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Research Article

A study of prescription pattern in the drug therapy of ear, nose, and throat infections at a tertiary care hospital in Mangalore

G. M. Nitasha Bhat[1]*, Rajendra Holla[1], Shrinath D. Kamath P.[2]

[1]Department of Pharmacology, K S Hegde Medical Academy, Deralakatte, Mangalore, Karnataka, India, [2]Department of ENT, K S Hegde Medical Academy, Deralakatte, Mangalore, Karnataka, India

*Correspondence to:
Dr. G. M. Nitasha Bhat,
Email: nitashabhat@gmail.com

ABSTRACT

Background: Diseases of the ear, nose, and throat (ENT) constitute among the most common causes of hospital visits worldwide and account for most of the antibiotics prescribed and used. They are responsible for significant school and work absenteeism and have generated 94.6 disability-adjusted life years lost worldwide. Due to the high incidence of these diseases and the different varieties of drugs in use, it becomes imperative for us to know the present prescribing patterns, so that appropriate adjustments can be made for the benefit of patients.

Methods: Over a period of 1-year, the outpatient department (OPD) records of 608 patients with ENT infections, reporting to the ENT OPD of Justice K S Hegde Charitable Hospital, Deralakatte, Mangalore, were scrutinized and the data collected in a specially designed proforma. Descriptive analysis of the data was done.

Results: Of the total 608 prescriptions analyzed, 309 (50.8%) belonged to male patients and 299 (49.2%) belonged to female patients. Highest numbers of patients were in the age group of 16-25 years (29.44%). The most common diseases reported were chronic suppurative otitis media (19.24%), followed by otitis externa (13.49%) and furunculosis (9.87%). Average number of drugs per prescription was found to be 3.0. Oral antibiotics were prescribed to 540 patients (88.81%). Most common antibiotics prescribed were amoxicillin-clavulanate (53%), levofloxacin (17%), and cefixime (14%). Antihistamines were prescribed in 52.47% prescriptions, and non-steroidal anti-inflammatory drugs were prescribed to 298 patients (49.01%).

Conclusion: This study shows that the diseases were treated rationally in accordance with the standard guidelines of therapy.

Keywords: Antibiotic, Prescription pattern, ENT

INTRODUCTION

Diseases of the ear, nose, and throat (ENT) constitute among the most common causes of hospital visits worldwide and are responsible for the significant amount of morbidity and rarely mortality. These are responsible for significant school and work absenteeism and have generated 94.6 Disability-adjusted life years lost worldwide and were the fourth major cause of mortality, responsible for 4 million deaths or 6.9% of global number of deaths in 2002.[1] ENT infections including non-specific upper respiratory tract infection (URTI), acute bronchitis, sinusitis, and OM are the most common reasons for individuals to seek treatment in the United States and account for up to 75% of all antibiotic use.[2]

Irrational use of antimicrobial agents has resulted in the development of drug-resistant organisms in the community.

Use and overuse of antibiotics are associated with the development and spread of resistant bacteria; a problem continuing to gain attention from national organizations as a significant threat to public health.[3]

Irrational prescription is a global problem. Bad prescribing habits lead to ineffective and unsafe treatment, exacerbation or prolongation of illness, distress and harm to the patient and higher costs.[4]

Irrational use of antimicrobial agents has resulted in the development of drug-resistant organisms in the community. Significant changes in the drug prescription patterns are required to ensure a reduction in the prevalence of drug-resistant organisms in the community. This in turn gives rise to the need of scrutinizing the antibiotic prescription pattern of the physicians, so as to ensure judicious use of antimicrobial agents.[5]

Rational use of drugs will ensure that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community.[4,6] Assessment of drug use patterns is becoming increasingly necessary to promote rational drug use.[7] Before activities are started to promote rational drug use, an effort should be made to describe and quantify the already existing situation.[4]

Hence, this study was undertaken to scrutinize the prescription pattern in the treatment of ENT infections.

