Prescription Pattern of Antibiotics in Pulmonary Ward of a Tertiary Care Hospital, Jammu and Kashmir

Mohd Altaf Dar[1], Mudasir Maqbool[2], Irfat Ara[3]

[1] Department of Pharmacology, CT Institute of Pharmaceutical Sciences, PTU, Jalandhar, Punjab, India. [2] Department of Pharmaceutical Sciences, University of Kashmir, Srinagar, Jammu and Kashmir, India. [3] Regional Research Institute of Unani Medicine, Srinagar, Jammu and Kashmir, India.

ABSTRACT

BACKGROUND

World population growth, pollution and overcrowding have all contributed to an increase in respiratory infections. Antibiotic resistant virulent bacteria are on the rise, and they're spreading quickly. As a general rule, lower respiratory tract infections cause only minor symptoms but can lead to significant morbidity and mortality. Improvements in public and professional awareness of the long-term nature of many LRTIs could lead to better antibiotic stewardship. The objective of the study was to assess the prescription pattern of antibiotics in patients in a pulmonary ward of a tertiary care hospital, Jammu and Kashmir.

METHODS

A six-month prospective observational study in a pulmonary ward of a tertiary care hospital in Jammu and Kashmir looked at antibiotic use patterns in a single location. According to the inclusion and exclusion criteria, a total of 355 patients were considered for evaluation. Asthma, bronchitis, pneumonia, chronic obstructive lung disease (COPD), and acute respiratory infections such as the common cold and pharyngitis were all included in the study.

RESULTS

In our study, 230 (64.79%) of the 355 patients were males, while 125 (35.21%) were females. Pulmonary Tuberculosis had the highest number of cases observed (157 patients, 44.22 percent), followed by COPD 91 patients (25.63 percent), pneumonia 46 patients (12.95 percent), Pleural effusion cases 43 patients (12.11 percent), and Bronchiectasis cases 18 patients (5.07 percent). The findings revealed that the most commonly prescribed antibiotics were Cephalosporins, Macrolides, Metronidazole, Penicillins, Aminoglycosides, Doxycycline, Fluoroquinolones, and finally Carbapenems.

CONCLUSIONS

Globally, respiratory illnesses are on the rise due to a growth in population, pollution, urbanization and overcrowding. There is a rapid increase in the number of multi-drug-resistant pathogenic bacteria. However, lower respiratory tract infections can cause severe morbidity and mortality if left untreated. Understanding and judicious use of antibiotics may be improved if more people are aware of the long-term nature of LRTIs. In order to understand the dangers and advantages of antibiotic treatment, further research is needed. There is a risk that the use of antibiotics for minor viral respiratory infections could lead to the development of antibiotic-resistant viruses in the community.

KEY WORDS

Drug Utilization, Prescription Pattern, Antibiotic Use, Respiratory Diseases.

Corresponding Author:

Dr. Mudasir Maqbool,
Research Scholar,
Department of Pharmaceutical Sciences,
University of Kashmir, Srinagar,
Jammu and Kashmir, India.
E-mail: bhatmudasir92@gmail.com

DOI: 10.14260/jemds.v12i6.423

How to Cite This Article:
Dar MA, Maqbool M, Ara I. Prescription pattern of antibiotics in pulmonary ward of a tertiary care hospital, Jammu and Kashmir. J Evolution Med Dent Sci 2023;12(06):171-175, DOI: 10.14260/jemds.v12i6.423

Submission 02-05-2023,
Peer Review 30-05-2023,
Acceptance 07-06-2023,
Published 30-06-2023.

BACKGROUND

In order to make better use of the limited resources available in the healthcare system, drug use studies are employed. Also, it aids in the detection of drug-related issues. As the use of antibiotics rises, so does the risk of antibiotic resistance becoming a serious issue. Humans and animals all over the world are being infected by microorganisms that are resistant to antibiotics for the first time. Diseases such as MRSA and CRE have become a worldwide problem, and they are resistant to many common antibiotics.[1-10]

There has been a trend towards exorbitant antibiotics in high-income nations, but also to an increase in morbidity and mortality in low-income and middle-income countries, where second-line medications are not easily accessible, because of the lack of efficacy of first-line drugs. It is more expensive to treat patients who have been given the wrong medication, and they are also more likely to die as a result of this. An increase in adverse drug occurrences is also a result of the irrational prescription of medications. An increasingly essential factor in reducing the global spread of bacterial resistance, adverse effects and treatment costs is the prudent application of antibiotics.

There has been a new focus on antibiotic use in quality assurance and cost control challenges. As a result of this, the broadcasting of antibiotic utilization review has been permitted, structured, and continuous. The results of antibiotic use reviews are put to good use to make better use of finite health care resources.[3,11-20]

Patients can be segmented into groups based on disease condition or drug-specific characteristics, and patterns in prescribing can be analyzed. A rise in global population, pollution, urbanisation, overcrowding and climate change are all factors that contribute to an increase in respiratory illnesses.

