Research Article

DOI: http://dx.doi.org/10.18203/2349-3291.ijcp20162381

Prescribing pattern of drugs in upper respiratory tract infections in pediatric out patients

Nivil Joseph¹*, Bharathi DR¹, Sreenivasa B.², Nataraj GR¹, Neethu George¹, Safdar M.¹

Received: 27 May 2016 Accepted: 02 July 2016

*Correspondence: Dr. Nivil Joseph,

E-mail: Nivil.joseph233@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Upper respiratory tract infections are the most frequently occurring illness of childhood. The common types of upper respiratory tract infections are common cold, rhinitis, laryngitis, pharyngitis, otitis media and sinusitis. Common misuse of antimicrobial agents is seen in infections caused by viruses, which are self-limited and they do not respond to the currently available anti-infective agents.

Methods: A prospective observational study was conducted at pediatric out-patient department of Basaveshwara Medical College Hospital and Research Centre, Chitradurga for a period of six months. The data was collected from outpatient record in a suitably designed individual case record form of the patients diagnosed with upper respiratory tract infection.

Results: A total of 120 patients aged less than 13 years were collected from the paediatric outpatient department of a tertiary care teaching hospital. The most common diagnosis was nonspecific upper respiratory tract infections (49.1%). Only 10 drugs were prescribed from the essential drug list. Amongst all drug class, respiratory drugs were prescribed in more (29%), antihistamines (24.6%), antimicrobials (24.3%), Non-steroidal anti-inflammatory drugs (18%) and nasal drops (4.1%). In antimicrobials, amoxicillin + clavulanic acid (45.8%) was the highly prescribed combination. The main drug interactions were between chlorpheneramine and terbutaline.

Conclusions: Antibiotic prescriptions were inappropriate in acute self-limiting upper respiratory tract infection. Antibiotics are over prescribed for paediatric upper respiratory tract infections. Amoxicillin with clavulanic acid combination were preferentially prescribed. Doctors should be educated on more appropriate and cost effective prescribing.

Keywords: Upper respiratory tract infections, Prescription pattern, Antimicrobials, Antibiotics

INTRODUCTION

Respiratory tract infections are the predominant cause for most of the health care consultation. Viruses are perhaps the major cause for these infections. The types of Upper Respiratory Tract Infections (URTIs) are: common cold, pharyngitis, otitis media and sinusitis. URTI forms a continuum with lower respiratory tract infection, which is more often associated with bacterial infection. Wide number of URTIs is caused by viruses that are self-limited.

Rational prescribing - a written prescription is the prescriber's order to prepare or dispense a specific treatment-usually medication-for a specific patient³. Common cold is a mild, self-limiting disease and two-thirds of sufferers recover within a week. Corona viruses are the substantial cause for minority of colds which include respiratory syncytial virus, influenza, parainfluenza and adenovirus.⁴ The current treatment approaches of common cold can be divided into: the antiviral and the anti-inflammatory.⁵ The better treatment for URTIs is non-pharmacological treatment.

¹Department of Pharmacy Practice, SJM College of Pharmacy, Chitradurga- 577502, Karnataka, India

²Department of Pediatrics, Basaveshwara Medical College Hospital and Research Centre, Chitradurga-577502, Karnataka, India

A study clearly reveals that there is an inappropriate use of antibiotics, mainly the broad-spectrum antibiotics, which has contributed largely to the development of antibiotic resistance.⁶

Although awareness of the consequences of antibiotic misuse is increasing, over prescribing remains widespread. It is driven largely by patient demand, time pressure on clinicians and diagnostic uncertainty. If the gains in the treatment of infectious diseases are to be preserved, clinicians must be wiser and more selective in the use of antimicrobial agents.⁷

The study attempts to analyze the current prescription patterns of drugs used in the treatment of URTI. Findings of this study are expected to provide relevant and useful feedback to pediatricians and general practitioners.