METHODS

The study was conducted in the outpatient department (OPD) of the ENT Department of Justice K S Hegde Charitable Hospital (JKSHCH), Deralakatte, Mangalore. The study was a prospective, observational study, undertaken from January 2013 to December 2013, for a period of 12 months after obtaining approval from the Institutional Ethics Committee. Prescriptions of patients who reported to the ENT department with age 5 years or more, either gender, suffering from commonly noticed ENT infections like otitis externa, otitis interna, acute otitis media (AOM), chronic suppurative OM (CSOM) (not undergone surgery), otomycosis, diseases of the pinna and the surrounding skin, Nasal and paranasal sinus infections including: vestibulitis, furunculosis, acute and chronic sinusitis, infections of the skin on the nose and surrounding area, throat infections including: pharyngitis both acute and chronic adenoiditis (not including surgery), laryngitis, etc., upper respiratory tract infections and any other infective conditions in the ENT region were included in the study. Prescriptions of patients suffering from surgical and allergic disorders were excluded. The data were collected in a specially designed proforma and was coded into Microsoft Excel spreadsheet (version 2013) and analyzed using Microsoft Excel and represented as number and percentage.

RESULTS

Of all the patients that visited the ENT OPD of JKSHCH over a period of 12 months, based on inclusion and exclusion criteria specified, a total of 608 prescriptions were studied, of which 309 (50.8%) and 299 (49.2%) were males and females, respectively. Highest number of patients were in the age group of 16-25 years (179 patients, 29.44%), followed by the age group of 5-15 years (128 patients, 21.05%), and 26-35 years (103 patients, 16.94%) (Table 1).

It was observed that, the most common disease reported was CSOM (117 patients or 19.24%), followed by otitis externa (82 patients or 13.49 %), furunculosis (60 patients or 9.87%), acute suppurative OMs/AOM (58 patients, 9.54%), and URTI (58 patients, 9.54%). Other diseases reported include sinusitis (52 patients or 8.55%), pharyngitis (52 patients or 8.55%), tonsillitis (52 patients or 8.55%), otomycosis (50 patients or 8.23%), vestibulitis (22 patients or 3.62%), and candidiasis of the oropharyngeal region (5 patients or 0.82%) (Table 2).

Average number of drugs per prescription was found to be 3.0.

Oral antibiotics were prescribed to 540 of the total 608 prescriptions studied (88.81%). Beta-lactams, including penicillins 290 (54%) and cephalosporins 123 (23%) form the most common group or oral antimicrobial agents (AMAs) prescribed to the patients. Amoxicillin-clavulanate was the most common AMA prescribed, 287 prescriptions (53%), followed by levofloxacin (90 prescriptions, 17%), and cefixime (30 prescriptions, 14%). Least commonly used drugs include macrolides, antifungals, and lincosamides (Table 3).

Totally, 327 out of 608 prescriptions (53.78%) contained prescriptions for topical agents.

The most common topical agent used was xylometazoline in 97 prescriptions (30%) followed by an fixed dose combination (FDC) of polymyxin B, neomycin and

Table 1: Demographic profile of the patients.

Age	Male	Female	Total (%)
5-15	67	61	128 (21.05)
16-25	83	96	179 (29.44)
26-35	59	44	103 (16.94)
36-45	33	37	70 (11.5)
46-55	29	42	71 (11.67)
56-65	19	19	38 (6.3)
>66	19	0	19 (3.1)
Total	309	299	608 (100)

Table 2: Disease profile.