Antibiotic resistant pathogenic bacteria are on the rise, and they're doing so quickly. In contrast, there have been few new antibiotics in recent years to combat them. To put it another way, there is a huge disconnect between the issue and the remedy.

More than 10 million people in the United States are affected with COPD, which is the third leading cause of death in the respiratory system. Increasingly, COPD is becoming a public health issue around the world. Infections in the upper respiratory tract kill an estimated 2.2 million people every year. Daily inhaled corticosteroid therapy is the most effective treatment for all individuals with chronic asthma, whether as monotherapy or in combination with other therapies. Acute exacerbations may necessitate antibiotic use.[10,21-29]

Though most ARIs are caused by viruses, administering antibiotics to treat them is not uncommon. An important indicator of the proliferation of drug-resistant microorganisms in the population is the use of antibiotic therapy for ARIs, which is quite prevalent.[30-32]

Objective

To study prescription pattern of antibiotics in pulmonary ward of a tertiary care hospital, Jammu and Kashmir.

METHODS

A six-month prospective observational study in a pulmonary ward at a tertiary care hospital in Jammu and Kashmir looked at antibiotic use patterns in a single location. According to the inclusion and exclusion criteria, a total of 355 patients were considered for evaluation. Asthma, bronchitis, pneumonia, chronic obstructive lung disease (COPD), and acute respiratory infections such as the common cold and pharyngitis were all included in the study. Complete documentation of patient demographics, date of admission and discharge, diagnosis, drug name, dose/route administration and rationale and outcome of health status were included in all the prescriptions. For the purposes of medication utilisation studies, the medical records of patients who got antibiotics were kept and examined further.

The Institutional Ethics Committee approved the study protocol and all other documentation related to the study. Patients with lower respiratory tract infections were randomly selected for the study. Because tuberculosis is the most common reason for hospitalisation, it has been given priority over respiratory tract diseases. A form for collecting data was created.

Patients' demographics, past medical history, medication history, social history, family history, chief complaints, co-morbid conditions and laboratory investigations such as complete blood picture, sputum testing, pleural fluid, and bronchoscopy were reviewed for therapeutic evaluation of various antibiotics.

All patients admitted to the pulmonary ward of the hospital during the study period, regardless of gender, were included in the study. The study did not include any pregnant or nursing women or paediatricians or geriatricians. SPSS was used to analyze the collected data and generate patient-related parameters. Percentages represented the findings.

RESULTS

Gender Distribution

In our study, among 355 patients, 230 (64.79%) were males and 125 (35.21%) were females.

S. No	Gender	No. of Patients	Percentage
1.	Male	230	64.79%
2.	Female	125	35.21%
Total		355	100%

Table 1. Gender distribution

Age Distribution with Gender

Higher percentage of our study population belonged to the age group of 41-65 years (53.80%), followed by 19-40 years (32.39%), and >65 years of age (13.80%).

S. No.	Age Group	No. of patients	Males	%	Females	%
1.	19-40	115 (32.39%)	59	16.61%	56	15.77%
2.	41-65	191 (53.80%)	137	38.59%	54	15.21%
3.	> 65	49(13.80%)	34	9.57%	15	4.22%

Table 2. Age distribution with gender

Clinical Presentation of Patients

Among the signs and symptoms of lower respiratory tract infections (LRTIs) are shortness of breath, cough, fever in majority of patients followed by chest pain, hemoptysis.

S. No.	Symptoms	No. of Patients
1.	Shortness of Breath	269
2.	Cough	252
3.	Fever	152
4.	Chest pain	79
5.	Hemoptysis	39
6.	Others	19

Table 3. Clinical presentation of patients

Lobar Involvement Based on Chest X-Ray

In a majority of patients (41.12%), the right lobe of the lung was involved.

S. No	Chest x-ray Lobar involvement	No. of patients	Percentage
1.	Bilobar	127	35.77%
2.	Right lobe	146	41.12%
3.	Left lobe	67	18.87%
4.	Normal	15	4.22%

Table 4. Lobar involvement based on chest x-ray

Sample	Sputum	Pleural Fluid
No of patients (n=355)	311	44

Table 5. Sources of sample specimen

Types of Diseases

In our study, the total number of cases were 355. The highest number of cases observed were Pulmonary Tuberculosis in 157 patients (44.22%), followed by COPD 91 patients (25.63%), Pneumonia 46 patients (12.95%), Pleural effusion 43 patients (12.11%), and Bronchiectasis in 18 patients (5.07%).

S. N.	Types of infections	No. of patients Effected	Percentage
1	Pulmonary Tuberculosis	157	44.22%
2	Pneumonia	46	12.95%
3	Bronchiectasis	18	5.07%
4	COPD	91	25.63%
5	Pleural Effusion	43	12.11%

Table 6. Types of diseases

Life Style of the Study Population

Life style of the study population is listed in the below table. The results revealed that 35.20% of patients had the habit of smoking and 64.80% of the study population were not having any addiction.

