EVALUATION ON PRESCRIBING PATTERN OF ANTIBIOTICS IN TREATING RESPIRATORY TRACT INFECTIONS WITH WHO CORE DRUG INDICATORS

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Article History	Abstract
	A respiratory tract infection (RTI) in defined as any infectious disease of the upper and lower respiratory tract Acute respiratory tract infection accounts for 12-39% of the in patients attendance in general hospital. A six months hospital based prospective observational study was carried out in the department of medicine at lalitha hospital, Guntur. The aim of the study was to analyse the prescribing patterns of antibiotic in respiratory tract infection at medicine department. The study results showed that out of 100 patients, more prevalent LRTI were 90 (90%) URTI were 10 (10%) The COPD, pneumonia, asthma were more prominent among LRTIs, whereas Pharyngitis and tonsilitis are prominent among URTI Results showed that for 100 patients 107 antibiotics were prescribed, most widely used antibiotics were penicillin+betalactam (38.31%). In our study the prescribers are relying upon higher antibiotics, this practise may lead to the antibiotic resistance and other complications of antibiotic resistance. Prescription analysis shows the way towards ratio use of drugs. Irrational drug use could also lead to ineffective and unsafe treatment and exacerbation and prolongation of illness, distress and harm to the patients. Hence prescription audit is necessary and the Clinical Pharmacist interventional programs should focus on promoting infections control with rational antibiotic prescription aimed at minimizing the future emergence of bacterial resistance. To overcome the irrational use of antibiotic, the study suggests the need of antibiotic prescribing guidelines for respiratory tract infections at the study site. *Keywords:* Antibiotic, prescription, RTIs, Antibiotic resistance.

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Introduction

Antibiotics are the substances produced by microorganisms, which selectively suppress the growth or kill other micro organisms at very low concentrations [1]. Antibiotics are one of the pillars of modern medical care and play a major role both in the prophylaxis and treatment of infectious diseases. The issues of their availability, selection and proper use are of critical importance to the global community [2], Infectious diseases remain a significant threat to public health, posing risks to individuals regardless of age, sex, ethnic background, socioeconomic status, or lifestyle [3]. A respiratory tract infection (RTI) is defined as any infectious disease of the upper and lower respiratory tract. In India, acute respiratory tract infections (ARTI) are responsible for one million deaths.

Out of these 10-15% is due to acute lower respiratory tract infections (ALRTIs). There is inadequate information from India on various lower respiratory tract bacterial pathogens and their resistance patterns in hospital settings [4]. The RTIs includes Upper respiratory tract infection (URTI), it is a nonspecific term used to describe acute infections such as common cold pharyngitis, sinusitis, and tracheobronchitis.

Lower respiratory tract infections (LRTIs) are frequent and include community acquired pneumonia (CAP), exacerbations of chronic bronchitis (ECB), acute bronchitis (AB), and viral lower respiratory tract infection (VRTI). The antibiotic prescription for LRTI remains controversial [5, 6]. Infections of LRTI are responsible for 4.4% of all hospital admissions and 6% of all general practitioner consultations. They also account for 3% to 5% of deaths in adults, especially over the age of 60 years. Therapy for community acquired lower respiratory tract infections (LRTIs) is often empirical [7]Inappropriate use of antibiotics, particularly for RTIs, has contributed to the major public health problem of antibiotic resistance in the community.Improper antibiotic use includes too low dose, too long duration, wrong choice of antibiotics, improper

combination of antibiotics and therapeutic or prophylactic use in unwarranted/unproven clinical situations.An audit of antibiotic prescribing patterns is an important indicator of the quality and standard of clinical practice. The study of prescribing patterns is a part of medical audit and seeks to monitor, evaluate and if necessary, suggest modifications in prescribing practices to make medical care rational [8].

Irrational prescription of antibiotics by clinicians might lead to drug resistance. Clinicians do prescribe antibiotics for either prophylactic or therapeutic reasons. By considering the above facts the study entitled "Analysis of prescription pattern of antibiotics in respiratory tract infections at medicine department at a tertiary care hospital", was undertaken to analyze the prescription pattern of antibiotics. This will help to promote the rational use of antibiotics.