Diagnosis	Male	Female	Total (%)
Otitis externa	35	47	82 (13.49)
Tonsillitis	19	33	52 (8.55)
Vestibulitis	16	6	22 (3.62)
ASOM	33	25	58 (9.54)
Candidiasis	5	0	5 (0.82)
Furunculosis	25	35	60 (9.87)
Otomycosis	30	20	50 (8.23)
Sinusitis	32	20	52 (8.55)
CSOM	58	59	117 (19.24)
Pharyngitis	24	28	52 (8.55)
URTI	32	26	58 (9.54)
Total	309	299	608 (100)

ASOM: Acute suppurative otitis media, CSOM: Chronic suppurative otitis media, URTI: Upper respiratory tract infection

Table 3: Distribution of antimicrobial agents used orally.

Class	Antibiotics	Number	Percentage of consumption
Beta-lactams	Amoxicillin- clavulanate	287	53
	Amoxicillin-dicloxacillin	3	1
	Cefixime	75	14
	Cefixime-clavulanate	30	5
	Cefpodoxime-clavulanate	3	1
	Cefuroxime	12	2
	Cefpirome	3	1
Fluoroquinolones	Levofloxacin	90	17
	ciprofloxacin	5	1
	Ofloxacin	8	1
	Ornidazole/ofloxacin	8	1
Lincosamide	Clindamycin	5	1
Macrolides	azithromycin	6	1
Antifungals	Clotrimazole	2	0
	Fluconazole	3	1
Total		540	100

hydrocortisone in 95 prescriptions (29%), followed by an FDC of ofloxacin, beclomethasone, clotrimazole, and lignocaine in 88 prescriptions(27%) (Table 4).

Totally, 319 out of 608 prescriptions contained antihistamines. The most common antihistamine used was an FDC of dextromethorphan, phenylephrine, cetirizine, and paracetamol in 65 prescriptions (20%) and ebastine-phenylephrine in 65 prescriptions (20%), followed by ebastine in 35 prescriptions (11%) (Table 5).

Non-steroidal anti-inflammatory drugs (NSAIDs) were prescribed in 298 prescriptions (49.01%).

The most common NSAID used was an FDC of diclofenac and paracetamol, in 124 prescriptions (42%); followed by an FDC of diclofenac and serratiopeptidase (34 prescriptions, 11%), followed by diclofenac in 34 prescriptions or 11% (Figure 1).

DISCUSSION

In our study, we assessed 608 prescriptions and found that there was not much difference in the number of male and female patients attending the ENT OPD (309, 50.8%; 299, and 49.2% respectively), which is in contrast with the findings of Ain et al. who reported that a majority of their patients were male.[1] The highest number of patients in our study were in the age group of 16-25 years 179 patients (29.44%) followed by 5-15 years, 128 patients (21.05%), and least were in the age group above 66 years (19 patients, 3.1%) which is in accordance with the findings of Ain et al. who also reported a similar distribution of patients.[1]

In our study, we observed that the most common condition reported was CSOM, 117 patients (19.24%), followed by

Table 4: Distribution of topical agents.

Combination	Number	Percentage
Fusidic acid	5	1
Polymyxin B, neomycin, hydrocortisone	95	29
Ofloxacin, beclomethasone, clotrimazole, lignocaine	88	27
Povidone iodine gargle	29	9
Gentamicin	2	1
Chloramphenicol, beclomethasone, lignocaine	5	1
Mupirocin	6	2
Xylometazoline	97	30
Total	327	100

otitis externa (82 patients, 13.49%), whereas Ong et al. reported that the most common ear infection they noticed was AOM.[8]

During the study, we observed that the most common antimicrobial agent class used was beta-lactams, including penicillins 290 (54%), and cephalosporins 123 (23%) form the most common group or oral AMAs prescribed to the patients. Amoxicillin-clavulanate was the most common AMA prescribed, 287 prescriptions (53%), followed by levofloxacin (90 prescriptions, 17%), and cefixime (30 prescriptions, 14%). Least commonly used drugs include macrolides, antifungals, and lincosamides. This was in accordance with the findings of Ain et al. who also found that the most common class of agents used were beta-lactams, followed by quinolones.[1] Similar several other studies also showed that beta-lactams, were the most commonly prescribed class of drugs, especially amoxicillin

