Original research article

Prospective Observational Study to Evaluate the Antibiotic Prescription Practises in a Tertiary Care Teaching Hospital's ENT Outpatient Clinic

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Abstract

Aim: To assess the prescribing pattern of antibiotics in patients attending ENT OPD in a tertiary care hospital.

Methods: This prospective observational study was carried out in the Department of Pharmacology, A.N.M. Medical College and Hospital, Gaya, Bihar, India, for 1 year. Prescriptions were evaluated based on the world health organization (WHO) core drug prescribing indicators (average number of drugs per prescription, average number of antibiotics per prescription, average duration of antibiotic drug treatment and percentage of antibiotics prescribed by generic name). Antibiotic prescribing pattern based on the group, route of administration, duration, dosage formulation and fixed dose combinations (FDC) was also analyzed.

Results: A total of 400 prescriptions were collected from the ENTOPD and analyzed. 36.25% of the prescriptions were prescribed for patients between the age group of 20-30 years, followed by the age group of 30-40 years (22.75%). 65% of prescriptions were prescribed to males in comparison to 35% prescribed among females. Average number of antibiotics prescribed per prescription was 1.26. In 77% of the patients received a single antibiotic. Most of the dosage form were tablets (43%), followed by capsules (28.75%) and topical drops (21.75%). Commonest route of administration prescribed was oral (80%) followed by topical application (19.5%) and least was intravenous route (0.5%). Commonly prescribed antibiotics belonged to penicillin group (42.75%) and quinolones (21.25%). Topical preparations of polymyxin were also prescribed (table 5). Most common prescribed FDC was amoxicillin with clavulanic acid .

Conclusion: Amoxicillin and 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

Keywords: Antibiotic, ENT, OPD, Prescribing pattern

Introduction

Infectious diseases are among the commonest causes of morbidity and mortality in most developing countries of the world[1] Diseases of the ear, nose and throat (ENT) affect adults and children, with significant impairment in daily life.[2] Upper respiratory tract infections including rhino pharyngitis, pharyngitis, tonsillitis and otitis media are the most common reasons for which patients seek treatment in ENT OP. The most common cause of acute upper

respiratory tract infections(URTIs) are due to viruses and do not need antimicrobial agent unless complicated by secondary infections as in conditions like acute otitis media (AOM) with effusion ,sinusitis, tonsillitis and lower respiratory tract infections.[3]

The Problem of overuse of antibiotic is a global phenomenon. In India, the prevalence of use of antibiotics varies from 24% to 67%. According to recent study, acute respiratory infections are the reasons for the 75% of the antibiotic prescriptions each year and is the most frequent reason for seeking medical attention. This occurs despite the fact that in most cases of URTIs, antibiotic confers little or no benefit.[4] The International Network for the Rational Use of Drugs (INRUD) was established in 1989 to promote the rational use of drugs in developing countries. Various indicators were developed by INRUD in collaboration with WHO that provided objective indices to allow for assessment of drug use practices.[5] Still, there is a need for data on both antibiotic use and determinants of its use from all the regions of the world.

It is very essential to analyze and monitor the prescribing patterns of drugs from time to time. This would enable the basic modification in prescribing practices to enhance the therapeutic benefit and decrease the side effects of drugs. Drug use evaluation is an ongoing, authorized and systemic quality improvement process, which will give right feed back to the clinician.[6] The usage of antibiotic is increasing nowadays in all types of patients, and there are very few studies available to help the physician to prescribe suitable antibiotic. The antibiotic resistance is emerging as a big threat to the society. This type of study will help medical professionals to prescribe the antibiotics rationally and therefore are very much needed. Keeping this in mind, the present study was undertaken to assess the prescribing pattern of antibiotics in the outpatient department of ENT A.N.M. medical college and hospital.

Material and methods
This prospective observational study was carried out in the Department of Pharmacology, A.N.M. Medical College and Hospital, Gaya, Bihar, India, for 1 year, after taking the approval of the protocol review committee and institutional ethics committee.
Duplicate carbon copies of the prescriptions of patients with at least one antibiotic were collected from the doctors at regular intervals. Prescriptions of follow up, secondary wound infection and readmission patients were excluded from the study. Total of 400 prescriptions were collected and analyzed.

Prescriptions were evaluated based on the world health organization (WHO) core drug prescribing indicators (average number of drugs per prescription, average number of antibiotics per prescription, average duration of antibiotic drug treatment and percentage of antibiotics prescribed by generic name).[7] Antibiotic prescribing pattern based on the group, route of administration, duration, dosage formulation and fixed dose combinations (FDC) was also analyzed.

Results
A total of 400 prescriptions were collected from the ENTOPD and analyzed. 36.25% of the prescriptions were prescribed for patients between the age group of 20-30 years, followed by the age group of 30-40 years (22.75%). 65% of prescriptions were prescribed to males in comparison to 35% prescribed among females (table 1).

Table 1: Distribution of prescriptions according to age

Age in years	N	%

Below 10	40	10
10-20	52	13
20-30	145	36.25
30-40	91	22.75
40-50	42	10.5
Above 50	30	7.5
Gender		
Male	260	65
Female	140	35

Average number of antibiotics prescribed per prescription was 1.26. In 77% of the patients received a single antibiotic (Table 2). Most of the dosage form were tablets (43%), followed by capsules (28.75%) and topical drops (21.75%) (Table 3). Commonest route of administration prescribed was oral (80%) followed by topical application (19.5%) and least was intravenous route (0.5%).