Aim

Evaluation on prescribing pattern of antibiotics in treating respiratory tract infections with WHO core drug indicators.

Objectives

1. To study the prescribing pattern of antibiotics in treating respiratory tract infections.
2. To assess the rationality of antibiotics prescribed.

Methods

Study was conducted at Department of Medicine, lalitha Teaching and General Hospital, Guntur. Which is a 1100 bedded teaching hospital, and is a one of the largest hospital in Guntur. The study was carried about 6month's period. The study was a prospective- observational study. The patients admitted to at Medicine Department were enrolled in to the study by considering the following inclusion and exclusion criteria after taking consent from the Patients/ attenders of the patients in a suitably designed informed consent form.

Inclusion criteria

1. Patients with age group 18-60 years.
2. Only inpatients are included.
3. Both male and female patients are included.
4. Patients with upper and lower respiratory tract diseases are included.

Exclusion criteria

1. Patients with age<18 years and above 60 years.
2. Pregnant and lactating women's are excluded.

Results and Discussion

A total of 100 patients with respiratory tract infections were enrolled into the study out of which 67 (67%) were male patients and 33(33%) were female patients.

TABLE 1: CLASS OF PRESCRIBED ANTIBIOTICS:

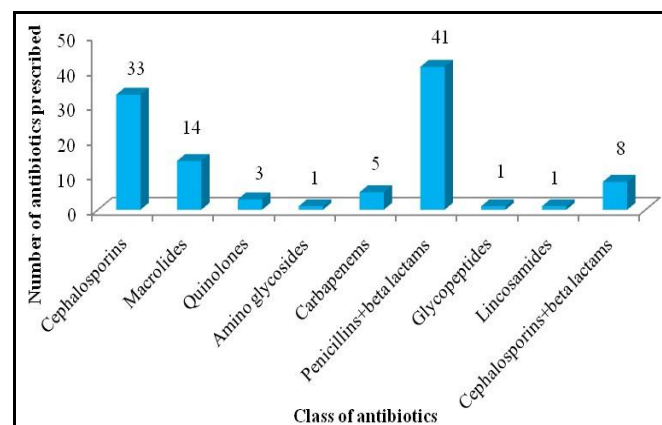| Class of antibiotics	Number of antibiotics prescribed (n=107)	Percentage (%)
Cephalosporins	33	30.84
Macrolides	14	13.08
Quinolones	03	2.80
Amino glycosides	01	0.93
Carbapenems	05	4.67
Penicillins+beta lactams	41	38.31
Glycopeptides	01	0.944
Lincosamides	01	0.944
Cephalosporins+beta lactams	08	7.47

FIG-1: Class of Prescribed Antibiotics

The analysis of prescriptions for class of antibiotics, the results showed that penicillins+betalactams 41 (38.31%) were widely prescribed antibiotic, followed by cephalosporins 33 (30.84%), Macrolides 14 (13.08%), cephalosporins+beta lactams 08 (7.47%), carabapenems 05 (4.67%) and quinolones 03 (2.80%), amino glycosides 01 (0.93%), glycopeptides 01 (0.94%), lincosamides 01 (0.94%). Whereas the study conducted by Mazzaglia G et al, the most frequently used antibacterial agents were cephalosporins (55%), followed by penicillins (11.7%), fluoroquinolones (11.4%), macrolides (10.1%) combination of penicillin's +beta lactamase inhibitor (7.9%).