S. No.	Life Style	Percentage (%)
1	No addiction	64.80%
2	Smoking	35.20%

Table 7. Life style of the study population

Co-Morbid Conditions

The co-morbidities of study population are given in the below table. The results revealed that 10.70% had Hypertension, 11.26% had Diabetes Mellitus, 7.60% had Asthma, 7.04% were having other comorbidities, and no comorbidities were observed in 63.38% .

S. No	Co-morbid conditions	Number(n=355)	Percentage (%)
1.	Hypertension (HTN)	38	10.70%
2.	Diabetes mellitus (DM)	40	11.26%
3.	Asthma	27	7.60%
4.	Other comorbidities	25	7.04%
5.	No co-morbidities observed	225	63.38%

Table 8. Co-Morbid conditions

List of Antibiotics Used

Name of the antibiotic	No. of patients used
Ceftazidime	20
Metronidazole	101
Ceftriaxone	260
Cefixime	107
Azithromycin	135
Amoxiclav (Amoxicillin + ClavulanicAcid)	65
Ciprofloxacin	20
Doxycycline	28
Cefotaxime	13
Amikacin	25
Meropenem	12
Kanamycin	13
Moxifloxacin	13

Table 9. List of antibiotics used in LRTI's

Antibiotics			Number of patients
Beta lactams	Penicillins	Amoxiclav	65
	Cephalosporins	Ceftriaxone Cefixime Ceftazidime Cefotaxime	400
	Carbapenems	Meropenem	12
Macrolides		Azithromycin	135
Fluoroquinolones		Ciprofloxacin Moxifloxacin	33
Aminoglycosides		Amikacin Kanamycin	38
Others	Tetracycline	Doxycycline	28
	Nitroimidazoles	Metronidazole	101

Table 10. Classification of antibiotics used by patients

Category of Treatment	Name of the drug	No of patients used
Category I	Isoniazid + Ethambutol	157
	Isoniazid + Rifampicin	
	Rifampicin + Isoniazid + Ethambutol	
	(AKT4) Rifampicin + Isoniazid + Pyrazinamide + Ethambutol	
Category II	Rifampicin + Isoniazid + Pyrazinamide + Ethambutol + Streptomycin	

Table 11. Antibiotics used for pulmonary tuberculosis

DISCUSSION

Antibiotics are still very common for people who have LRTI. Recommendations have been made not to use them because they are making respiratory pathogens more resistant to antimicrobials and because they haven't been proven to work. A critical review of the published evidence for the effectiveness of antibiotics shows that there is a surprising lack of data. For a subject that is so common, important, and controversial, there are only a few studies that can help you make decisions based on evidence. Trends in favour of better results were seen for these measures of effectiveness, but statistical significance was not reached. There were no big changes in the side effects in the group that got the medicine. The antibiotics were not likely to change the course of most adult patients' illnesses. A total of 355 patients' records were looked at. Out of the 355 cases, 230 were males and 125 were females (35.21 percent). 53.80 percent of the cases came from people who were between the ages of 41 and 65, which is known to be a high risk group for LRTIs followed by 32.39 percent of people between the ages of 19 and 40. Our case studies show that cephalosporins are the most commonly used antibiotics, with 400 patients using them. Macrolides came in second, with 135 patients, Metronidazole came in third, Penicillins came in fourth, Aminoglycosides came in fifth, Doxycycline came in sixth, Fluoroquinolones came in seventh,

and Carbapenems came in eighth (12 patients). In our study, we looked at 355 people, and 157 of them had Pulmonary Tuberculosis.

CONCLUSIONS

Globally, respiratory illnesses are on the rise due to a growth in population, pollution, urbanization and overcrowding. There is a rapid increase in the number of multi-drug-resistant pathogenic bacteria. There is a risk of severe morbidity and mortality associated with LRTI. Understanding and judicious use of antibiotics may be improved if more people are aware of the long-term nature of LRTIs. In order to understand the advantages and disdvantages of antibiotic treatment, further research is needed. Aiming to improve the quality of life of the severely ill LRTIs patients while also averting future problems is the focus of this study. Intervention measures to encourage reasonable antibiotic usage are warranted, according to the findings of this study. As a result, reducing unnecessary antibiotic use is the greatest method to prevent the development of resistance. An increasing number of people are calling for stricter restrictions on antibiotic use and monitoring. In addition, hospitals should develop standard prescribing procedures for antibiotics based on antibiotic sensitivity patterns. Antibiotic use patterns were examined in the study. Following the empirical therapy and preventive therapy, further antibiotics were recommended. That's what researchers concluded after conducting a study on antibiotic use patterns and extra costs that patients incur as a result of their treatment, and thereby aiding in the creation of antibiotic policies.

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