Most of the antibiotics were prescribed for 1 to 5 days(76.25%) (Table 4). Commonly prescribed antibiotics belonged to penicillin group (42.75%) and quinolones (21.25%). Topical preparations of polymyxin were also prescribed (table 5). Most common prescribed FDC was amoxicillin with clavulanic acid (Table 5). Most of the antibiotics were prescribed by brand name (99%).

Table 2: Distribution of the number of antibiotics prescribed per prescription

No of antibiotic per prescription	N	%
1	308	77
2	90	22.5
3	2	0.5

Table 3: Distribution of dosage formulation of antibiotics prescribed

Prescribed dosage form	N	%
Ointment	8	2
Syrup	14	3.5
Drops	87	21.75
Tablets	172	43
Capsules	115	28.75
Injection	4	1

Table 4: Distribution of antibiotics based on duration

Duration (days)	N	%
1-5	305	76.25
6-10	51	12.75
>10	44	10

Average number of drugs prescribed per prescription including antibiotics was 2.6. Of the 400 prescriptions 182 (45.5%) had at least three drugs prescribed.

Table 5: Distribution of FDCs of antibiotics prescribed

FDCs of antibiotics	N	%

Amoxicillin + clavulanic acid	171	42.75
Ampicillin + cloxacillin	73	18.25
Cefpodoxime + clavulanic acid	6	1.5
Ciprofloxacin + tinidazole	47	11.75
Clotrimoxazole + ofloxacin	2	0.5
Chloramphenicol + clotrimazole	12	3
Polymyxin + chloramphenicol	85	21.25
Polymyxin + neomycin + bacitracin	4	2

Discussion

A total of 400 prescriptions were collected from the ENTOPD and analyzed. 36.25% of the prescriptions were prescribed for patients between the age group of 20-30 years, followed by the age group of 30-40 years (22.75%), similar to Ain et al.[8] 65% of the prescriptions were prescribed among male patients in comparison 35% in female patients similar to study by Ain et al, Suman et al.[8,9] Higher prescriptions among male indicate higher exposure to environmental pollutants and pathogens due to higher ambulatory working adult male population. Frequent visits to the physician by the adult working population shall also result in financial burden. Use of natural gas for cooking and decreased exposure to fumes in the kitchen also contributes to lesser incidence among urban female patients.

Average number of antibiotics prescribed per prescription was 1.26 including the topical antibiotics which is lower than in the study done by Suman et al. (1.69).[9] Most commonly prescribed group of antibiotics were penicillin's(42.75%), followed by quinolones (21.25%). and cephalosporins (9%). Combinations of amoxicillin with clavulanic acid was the commonest prescribed antibiotics followed by ampicillin with cloxacillin among the penicillin group. The studies conducted by Suman et al, Khan et al, Bhat et al. have shown that beta lactam antibiotics were the most commonly prescribed antibiotics.[9-11] This indicates a change in the prescribing patterns from a narrow spectrum to extended spectrum pencillins. Prescribing of extended spectrum penicillins could be due to an increase in antibiotic resistance. Prescribing an extended spectrum antibiotics also increase the cost of treatment. Regular use of levofloxacin (7.5%) reduces its efficacy when used in the treatment of multi drug resistant Tuberculosis.

Most of the dosage form were tablets(43%), followed by capsules (28.75%) and topical drops (21.75%). 1% of antibiotics prescribed were injectables similar findings were seen in study done by Padwal et al.[12] Injections were prescribed in 0.8% of encounters on average, which was well within the acceptable limit proposed (≤10%). Increase use of injections fuels the cost of health care management. The study also indicates a substantial use of antibiotics as topical preparations.

In this study, the average number of drugs per encounter was 2.60, which is lower than the WHO recommendation of less than 3 drugs per encounter, but indicates a trend towards polypharmacy.[7] Increase in prescribing errors, drug-drug interaction, adverse drug reactions and cost of treatment increase with increase in number of drugs prescribed per prescription. Similar to Padwal et al NSAIDs were prescribed in 22.6% of prescriptions.[12] Similar to the study by Suman et al predominant prescribing of nasal decongestants (60 %) and antihistamines indicates the need to provide symptomatic relief to patients.[9] WHO recommends 100% prescribing by generic name as a safety precaution for patients as it identifies the drug, enables better information exchange and better communication between

health care providers.[13] In the present study only 1% of the drugs were prescribed by generic name, indicating extensive use of brand names. Extensive availability and promotion of branded drugs also increases the prescribing of non- generic drugs.

94% of the drugs are from the National list of essential medicine, India. WHO recommendation of 100% prescription of drugs from the essential medicines list (EDL).[14] Prescribing drugs from the EDL issued by WHO provides a framework for rational prescribing. Drugs in EDL are well-established drugs, with established clinical use and lower cost than newer drugs.

Conclusion

An analysis of antibiotic prescription patterns is a good way to reflect the appropriateness of antibiotic use. Our research focused primarily on the antibiotic prescription patterns in the outpatient clinic of the ENT A.N.M. medical college and hospital. Antibiotics were given to any of the patients who had ENT infections. In our research, the combination of amoxicillin and clavulanic acid was the most widely used antibiotic. Just one antibiotic was prescribed with each prescription. Anti-ulcer drugs were found to be prescribed without the proper indication. The research also discovered that brand-name medications were being prescribed. We'd like to encourage physicians to engage in research.

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