IJPSR (2015), Vol. 6, Issue 7 **(Research Article)**

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

Received on 29 November, 2014; received in revised form, 14 February, 2015; accepted, 27 March, 2015; published 01 July, 2015

ANALYSIS OF THE PRESCRIBING PATTERNS OF ANTIBIOTICS IN RESPIRATORY TRACT INFECTIONS AT DEPARTMENT OF MEDICINE AT A TERTIARY CARE HOSPITAL

Priyanka Errabelly*, Vineela Ramavath, Arshiya Afreen and Alekya Sanaboina

HKES Mathoshree Taradevi Rampure Institution of Pharmaceutical Sciences, Gulbarga, Karnataka, India

Keywords:

Antibiotic; Prescription; RTIs; Antibiotic resistance

Correspondence to Author:
Priyanka Errabe

HKES Mathoshree Taradevi Rampure Institution of Pharmaceutical Sciences, Gulbarga, Karnataka, India

E-mail: epriya1712@gmail.com

ABSTRACT: A respiratory tract infection (RTI) is defined as any infectious disease of the upper and lower respiratory tract. Acute respiratory tract infection accounts for 12-35% 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 BTGH, Gulbarga. The aim of the study was to analyse the prescribing patterns of antibiotic in respiratory tract infection at medicine department. The study result showed that out of 90 patients, more prevalent LRTI were 86(95.5%), URTI were 4(4.5%) The COPD, pneumonia, asthma were more prominent among LRTIs, whereas pharyngitis and tonsillitis are prominent among URTIs. Results showed that for 90 patients 107 antibiotics were prescribed, most widely used antibiotics were penicillins + betalactams (38.31%). In our study the prescribers are relying upon higher antibiotics, this practise may lead to the antibioic resistance and other complications of antibiotic resistance. Prescription analysis shows the way towards rational 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 infectious 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.

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.[4] A respiratory tract infection (RTI) is defined as any infectious disease of the upper and lower respiratory tract.[5]

QUICK RESPONSE CODE

DOI: 10.13040/IJPSR.0975-8232.6(7).2963-67

Article can be accessed online on: www.ijpsr.com

DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.6(7).2963-67

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.[6] 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 infections (VRTI). The antibiotic prescription for LRTI remains controversial. [8, 9] 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.[10] 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. [12]

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.

METHODS: Study was conducted at Department of Medicine, HKES's Basaveshwar Teaching and General Hospital, Gulbarga. Which is a 765 bedded teaching hospital, and is a one of the largest hospital in Gulbarga. The study was carried about 6months 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 includes: Inpatients of either sex and above 18 years admitted at department of medicine, Inpatients diagnosed with RTI, Inpatients prescribed with antibiotics treatment, Inpatients willing to participate in the study.

Exclusion criteria: Patients suffering with other than RTI's. Immunosupressed patients. Finally the collected data was compared with standard guidelines like BPAC (Best Practise Advocacy Centre).

RESULTS AND DISCUSSION:

A total of 90 patients with respiratory tract infections were enrolled into the study out of which 46 (51.11%) were male patients and 44 (48.89%) 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

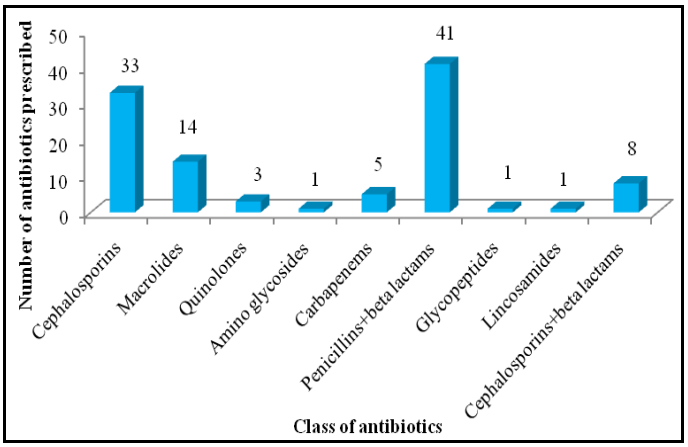

FIG.1: CLASS OF PRESCRIBED ANTIBIOTICS

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%).