METHODS

A Prospective Observational Study was conducted at paediatrics out-patient department of Basaveshwara medical college Hospital and Research Centre, Chitradurga. The study was conducted for a period of six months and accepted by Institutional Human Ethical Committee of the S.J.M College of Pharmacy, Chitradurga. (SJMCP/IEC–543j/2014- 15 Date 13/10/14).

The details of the patients were documented in a suitably designed case record form of those patients diagnosed with upper respiratory tract infections. The study included only one prescription per patient and the data collected were transferred into excels worksheet. All these results were statistically analyzed by using the statistical package for social service SPSS-19 version, using descriptive statistics.

RESULTS

During the 6 months study period, there were a total of 120 admissions of pediatric out patients with upper respiratory tract infections. A gender distribution of the subjects indicated 69 were males and 51 were females. It was observed that majority of patients comes under the age group of 1-5 years. The average number of drugs per prescription was 3.38. The drug prescribing indicators are summarized in Table 1.

Majority of patients suffering with Non-specific URTI 59 (49.1%), followed by common cold 34 (28.3%), URTI with PND 15 (12.5%), rhinitis and sinusitis were diagnosed in equal number of patients i.e. 4 (3.3%), laryngitis and otitis media also diagnosed same numbers i.e. 2 (1.7%).

A total of 345 drugs were prescribed for 120 patients. Table 2 shows the commonly prescribed drug classes. Respiratory drugs are the most frequently prescribed 100 (29%), followed by Antihistamines 85 (24.6%), Antimicrobials 84 (24.3%), NSAIDs and Antipyretics – Analgesics 62 (18%), and Nasal drops 14 (4.1%).

Table 1: Prescribing indicators among outpatients.

Parameter	Number
Total number of prescriptions analyzed	120
Total number of drugs prescribed	345
Average number of drugs per encounter	3.38
% of encounters with an antibiotic prescribed	70
% of encounter with an injection prescribed	0
Number of drugs from WHO essential drug list	10

Table 2: Distribution of different class of drugs.

Drug class	Frequency	%
Antimicrobials	84	24.3
NSAIDs and antipyretics - analgesics	62	18
Antihistamines	85	24.6
Respiratory drugs	100	29
Nasal drops	14	4.1

Table 3: Frequency of individual antimicrobials for specific diagnosis.

Diagnosis	Antimicrobials						
Common cold	A	В	С	D	Е	F	G
Laryngitis	3	12	2	2	0	6	0
Otitis media	0	2	0	0	0	0	0
Rhinitis	0	0	0	0	0	0	0
Sinusitis	0	0	0	0	0	0	0
Nonspecific URTI	0	2	0	0	0	0	2
Nonspecific URTI with PND	0	32	0	4	2	2	0

A – Amoxicillin; B – Amoxicillin + Clavulanic acid; C – Azithromycin; D – Cefpodoxime + Clavulanic acid; E – Cefixime; F- Cefpodoxime; G- Cefalexin.

The percentage of encounter with an antibiotic prescribed was 70. Among 84 antimicrobials 65 were fixed drug combinations (FDC), Amoxicillin + clavulanic acid combination was the leading antibiotic prescribed 55 (45.8%), and mainly prescribed for Non- specific URTI. Penicillin's group of antibiotics is the most frequently prescribed 69% followed by Cephalosporins 21.4% and Macrolide antibiotics 9%. Use of antimicrobials is summarized in Figure 1 and Table 3.

In this study the most frequently occurring drug interactions was Chlorpheneramine + terbutaline (8) followed by Chlorpheneramine + phenylephrine (7), Salbutamol + terbutaline and Mefenamic acid + terbutaline occur in same frequency (2).

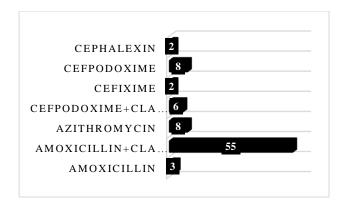


Figure 1: Distribution of individual AMAS.

