

Drug utilization pattern of antimicrobials in OPD of ENT in teaching hospital

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ABSTRACT

Background: A drug utilization study may be helpful to identify the problems, suggest the remedial measures and promote rational use. Antimicrobials are commonly used to treat infections caused by bacteria, viruses, protozoa and fungi, evidently require huge prescriptions in India.

Methods: A prospective, observational study was carried out for a period of four months from February to May 2019 in the Department of ENT (OPD) at NRI Medical College and General Hospital. Prescriptions were collected randomly from around 300 patients attending the ENT outpatient department after obtaining informed consent. The data were collected in the predesigned proforma for analysis.

Results: 300 ENT patients were selected for the study, 62% were male and 38% were female. Out of 300 patients 190 ear disorders, 50 nasal, and 60 throat infections. Antimicrobial therapy were most commonly instituted in ear diseases (67.66%), nose (16.95%) and throat (15.37%) respectively. The most commonly used agents were amoxicillin with clavulanic acid- n=295, cefixime- n=1260, gentamicin- n=200, ciprofloxacin- n=157, azithromycin- n=199, nitroimidazoles (metronidazole- n=111).

Conclusions: Cefixime and amoxicillin+clavulanic acid combination was the most commonly prescribed antibiotic in our study. Interventions to rectify the use of brand names are necessary to promote rational drug use. An antibiotic policy has to be developed for the doctors in treating infections so that rationality in using the antibiotics will be developed and the occurrence of antibiotic resistance can be reduced.

Keywords: Antibiotic, ENT, OPD, Prescribing pattern

INTRODUCTION

Diseases of the ear, nose and throat (ENT) are very common problems in adults and children which may cause impairment of routine daily activity. It was observed that common cause of hearing loss in global population, especially in children was due to upper respiratory tract infections (URTIs). The world health organization (2004) estimated that respiratory infections produce 94.6 disability adjusted life years worldwide.¹ Antimicrobial drugs used to treat disorders caused by bacteria, viruses, protozoa and fungi, evidently require huge prescriptions in India. URTIs including nasopharyngitis, pharyngitis, tonsillitis and otitis media constitute a

major proportion of the total episodes of respiratory infections.² Therefore, it is imperative to evaluate and monitor the drug utilization patterns from time to time, to enable suitable modifications in prescribing patterns, to increase the therapeutic benefit and decrease the drug adverse effects and to optimize the medical service for the patients. Commonly used drugs for the respiratory tract infections are antibiotics like amoxicillin, amoxicillin+ clavulanic acid, cefixime, cefuroxime. A central and still largely unanswered question is how antibiotics should be administered clinically to minimize resistance development without compromising safety and efficacy due to easy availability of the antibiotics as over the counter medication. The International Network for the

Rational Use of Drugs (INRUD) was established in 1989 to promote the rational use of drugs in developing countries.³ It is well known fact that, if the injudicious use of antimicrobials in hospitals and the easy availability as over the counter can be checked, the misuse of antibacterials can be avoided. Several remedial measures can be applied to this situation, but before that, it is necessary to evaluate the existing base line practice. A drug utilization study may therefore help us to identify the problems, suggest the remedial measures and promote rational use. So, the purpose of this study is to ascertain the quality of antimicrobial drugs use, with a view to devise some appropriate interventions to correct the fallacies, if any.⁴

METHODS

This prospective study was conducted in the Department of ENT (OPD) at NRI Medical College and General Hospital, Chinakakani, Guntur and collected data based on antimicrobial agents prescribed in ear, nose and throat infections. All the data were recorded in case record form (CRF). The sources of data were physicians prescribing records, patient's medication profile and weekly diary cards. Patient profile (age, sex, weight, patient's address), drugs prescribed (generic/brand name), doses and frequency were recorded.⁵ Patients were interviewed after their informed consent was obtained. Interviews were conducted by using structured questionnaire (open question method). Weekly diary cards were used to determine patient compliance. Non-compliance was considered if there was <80% of recommended intake of prescribed drugs.