Types of prescribed cephalosporins:

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

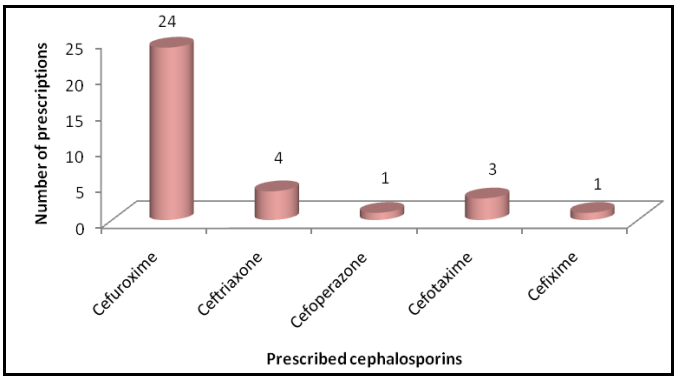

FIG.2: TYPES OF PRESCRIBED CEPHALOSPORINS

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%).

Types of prescribed macrolides:

TABLE 3: TYPES OF PRESCRIBED MACROLIDES

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

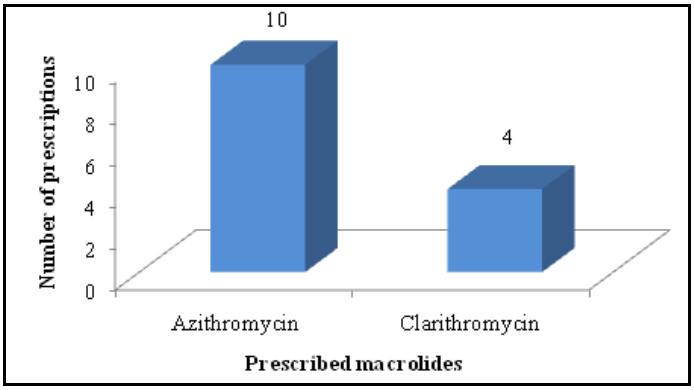

FIG.3: TYPES OF PRESCRIBED MACROLIDES

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

Types of prescribed penicillins + beta lactamase:

TABLE 4: TYPES OF PRESCRIBED PENICILLINS + BETA LACATAMASE

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

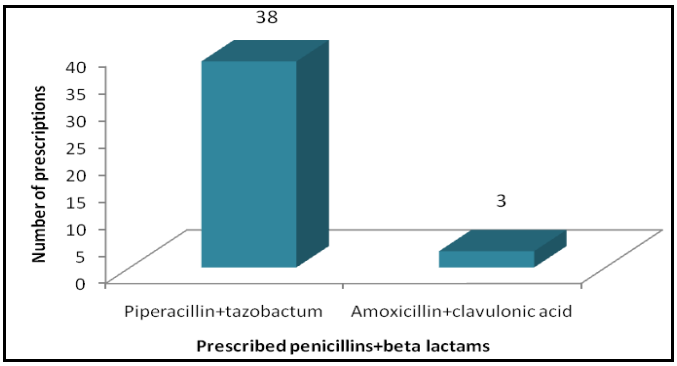

FIG. 4: TYPES OF PRESCRIBED PENICILLINS+ BETA LACATAMASE.

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.

Types of prescribed cephalosporins +beta lactams:

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

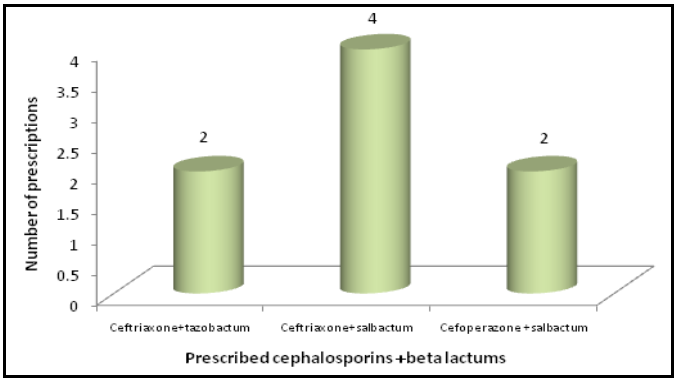

FIG. 5: TYPES OF PRESCRIBED CEPAHLOSPORINS + BETA-LACATMASE

Among 8 cephalosporins + beta lactams class the preferred antibiotic was ceftriaxone +salbactum 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

