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Antibiotic Prescriptions Pattern in Paediatric In-Patient Department with Lower Respiratory Tract Infection at a

Tertiary Care Hospital, Davangere.

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Conflicts of Interest: Nil

Abstract

The Objective of the study was carried out with the aim to assess the prescribing pattern of antibiotic drugs with Lower Respiratory Tract Infection (LRTI) at a tertiary care teaching Hospital, Davangere using WHO core drug prescribing indicators. The secondary objective of the study is to analyze the Number of antibiotics per prescription. A retro- prospective observational study was conducted at SSIMS & RC, Davangere, Karnataka for a period of six months. Methodology include, a total of 100 case records of pediatric patients was analyzed in the study. The collected data include patient's information's on demography, drug therapy and length of hospital stay which were collected from inpatient case sheets of Paediatric ward.

The results of the study include, a total of 360 drugs (3.6% antibiotic drugs) were prescribed. Males were 44% and Females were 56%.Most commonly prescribed antibiotic was under the class beta lactams (57%) followed by Aminoglycosides (21%). 66.6% patients received one antibiotic and 33.4% patients received multiple antibiotics.13.34% of antibiotic drugs were prescribed by their Generic names.

Conclusions: Most of the paediatric patients received only one antibiotic. Prescribing by generic name was less

and polypharmacy was observed. Irrational use of antibiotics for LRTI was also observed in our study.

Keywords: LRTI, Pediatric Inpatients, Prescribing Pattern, WHO core drug prescribing indicators.

Introduction

Paediatrics is a branch of medicine which deals with the development, disorders and diseases of children. Prescribing pattern studies are one of the currently powerful exploratory tools to ascertain the role of drugs in the society [1] Antibiotics are among the most commonly prescribed drugs in pediatrics. Because of an overall rise in health care costs, lack of uniformity in drug prescribing and the emergence of antibiotic resistance, monitoring and control of antibiotic use is of growing concern and strict antibiotic policies should be warranted. Before such policies can be implemented, detailed knowledge of antibiotic prescribing practice is important [2]. Paediatric population is prone to suffer from recurrent infections of the respiratory tract. [3]In developing countries 25% of all paediatric admissions are duento acute respiratory tract infections and which ultimately causes death of 3.5 million children beach year. Most infections are limited to the upper respiratory tract and only 5% involve the lower respiratory tract. Viruses are the most common cause of lower respiratory tract disease in infants and young

children and are a major public health problem in this age group..The present study is done to assess the prescribing pattern of antibiotic drugs with Lower Respiratory Tract Infection (LRTI) in paediatric inpatients using WHO core drug prescribing indicators.[3]

Objective

The objective of the study was carried out with the aim to assess the prescribing pattern of antibiotic drugs with Lower Respiratory Tract Infection (LRTI) at a tertiary care teaching hospital, Davangere using WHO core drug prescribing indicators.

The secondary objective of the study is analysing the Number of antibiotics per prescription. A retroprospective observational study was conducted at SSIMS & RC, Davangere, Karnataka for a period of six months Methodology include A Total of 100 patients were included in the study. The collected data include patient's information's on demography, drug therapy and length of hospital stay which were collected from in-patients case sheets of Paediatric ward.

Materials and Methods

Study Site: Shamanur Shivashankarappa Institute of Medical Sciences and Research Centre (SSIMS & RC), Davangere.

Duration of Study: Study will be conducted for a period of 6 months

Sample Size: 100 SUBJECTS

Study Design: A retro- prospective observational study.

Source of Data: The data about patients was collected from in-patients case sheets of Paediatric ward.

Inclusion Criteria

Patients of either sex from pediatric department. All in-patients with LRTI admitted to paediatric wards.

Exclusion Criteria

All Outpatients of paediatric ward.

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Patients on ventilators or seriously ill patients requiring ICU admission.

Patients unwilling to participate.

Patients with other diseases such as hepatic, renal, TB,GI tract infections etc.

Study Procedure

Patient case records analysed were for demographic characteristics, date of admission, of hospitalization, diagnosis, duration date of discharge. antibiotic drugs used and dosage regimen (form, route, frequency and duration) using WHO core drug prescribing indicators. Data was recorded in a separate data collection form and documented.

Statistical Method

Simple percentage calculations were used and expressed using graphs. Approval was obtained from the Institutional Ethics Committee before initiating the study on 1th January 2017 and ethical clearance certificate reference number is IEC/ 34/16-17/ BPC.

Results

Table No- 1: Male Female Ratio

A Total of 100 prescriptions was collected and analyzed. Of the100 patients, 44% were male subjects and 56% were female and the Average duration of hospital stay is 5.6 days and the total 360 antibiotics were prescribed to the paediatric patients with LRTI and the average number of antibiotics per prescription was 2.42 ± 0.77 .