Table 5: Distribution of the antihistamines used.

| Drugs	Number	Percentage
Ebastine	35	11
Dextromethorphan, phenylephrine, cetirizine, paracetamol	65	20
Ebastine, phenylephrine	65	20
Paracetamol, phenylephrine, chlorpheniramine maleate	23	7
Cetirizine	29	9
Levocetirizine, paracetamol, pseudoephedrine	31	10
Chlorpheniramine maleate, phenylephrine	13	4
Ambroxol, cetirizine	3	1
Cetirizine, phenylephrine	48	15
Levocetirizine/montelukast	7	2
Total	319	100
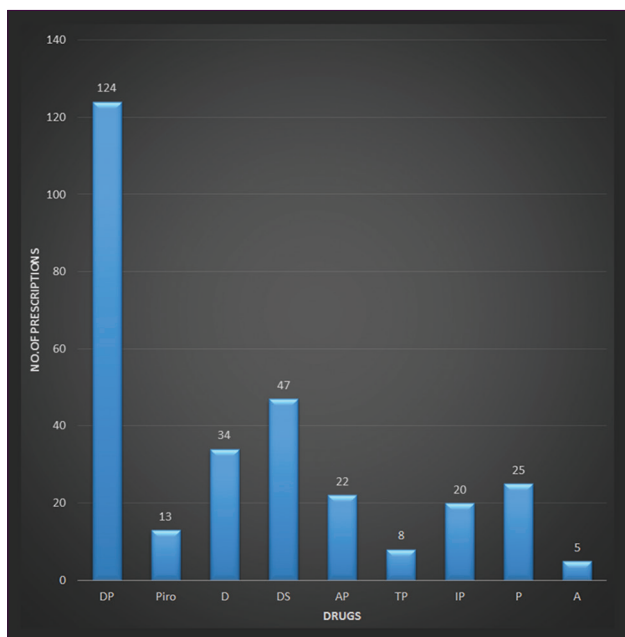
Figure 1: Distribution of the non-steroidal anti-inflammatory drugs used, DP: Diclofenac, Paracetamol; Piro: Piroxicam; D: Diclofenac; DS: Diclofenac, Serratiopeptidase; AP: Aceclofenac, Paracetamol; TP: Tramadol, Paracetamol; IP: Ibuprofen, Paracetamol; P: Paracetamol; A: Aceclofenac.

or amoxicillin-clavulanate especially for AOM, which is in accordance with our findings.[9,10-12]

We also found that 327 out of 608 prescriptions (53.78%) contained prescriptions for topical agents. The most common topical agent used was xylometazoline in 97 prescriptions (30%) followed by an FDC of polymyxin B, neomycin, and hydrocortisone in 95 prescriptions (29%), followed by an FDC of ofloxacin, beclomethasone, clotrimazole, and lignocaine in 88 prescriptions (27%).

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By our study, we found that the average number of drugs used per prescription were 3, whereas Ain et al. reported 1.58 AMA/patient/course.[1]

We have also found that most of the adjuvants prescribed were in the form of FDCs, that is a combination of an antihistamine with a nasal decongestant and paracetamol being used commonly, for example an FDC of dextromethorphan, phenylephrine, cetirizine, paracetamol in 65 prescriptions (20%) and ebastine-phenylephrine in 65 prescriptions (20%).

In NSAIDs also FDCs proved to be more common, of diclofenac, paracetamol, in 124 prescriptions (42%); followed by FDC of diclofenac, serratiopeptidase (34 prescriptions, 11%) of all prescriptions that contained NSAIDs, probably because of their ease of usage for the patients.

We have found that the therapy given was based on clinical knowledge and experience and was empirical, but rational in accordance with the literature available.

CONCLUSION

In the present study, most of the antibiotics and the adjuvants were prescribed as an FDC and by brand name. There is a need to conduct similar studies with larger sample size to get a bigger picture of the situation at hand.

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