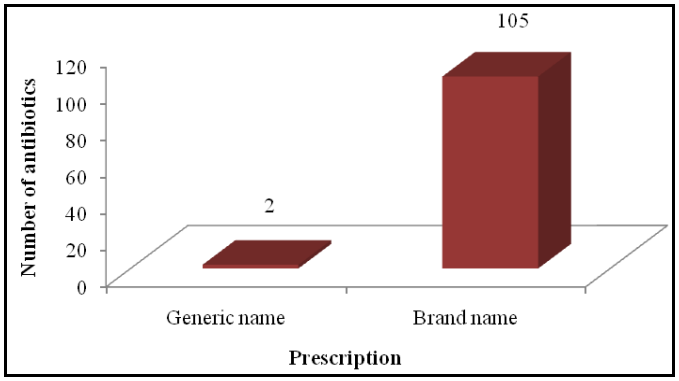

FIG. 6: DETAILS OF PRESCRIPTIONS WITH BRAND NAME AND GENERIC NAME

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

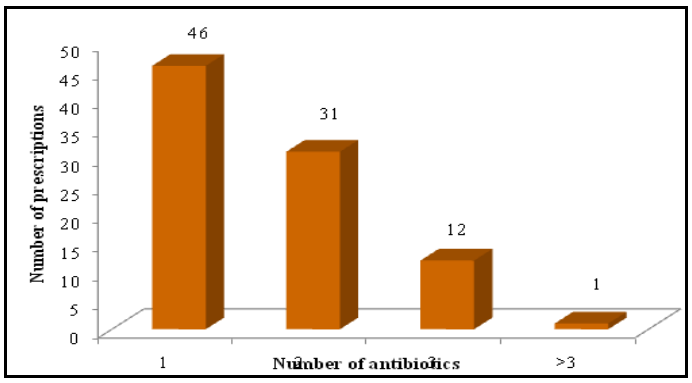

FIG.7: DETAILS OF NUMBER OF ANTIBIOTICS PER PRESCRIPTION

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.

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.

ACKNOWLEDGEMENT: We are thankful to all the faculty members of Department of pharmacy practice HKES MTRIPS and BTGH, Gulbarga, for their valuable guidance. We extend our heartfelt thankfulness to all the patients for their participation and support to complete this work.

REFERENCES:

1. Tripathi KD. Essentials of Medical Pharmacology. 5th ed. New Delhi: Jaypee Brothers Medical Publishers (Pvt) ltd; 2008-09:627-9.
2. Teferra A, Mohammed K. The pattern of antibiotic usage in surgical inpatients of a teaching hospital, Northwest Ethiopia. Ethiop J Health Dev.2004; 18 (1): 35-8.
3. Srishyla MV, Naga Rani, Venkataraman BV. Drug utilization of antimicrobials in the in-patient setting of a tertiary hospital. Indian J Pharmacol. 1994; 26: 282-7.
4. Mohan H. The Respiratory system. Text book of Pathology, 4th ed. New Delhi: Jaypee Brothers Medical Publishers (Pvt) ltd; 2000: 438-9.
5. Prescribing of antibiotic for self limiting respiratory tract infections in adults and children in primary care; Nice Clinical Guidelines in UK. 2008; 8: 69.
6. Khan IA, Shobha Rani RH, Subramanyam G. Efficacy and safety of azithromycin with various cephalosporins used in treatment of lower respiratory tract infection. Indian J. Pharm. Pract. 2009; 1(2):53-61.
7. Okesola AO, Ige OM. Trends in Bacterial Pathogens of Lower Respiratory Tract Infections. Indian J Chest Dis Allied Sci. 2008; 50:269-72.
8. Davey PG, et al. The influence of case mix, site selection, and methods biases on costs of hospitalization for acute exacerbations of chronic obstructive airways disease and lower respiratory tract infections. ISPOR. 1999; 2(5): 333-41.

9. Mainous AG, Saxena S, Hueston WJ, Everett CJ, Majeed A. Ambulatory antibiotic prescribing for acute bronchitis and cough and hospital admissions for respiratory infections: time trend analysis. J R Soc Med. 2006; 99(7):358-62.
10. Peterson LJ. Antibiotics, their use in therapy and prophylaxis. In: Topazian RG, Goldenberg MH, eds. Management of infections of the oral and maxillofacial region, 2nd ed. Philadelphia: WB Saunders Company; 1987
11. Tenover FC, Hughes JM. The challenges of emerging infectious diseases. J Am Med Assoc. 1996; 275:300–4.
12. Gujar A, Tiwari P. Antimicrobial drug use in hospitalized children. CRIPS. 2008; 9(1):2-6

How to cite this article:
Errabelly P, Ramavath V, Afreen A and Sanaboina A: Analysis of the Prescribing Patterns of Antibiotics in Respiratory Tract Infections at Department of Medicine at a Tertiary Care Hospital. Int J Pharm Sci Res 2015; 6(7): 2963-67.doi: 10.13040/IJPSR.0975-8232.6(7).2963-67.