Table-2: Types of Prescribed Cephalosporins

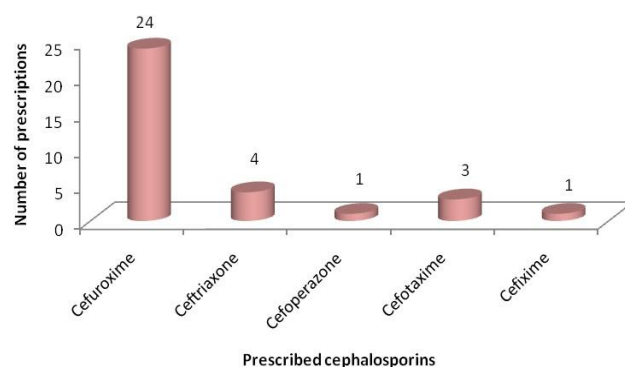| Prescribed cephalosporins	Number of prescriptions	Percentage (%)
Cefuroxime	24	73.00
Ceftriaxone	04	12
Cefoperazone	01	03
Cefotaxime	03	09
Cefixime	01	03

FIG-2: Types of Prescribed Cephalosporins

Among 33 prescribed cephalosporins the most widely prescribed cephalosporin was cefuroxime 24 (73%), followed by ceftriaxone 04 (12%), cefotaxime 03 (9%), cefoperazone 01 (3%) and cefixime 01 (3%). Whereas the study conducted by Ratima I et al, cefdinir (72%) is the most prescribed drug

among the Cephalosporins followed by cefuroxime (16%) and cefditoren (11%) .

TABLE-3 TYPES OF PRESCRIBED MACROLIDES

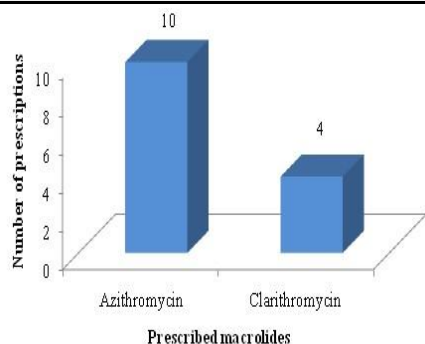| Prescribed macrolides	Number of prescriptions	Percentage (%)
Azithromycin	10	71.42
Clarithromycin	4	28.57

FIG-3: Types of Prescribed MACROLIDE

Among 14 prescribed macrolides the most prescribed regimen was azithromycin 10 (71.42%) followed by clarithromycin 04 (28.57%).

TABLE-4: types of prescribed penicillins + beta lactamase inhibhitors

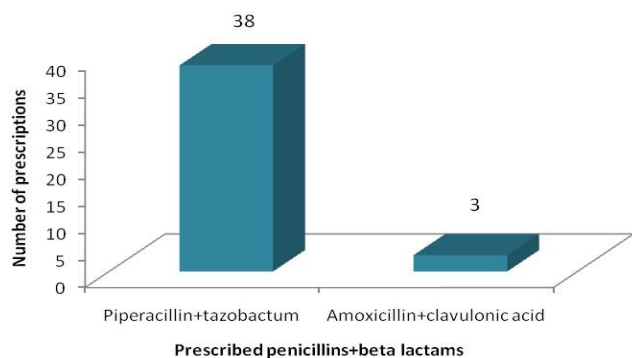| Prescribed penicillins+beta lactams	Number of prescriptions	Percentage (%)
Piperacillin+tazobactum	38	92.68
Amoxicillin+clavulonic acid	03	07.32

FIG-4: Types of Prescribed Pencillins+Betalactamase Inhibhitors

Among 41 penicillin +beta lactam class of antibiotic the most preferred antibiotic was piperacilliin+tazobactum 38 (92.68%) followed by amoxicillin+clavulanic acid with 03 (7.31%) prescriptions.

TABLE 5: Types Of Prescribed Cepahlosporins+Beta Lacatmase

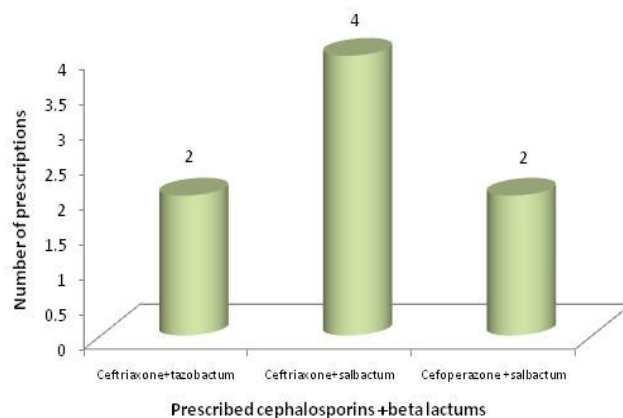| Prescribed cephalosporins +beta lactums	Number of prescriptions	Percentage (%)
Ceftriaxone+tazobactum	2	25
Ceftriaxone+salbactum	4	50
Cefoperazone +salbactum	2	25