DISCUSSION

In the present study, the highly prescribed antimicrobials were penicillin's for example amoxicillin with clavulanic acid 55 (45.8%) followed by cephalosporin's. Mohan S et al, too reported that penicillin's are the highly prescribed drugs, i.e. Amoxicillin with clavulanate 55 (60.4%) was the preferred drug for all URTIs. Similar findings were also published by Nandimath MK et al. 9

Arnold SR et al reviewed the patient charts in which diagnostic codes are used in billing suggested possible respiratory tract infection. ¹⁰ In my review there is no diagnostic codes used by the practitioners hence there was a chance of inappropriate diagnosis was high.

Studies by Nandimath MK et al, shows that antimicrobials are the highly prescribed drugs followed by NSAIDs and antihistamines. In antihistamines chlorpheneramine was prescribed highly (40.4%). In my study, amongst all prescription respiratory drugs are highly prescribed followed by antihistamines, antimicrobials, NSAIDs and antipyretics and analgesics and nasal drops. Cetirizine is prescribed highly prescribed as antihistamines (43.3%).

Compare to Nandimath et al, study in my study less drug interaction because the chlorpheneramine will cause drug interactions with respiratory drugs like terbutaline and phenylephrine.¹

CONCLUSION

The majority of children in this study were in the age group of 1-5 years. Antibiotics are over prescribed for self-limiting URTIs. Penicillin's are the highly prescribed antimicrobials followed by ceftriaxone. Amoxicillin and clavulanic acid combination was most prescribed medication in hospital. Only 10 drugs are prescribed from WHO essential drug list. Doctors should be educated for more appropriate and cost effective prescribing.

ACKNOWLEDGEMENTS

The authors are thankful to the Management of SJM Vidyapeetha, Principal of SJM College of Pharmacy and Basaveshwara Medical College Hospital & Research Centre, Chitradurga for granting the permission and providing the facilities for the successful completion of our study.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- Meena KN, Ahuja S. Drug Prescribing Pattern In Upper Respiratory Tract Infection In Children Aged 1 – 14 Years. International Journal of Pharma and Bio Sciences. 2012;3(1):299-308.
- Mlynarczyk G, Mlynarczyk A, Jeljaszewicz J. Epidemiological aspects of antibiotic resistance in respiratory pathogens. Elsevier Inc. 2001;18(6):497-502.
- 3. Bertram GK. Rational prescribing and Prescription writing. Basic and Clinical Pharmacology.10th ed. McGraw Hill. 2007:1063.
- 4. De Sutter AIM, Lemiengre M, Campbell H.Antihistamines for the common cold. The Cochrane Collaboration. 2009;8:1-116.
- 5. Mediratta PK, Sharma KK, Verma V.A review on recent development of common cold therapeutic agents. Indian J Med Sci. 2000;54:485-90.
- Bharathiraja R, Sivakumar S, Luke RC, Saradha S, Mangayarkarasi S. Factors Affecting Antibiotic Prescribing Pattern in Pediatric Practice. Indian J Pediatr. 2005;10:877-9.
- 7. Laurence LB. General principles of antimicrobial therapy. Laurence LB. Goodman and Gilman's the pharmacological Basis of Therapeutics. 11thed. New York, NY: McGraw Hill. 2006:1095.
- 8. Tom F, Nigel S, Toby T. Systematic review of the treatment of upper respiratory tract infection. Arch Dis Child. 1998;79:225-30.
- Meena KN, Nagesh BCV. Judicious Use of Antibiotics in Viral Infections. JIMSA 2014;27(4):193-194.
- Sandra RA, Upton DA, Mohammed A, Darrell HST, Elaine ELW. Antibiotic Prescribing by Pediatricians for Respiratory Tract Infection in Children CID. 1999;29:312-7.

Cite this article as: Joseph N, Bharathi DR, Sreenivasa B, Nataraj GR, George N, Safdar M. Prescribing pattern of drugs in upper respiratory tract infections in pediatric out patients. Int J Contemp Pediatr 2016;3:1006-8.