Sex		Percentage (%)
Male		44
Female		56
Average duration hospital stay	of	5.6days
Average number antibiotics prescription	of per	2.42 ±0.77

Table No. 2: Categorizing Parent Understands OfDrug Use

In this study, the parents understanding of drug usage was assessed by interviewing the parents of the children attending the outpatient department. It is found that 57% of the parents possessed a good understanding of the drug usage; 23% of the parents belonged to the moderate understood category, while 20% of the parents had a poor understanding of the drug usage.

Category	Score obtained in the study(N=100)	Percentage (%)
Well understood	57	57
Moderately understood	23	23
Poorly understood	20	20

Table No. 3: List of Who Core Drug Use IndicatorsUsed In the Study.

Parameters	Number/
	Percentage
	1 er centage
Total number of patient case records analysed	100
Total number of antibiotic drugs prescribed	360
· · ·	
Average number of drugs prescribed	2.42 ±0.77
Number of drugs prescribed by generic name	48
Percentage of drugs actually dispensed	98.7%
Percentage of prescriptions with an injection	41.66%
prescribed	
presented	
Percentage of drugs adequately labelled	94 %
recentage of drugs arequarely fabelled	21.70
Percentage of drugs prescribed from the essential drug	68%
Let en fermentene	0070
list or formulary	

Table No. 4: Age Distribution among PaediatricPatients

The age group 1 to 6 years accounted for the highest number 35% of patients followed by 1-6 year age group 28% which is followed by 1 month to 1 year 23% and less than one month 14%.

Parameters	Number of patients	Percentage (%)
≤1 month (NEONATE)	14	14
>1 month-≤1 year (infant)	23	23
>1 year–≤6 years (children)	35	35
>1 year-≤ 12 years (children)	28	28

Table No-5: Different Groups of Antibiotic Prescribed

The commonly prescribed antibiotic was Beta lactams 35% followed by Cephalosporins 22% Aminoglycosides 21% ,Macrolides 11%,Glycopeptide antibiotics 6% ,Fluroquinolones 3% and Carbapenems 2%.

Antibiotic Group	Number of Prescriptions (%)
Beta lactams	57
Aminoglycosides	21
Macrolides	11
Glycopeptide antibiotics	6
Fluroquinolones	3
Carbapenems	2

Table No-6: Route of Administration Of DifferentTypes Of Antibiotics

The commonly prescribed route of administration was by Iv route (41.66) followed by orally as syrup (30.27%)route and as tablets and capsules(28.03%).

Route	Number	Percentage
Intravenous	150	41.66
Syrup	109	30.27
Tablets and Capsules	101	28.03
Total	360	100

Table No. 7: disease Distribution among PaediatricPatients

The commonly diagnosed disease was Bronchopneumonia (43%) followed by Bronchitis (22%), bronchiolitis (21%), and asthma (13%).

Diseases	Percentage %
Bronchopneumonia	43
Bronchitis	22
Bronchiolitis	21
Asthma	13
Other(croup)	1

Table 8: Number of Antibiotics per Prescription

In our study total of 360 antibiotics were analysed among that 66.6% of antibiotics were given as monotherapy and 33.4% antibiotics were given as combination therapy.

Antibiotics given as	Number	Percentage (%)
Single drug	240	66.6
Two drugs	57	15.8
Three drugs	48	13.4
Four drugs	12	3.4
Nil	3	0.84
TOTAL	360	100

Table No. 9: Prescribing Patterns

In our study total of 360 antibiotics were analysed among that 86.7% antibiotics were prescribed by their brand name and 13.34% drugs were given by their generic name.

Antibiotics	Number	Percentage (%)
Brand name	312	86.7
Generic name	48	13.34
Total	360	100

Table No. 9: Prescribing Antibiotics as Single Drug

The commonly prescribed drugs as monotherapy was ceftriaxone (22.5%)followed by cefotaxime (17.5%), azithromycin (10.41), ofloxocin (7.91),amikacin (7.08), vancomycin (7.08),imipenem (6.25), Meropenem (6.25), Piperacillin + Tazobactam(3.75), Amoxicillin + Clavulanic acid (3.75), Ampicillin + Cloxacillin (3.33%), Cefpodoxamine (2.5%) Cefadroxil (2.08), and Cefepime (1.66)

Drugs	Number	Percentage (%)
Ceftriaxone	54	22.5
Cefotaxime	42	17.5
Azithromycin	25	10.41
Ofloxocin	19	7.91
Amikacin	17	7.08
Vancomycin	17	7.08
Imepenem	15	6.25
Meropenem	10	4.16
Piperacillin+Tazobactam	9	3.75
Amoxicillin+Clavulanic acid	9	3.75
Ampicillin+Cloxacillin	8	3.33
Cefpodoxamine	6	2.5
Cefadroxil	5	2.08
Cefepime	4	1.66
Total	240	100

Table No.10: Prescribing Drugs as CombinationTherapy

The commonly prescribed drugs as combination therapy are ceftriaxone + tazobactam (38.33) followed by cefotaxime + amikacin (26.66), Ceftriaxone & Azithromycin (24.16%), Cefpodoxime & Azithromycin (6.66%), Ceftriaxone & Amikacin, (3.33)% and Cefotaxime & Erythromycin (0.83%).

