Prescribing patterns of antimicrobial usage in ophthalmology out patients department at tertiary care teaching hospital

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ABSTRACT

Background: Drug utilization provides prescribing behaviors of prescriber. Rational prescribing of antimicrobial drugs plays a crucial role in reducing the antibiotic resistance. The study aim was to analyze the patterns of antimicrobial prescribed ophthalmology outpatient department (OPD) patients.

Methods: The study was an observational study completed over a period of 6 months, from July 2014 to December 2014. The study was conducted in Department of Ophthalmology, MGM Medical College, and Hospital Navi Mumbai. A questionnaire was specifically designed factoring patients' demographical profile, diagnosis of disease, drug regimen.

Results: A total 125 prescriptions of patients were analyzed who visited ophthalmology OPD department. Maximum patients belonged to the age group of 41-50 years (27.2%), followed by age group of 31-40 years (25.6%). The proportion of male (59%) patients was more as compared to female patients (41%). Total drug prescribed was 296. Average drug per prescription was 2.36. Among 296 drugs, 144 were antibiotic prescribed. Average antibiotic per prescription was 1.15. Most commonly antibiotic prescribed was moxifloxacin. Most common fixed dose combination (FDC) of antibiotic prescribed was tobramycin plus loteprednol. Among total 125 patients, maximum patients were diagnosed with cataract (25%), followed by meibomitis (12%), conjunctivitis (24%), blephritis (9%), foreign body in eye (12%), psedophakia (10%) and other disease (8%). 96% of antimicrobial were prescribed from essential drug list. The FDC of antimicrobial (40%), fluroquinolone (19%), aminoglycoside (13%), broad spectrum (12%), macrolide (9%), anti-viral (7%) was prescribed. Maximum number of drugs was found in the form eye drops (72%).

Conclusion: The present study found that FDC of antibiotic was prescribed maximum. Most common dosage form of prescribed drug was eye drop. Prescription of drugs by brand name was a matter of concern.

Keywords: Prescribing patterns, Ophthalmology, Out-patients, Fixed dose combinations

INTRODUCTION

Drug utilization research is defined by World Health Organization (WHO) as the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences. To increase the therapeutic efficacy and minimize the development of resistance drug utilization, pattern needs to be evaluated periodically.^{1,2} Periodical auditing of prescribing pattern is vital for the promotion of rational use of drugs. According to the WHO, use of antimicrobials is one of the important core drug use indicators.³

The emergence of antimicrobial resistance is increasing globally and a major public health issue that significantly impacts patient treatment and outcomes. The relationship between antimicrobial use and antimicrobial resistance is complex, with a growing body of data strongly suggesting that higher levels of antimicrobial usage are associated with increased levels of antimicrobial resistance.⁴ In appropriate use of drugs and dosage forms result in potential health hazard to the patients and cause a financial burden. To avoid such problems, every member of the healthcare system should practice rationally. Antibiotics are widely prescribed for various ophthalmic diseases. Evidences have shown trends of resistance to a different

class of antibiotics often used in ocular therapeutics. Indiscriminate use of topical antibiotics and nonsteroidal anti-inflammatory drugs cause histological and structural changes in conjunctiva.⁵⁻⁷

In the present time, the development of new antibiotics has declined, and the limited antibiotic has available and they cannot compete with the rapid increase of antibiotic resistance. Therefore, it is most important that we utilize the available antibiotics with much care. Hence, this study was designed with the aim to investigate the antimicrobial utilization pattern in a tertiary care hospital.

Objective

The objective was to analyze the patterns of antimicrobial prescribed in ophthalmology OPD patients.

METHODS

- I. Necessary approval from the Institutional Ethics Committee was obtained before initiating the study
- II. Study site: This drug utilization study was conducted at the departments of Ophthalmology and Pharmacology, MGM Medical College and Hospital, Kamothe, Navi Mumbai, India
- III. Study period: The study was an observational study completed over a period of 7 months, from June 2014 to December 2014
- IV. Study design: Prospective-open labeled, observational study
- V. Sample size: Total 125 patients were recruited for the study
- VI. Patient selection
 - Inclusion criteria: Patient attending ophthalmology OPD and giving consent to participate in the study
 - Exclusion criteria: Patient who was seriously sick (emergency) and inpatient department patients.
- VII. Study material: A specially designed data entry format was used to record patients' details such as patient name, age, sex, drug regimen, drug dose.

Prescribing Indicators

- a. Percentage of encounters with an antibiotic
- b. Percentage of antibiotic prescribed in fixed dose combination (FDCs)
- c. Percentage of antimicrobial drug prescribed from essential drug list.

RESULTS

A total of 125 patients were analyzed for the antimicrobial usage pattern in the ophthalmology department. Maximum patients belonged to the age group of 41-50 years (27.2%), followed by age group of 31-40 years (25.6%). The

proportion of male (59%) patients was more as compared to female patients (41%) (Table 1).