Inclusion and exclusion criteria

All the patients who are taking antimicrobial agents were included in the study.

- The pregnant ladies and lactating mothers were excluded from the study.
- The patients who are not taking antimicrobial agents and those who are not being able to give consent are to be excluded.
- Those patients who did not want to participate into the study will be also excluded from the study.

Statistical analysis

Results were expressed in percentage. The data were entered in Microsoft excel and data were analyzed by SPSS software version 19.

RESULTS

700 patients who visited the ENT OPD, 300 patients were selected for the study. Among the 300 patients, 62% were male and 38% were female. The highest numbers of patients were in the age group of 16-40 years. During the study, it was observed that 190 patients visited for ear

disorders, 50 for nasal disorders, and 60 for throat infections. During the study, it was observed that the most commonly prescribed antibacterials were β -lactam (penicillins and cephalosporins)- n=1816, followed by aminoglycosides- n=226, macrolides- n=19, flouroquinolones- n=51 (Table 1).

Table 1: Pattern of data of ENT patients.

S.no.	Parameters	Results
1	Total number of samples or patients	300
2	OPD sample or patients	300
Gender distribution		
3	Male	62%
	Female	38%
4	Diagnosis	
	Ear disease	190
	Nose and throat disease	110
	Total drug prescribed	3890
5	Average drugs/prescription	3.26
6	Total antibiotic prescribed	3232
7	No of oral antibiotic prescribed	247
8	Average antibiotic /prescription	1.7
9	No of topical antibiotic prescribed	90
10	Poly-pharmacy practice	32%
11	Injectable prescribed	0%
12	Most commonly prescribed antibiotic	β -Lactams
13	Percentage of antibiotic prescribed from essential drug list	70%
14	Encounters with brand names	100%
15	No of other concomitant medication prescribed	315
16	Concomitant medication prescribed (other than antibiotic like NSAID, vitamins)	Phenylephrine+ paracetamol+ levocetirizine, mucolyte, xylometazoline, diclofenac, multivitamins

The most commonly used agent of these classes, i.e., β -lactam was penicillins (amoxicillin with clavulanic acid- n=295) and cephalosporins (cefixime- n=1260) followed by aminoglycosides (gentamicin- n=200), quinolones (ciprofloxacin- n=157), macrolides (azithromycin- n=199), nitroimidazoles (metronidazole- n=111) (Table 2).

Antimicrobial therapy were most commonly instituted in ear diseases (67.66%), followed by nose (16.95%) and throat (15.37%) respectively. β -lactam antibiotics were most commonly used in ear disorders (56.18%) and least in throat (6.15%) (Table 3).

Table 2. Antimicrobials prescribed (n=3232).

Class	Antibacterial agents	No. of agents prescribed	Consumption (%)
β-lactams	Amoxicillin	110	3.4
	Ampicillin+cloxacillin	125	3.86
	Amoxicillin+clavulanic acid	295	9.12
	Cefpodoxime	65	2.01
	Cefixime	1260	38.98
	Cefixime+clavulanic acid	310	9.59
	Ceftriaxone	250	7.73
	Cefuroxime	30	0.92
	Total	2445	75.64
Fluroquinolones	Ciprofloxacin	70	2.16
	Ofloxacin	22	0.68
	Levofloxacin	65	2.01
	Total	157	4.85
Aminoglycosides	Neomycin	60	1.85
	Amikacin	45	1.39
	Gentamicin	200	6.18
	Total	305	9.43
Macrolide	Azithromycin	199	6.15
Nitroimidazoles	Metronidazole	111	3.43
	Ornidazole	15	0.46
	Total	126	3.89
Grand total		3232	100

Table 3: Relationship between type of infection and class of antimicrobial agent prescribed in ear, nose and throat.