FIG-5: Types of Prescribed Cephalosporins+Beta LACTAMASE

Among 8 cephalosporins + beta lactams class the preferred antibiotic was ceftriaxone +sulbactum 04(50%) followed by ceftriaxone+tazobactum 02 (25%), and cefoperazone+salbactum with 02 (25%) prescriptions.

Prescriptions with brand name and generic name:

TABLE 6: DETAILS OF PRESCRIPTIONS WITH BRAND NAME AND GENERIC NAME

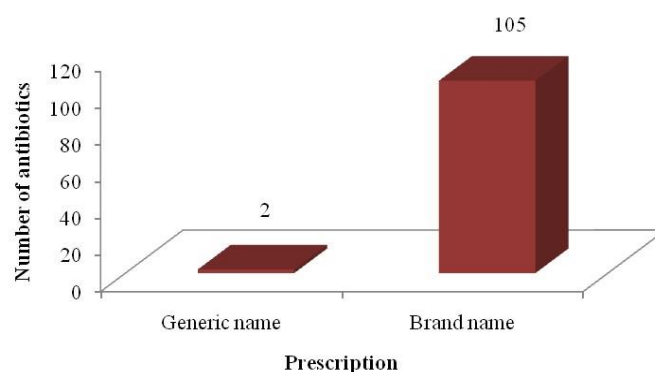| Prescription with	Number of antibiotics	Percentage (%)
Generic name	2	1.87
Brand name	105	98.13

FIG-6: Details of Prescriptions With Brand Name And Generic Name

From the prescribed 107 antibiotics more number of antibiotics were prescribed with brand names 105 (98.13%) and remaining 02 (1.87%) were with the generic name of the drug,

Details of Number of antibiotics per prescription

TABLE 7: Details of No of Antibiotics per Prescription

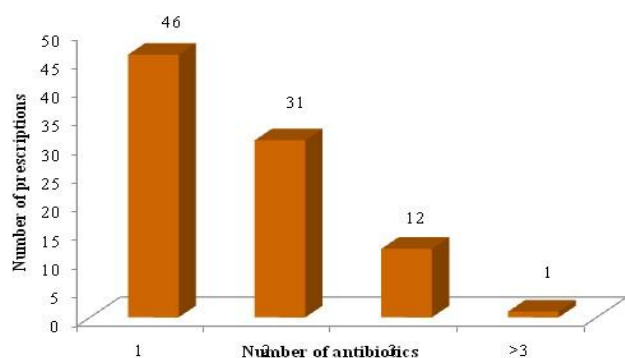| Number of antibiotics	Number of prescriptions	Percentage (%)
1	46	51.12
2	31	34.44
3	12	13.33
>3	1	1.11

FIG-7: Details of No of Antibiotics per Prescription

Out of 90 prescriptions more prescriptions 46 (51.12%) were with one antibiotic, 31 (34.44%) with two antibiotics, 12 (13.33%) were with three antibiotics and 01 (1.11%) were with more than three antibiotics.

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Inform Consent

Not Applicable

Ethical Statement

Not Applicable

Conflict of Interest

Authors are declared that no conflict of interest

Author Contribution

All authors are contributed equally

Conclusion

The prescribers are prescribing higher antibiotics rather than the lower antibiotics, though several antibiotic guidelines for RTIs recommend the use of lower antibiotics. Prescribers are prescribing higher antibiotics for geriatric patients. This practice is also not complying with the well accepted antibiotic guidelines. At the study site the prescribers are not having any standard antibiotic prescribing guidelines for RTIs nor are they following any standard guidelines available. Hence there is a need of educational programmes in order to bring rational use of antibiotics that requires development of standard guidelines for antibiotic prescription at the study site.

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