, the rate of prescription of 1st and 2nd generation of cephalosporins is very less in males. Antibiotics other than cephalosporins that are Penicillins, Ciprofloxacin, Metronidazole, and Vancomycin etc. are prescribed mostly in male pediatric patients and less in female pediatric patients. The first generations of cephalosporins are prescribed to male pediatric patients but very less in female pediatric patients. The second generation of cephalosporins is also prescribed to male pediatric patients, but mostly prescribed to female pediatric patients. The third generation of cephalosporins is the antibiotics prescribing mostly to the male as well as female pediatric patients. Chi square value with degree of freedom $\chi^2 = 658 = df 12$ in different age groups shows no significant results it mean there is all generation of cephalosporin used frequently. Chi square test with p value 0.151 and degree of freedom $df=3$ shows that there is no difference to prescribe drugs in male and female.

Conclusion

Use of antibiotics may be due to Doctors' perceived demand and expectation and retail pharmacists copying the prescription of neighborhood doctors and dispensing antibiotics for common conditions like cold, sore throat, and diarrhoea.

Acknowledgement

We would like to thank hospital's management of Karachi to support.

Conflict of interest

There is no conflict of interest.

References

1. Dubey A K, Subish P, Shankar P R, Upadhyay DK, Mishra P. Prescribing patterns among pediatric inpatients in a teaching hospital in western Nepal. *Singapore Med J* 2006; 47:261-265.
2. O P Ghai, Vinod K Paul, Aravind Bagga. Disorders of respiratory system. *Essential Pediatrics*. 7th edition. 2009; 351-352.
3. Bharathiraja R, Sridharan S, Chelliah LR, Suresh S, Senguttuvan M. Factors affecting antibiotic prescribing patterns in pediatric practice. *Indian J Paediatric* 2005; 72:877-80.
4. Moreland TA, Rylance GW, Cristopher LJ, Stevenson IH. Patterns of drug prescribing for children in hospital. *Eur J Clin Pharmacol* 1978; 14:39-46.