Combination of Antibiotics	No. of patients	Percentage (%)
Ceftraixone & Tazobactum	46	38.33
Cefotaxime & Amikacin	32	26.66
Ceftriaxone & Azithromycin	29	24.16
Cefpodoxime & Azithromycin	8	6.66
Ceftriaxone & Amikacin	4	3.33
Cefotaxime & Erythromycin	1	0.83
Total	120	100

Table No. 11: Summary of Treatment/Patient FollowUp Evaluation

While evaluating the condition of the patient it is found that 60% of the patient's condition gets improved while 33% were fair and 4% patients were discharged under request and 3% of them were referred by the health care practitioners no deaths were found.

Patient Condition	% Percentage
Improved	60
Fair	33
Discharge under request	4
Referred	3
Death	0
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Table No. 12: Immunization History as Per IAP

Based on immunization history as per IAP (Indian association of pediatric) 72 patients were incompletely immunized and 33 patients were completely immunized.

Immunization Number	(N=100)	Percentage (%)
Completely Immunized	48	48
Not completely	52	52

Discussion

The present study was done to evaluate antibiotic prescribing pattern among paediatric in patients. Infancy and childhood is a period of rapid growth and development. Infants and children represent a large part of the population in developing countries. [4]. Although it is difficult to curtain the irrational drug prescribing practices, interventions in the forms of rational drug use workshop and problem-based training course in pharmacotherapy may prove useful in improving irrational drug prescribing practices.[5,6]In our study, the total percentage of female paediatric patients were 56% comparatively more that of male paediatric patients 44% similar in the study conducted by Malpani et al.[7] which is in contrast with the study conducted by Orrett et al.were male patients contributes the major population[8].In our study Bronchopneumonia (43%) was the most commonly diagnosed disease among paediatrics followed bv Bronchitis (22%) similar observation was found by the study conducted by Du Toit George et al .[9].The main disease prone age group was between 1-6 year similar to the study conducted by Palikhe et al (35%).Betalactams was the mostly prescribed antibiotic class (57%) followed by aminoglycosides (21%) which is similar to the study conducted by Shruthi K.V et al. The drug prescribed as monotherapy was Ceftriaxone 22.5% followed by Cefotaxime 17.5% belongs to the class cefalosporins, Contrary to this a study by Kamaldeen et al. [10].

were prescribed the most and combination therapy ceftriaxone + tazobactam 38.33 followed by cefotaxime + amkacin 26.66% similar observation was found on the drugs were prescribed by their brand name (312) out of 100 prescriptions compared to drugs by their generic (48) out of 100 prescriptions which is similar to the study conducted by Shruthi K.V et al. The drug prescribed as monotherapy was 66.6% and combination therapy was 33.4%. Based on immunization history as per IAP (Indian association of pediatric) 52 patients were incompletely immunized and 48 patients were completely immunized this in comparison to study done by Khaja etal. [12]. The data presented here will be useful in the future, long term and more extensive drug utilization studies in the hospital and in promotion of rational prescribing and drug use in hospitals. [14]. The major route of administration was by IV route 41.66% followed by oral syrup 30.27% and as tablets and capsules 28, 03%. And this number is more compared to Shivaleela et al. Prescription pattern analysis or auditing types of studies are to be conducted on large scale in different health sectors then study will be more effective and help in making local policy for antibiotics prescription in paediatric and also in other specialties. [15].

indicated that penicillins(Amoxicillin) and metronidazole

Thus our study results revealed that the most common cause of prescription of antibiotic was pneumonia followed by bronchitis these results are in agreement with the previous study conducted by Khaled et al. [16].

Conclusion

The present study reveals that the most commonly prescribed antibiotic class in teaching hospital for LRTI was cephalosporins. The most commonly prescribed antibiotic combination was Ceftriaxone +Tazobactam.The average numbers of antibiotic per prescription were

markedly higher than recommended by WHO.Generic prescribing of drugs was comparatively lower and mainly prescribed from Essential Drug List.[13]. Our study suggests that strategies to control irrational use of antibiotics should be implemented and the guidelines used for treatment of paediatric patients should be upgraded periodically. Hence, the present study concludes that Interventions to rectify over prescription of antibiotics and prescribing drug by their Generic name are necessary to improve rational drug use. Developing antibiotic policy and therapeutic guidelines with continued assessment of problems associated with resistance from time to time is essential to promote the rational use of antimicrobial agents. [17].

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