Organ	Class	No. of agents prescribed	Consumption (%)
Ear	β-lactams	1816	56.18
	Fluroquinolones	51	1.57
	Aminoglycosides	226	6.99
	Macrolide	19	0.58
	Nitroimidazoles	75	2.32
	Grand total	2187	67.66
Nose	β-lactams	430	13.3
	Fluroquinolones	22	0.68
	Aminoglycosides	60	1.85
	Macrolide	11	0.34
	Nitroimidazoles	25	0.77
	Grand total	548	16.95
Throat	β-lactams	199	6.15
	Fluroquinolones	84	2.59
	Aminoglycosides	19	0.58
	Macrolide	169	5.22
	Nitroimidazoles	26	0.8
	Grand total	497	15.37

DISCUSSION

The drug prescription by the physician reveals important data regarding rational drug usage. In general practice, the therapeutic approach for ENT infections is nearly empirical and the main aim of physicians is to treat as specifically as possible, while covering the most likely pathogens. The present study indicates general prescribing

trends of antibiotics and other drugs in the OPD of ENT department. The antimicrobials were most frequently prescribed drugs followed by NSAID and vitamins in this study; this was similar to Admane et al.⁶

In the present study, prescriptions for male were more as compared to females which may be because of males are more travelling. This result is similar with other studies

conducted by Ain et al, Pradhan et al, and Shankar et al.⁷⁻⁹ Our study shows that ear infections (67.66%) were common, followed by nose (16.95%) while throat infections (15.37%) were least common. This is in slight variance with other study conducted by Pramila et al who also shows ear infections (50.8%) were common, followed by throat (31.37%) and nose infections (26.47%) were less common.¹⁰

In our study, most commonly prescribed antimicrobials were β -lactams (75.64%), followed by aminoglycosides (9.43%), macrolides (60.15%), fluoroquinolones (4.85%) and nitroimidazole (3.89%). The most commonly prescribed antimicrobial agent was cefixime. This contradicts to other study conducted by Das et al which shows ciprofloxacin (23.85%) was the most commonly prescribed agent followed by amoxicillin (20.06%), a combination of ampicillin+cloxacillin (9.17%), doxycycline (5.96%), erythromycin (4.58%) and cotrimoxazole (4.58%).¹¹ The reason for prescribing the third generation cephalosporin was the preponderant mixed group of infections. Drug utilization is defined as “the prescribing, dispensing, administering, and ingesting of drugs”. It is designed to describe quantitatively and qualitatively- the population of users of a given class of drugs and/or the conditions of use (for example, indications, duration of treatment).¹² This study was performed in OPD patients and some patients were on not adhering to the treatment duration resulting in antimicrobial resistance which demanded the use of cephalosporins, so this may be a reason for the difference of antibiotics preferred.

Good numbers of patients were with nonspecific throat complaints and the fear psychosis of malignancy of throat drove them to OPD. Two antibiotic combinations prescribed included oral as well as topical. All the drugs were prescribed by brand names, similar to the reported previous study.⁷ The variability in antibiotic prescription is attributable to the infecting organisms and antimicrobial susceptibility that differ from country to country, or even from region to region, but other factors may also be involved including physician preference, local policy, costs and lack of local guidelines. The present work is the maiden drug utilization study conducted in ENT department at our teaching hospital. It highlighted some rational prescription patterns including less utilization of antibiotics in ENT infections, good adherence by patients and prescription by brand names. The data presented here will be useful in future, long term and more extensive drug utilization studies in the hospital and in promotion of rational prescribing and drug use in hospitals. We recommend regular CMEs for the doctors at different levels to encourage prescribing by generic names and on correct writing of prescriptions. We also recommend framing strategies to make the prescriptions cost effective.

CONCLUSION

Cefixime and cefixime+clavulanic acid combination was the most commonly prescribed antibiotic in our study. Interventions to rectify the use of brand names is necessary to promote rational drug use. An antibiotic policy has to be developed for the doctors in treating infections so that rationality in using the antibiotics will be developed and the occurrence of antibiotic resistance can be reduced. All the prescriptions contained only a single antibiotic. It was observed that anti-ulcer agents were prescribed without appropriate indication. We would like to motivate the clinicians regarding cost effective way of drug prescription and also about prescribing generic drugs.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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