Total 125 prescription of patients who were visited our ophthalmology OPD were analyzed. Total drug prescribed was 296 in 125 prescriptions. Average drug per prescription was 2.36. Among 296 drugs, 144 (38.51%) were antibiotic prescribed. Average antibiotic per prescription was 0.912. Most commonly antibiotic prescribed was moxifloxacin. Most common FDC of antibiotic prescribed was tobramycin plus loteprednol. 96% of prescribed antimicrobial drugs were from essential drug list. Remaining 182 (61.49%) were other concomitant drugs were prescribed including steroids, mydriatic, artificial tear, antihistamine. Antiulcer, multivitamin, etc. the drug prescribed by generic name was 7.12% (Table 1).

Among total 125 patients, maximum patients were diagnosed with cataract (25%), followed by meibomitis (12%), conjunctivitis (24%), blephritis (9%), foreign body in eye (12%), psedophakia (10%) and other disease (8%) such as glaucoma, dry eye, uveitis (Figure 1).

Among total 144 antimicrobial drugs prescribed, the FDC of antimicrobial (40%) was prescribed maximum followed by fluoroquinolone (19%), aminoglycoside (13%), broad spectrum (12%), macrolide (9%), anti-viral (7%) (Figure 2).

Figure 1: Patterns of antimicrobial drug prescribed in eye outpatient department.

Figure 2: Pattern of diagnosis of disease in eye outpatient department.

Table 1: Pattern of demographic data of eye OPD patients.

Parameters	Results
Total number of sample	125
OPD sample	125
Age (year)	Percentage of patients
10-20	5 (4)
21-30	12 (9.6)
31-40	32 (25.6)
41-50	34 (27.2)
51-60	30 (24)
61-70	12 (9.6)
Gender	
Male	59%
Female	41%
Total drug prescribed	296
Average drugs/prescription	2.36
Total antimicrobial drug prescribed	144 (38.51%)
Average antimicrobial drug prescribed per patients	0.912
Most commonly antibiotic prescribed drugs	Moxifloxacin
Most commonly antibiotic prescribed with FDC drug	Tobramycin+loteprednol
Encounter with FDC of antibiotic	40%
Encounter of antimicrobial from essential drug list	96%
Encounter with a generic name	7.12%
Other concomitant medication prescribed	Mydriatics, antiulcer artificial tear, vitamins, analgesics, steroids, antihistamine

FDC: Fixed dose combination, OPD: Outpatient department

Analysis of 144 antimicrobial prescribed, the antimicrobial from different classification were moxifloxacin (9%), ciprofloxacin (6%), gatifloxacin (4%), tobramycin (9%), neomycin (4%), chloramphenicol (12%), azithromycin (5%), polymyxin (4%), acyclovir (7%), tobramycin plus loteprednol (23%) and ciprofloxacin plus prednisolone (17%) (Figure 3).

Various dosage forms was seen in ophthalmology OPD prescription. Among 125 prescription and total 296 drugs, maximum drugs prescribed in eye drops (72%) followed by eye ointment (16%) and remaining were prescribed in tablet/capsule form (12%). No injectable was prescribed (Figure 4).

DISCUSSION

The present study analyzed 125 prescriptions of the patients who visited our ophthalmology department. We did not find similar studies during the literature search. The present study evaluates first time as best of my knowledge showing patterns antimicrobial in tertiary care hospital. The demographic data of the present study showed maximum patients belonged to the age group of 41-50 years (27.2%). The proportion of male (59%) patients was more as compared to female patients (41%) similar pattern shown by some previous studies of the ophthalmology department by Topno et al.³ and Dutta et al.⁵

Figure 3: Commonly prescribed antimicrobials in eye outpatient department.

Total drug prescribed was 296. Average drug per prescription was 2.36. Among 296 drugs, 144 (38.51%) were antibiotic prescribed. Average antibiotic per prescription was 0.912. Most commonly antibiotic prescribed was moxifloxacin. Most common FDC of antibiotic prescribed was tobramycin plus loteprednol. The previous studies by Dutta et al.⁴ showed 1.9 drugs per prescription which lower than the present study but antibiotic per prescription was not shown by any studies. The drug prescribed by generic name was 7.12%. The similar study by Topno et al.³ showed higher number of drug prescribed by generic name.

Figure 4: Pattern of dosage form of prescribed drug in eye outpatient department.

The analyzation of 125 prescription, maximum patients were diagnosed with cataract (25%) followed by meibomitis (12%), conjunctivitis (24%), blephritis (9%), foreign body in eye (12%), psedophakia (10%) and other disease (8%). The previous study by Dutta et al.⁴ showed similar pattern of diagnosis as they showed conjunctivitis (40%) was maximum diagnosed in their study as the present study evaluates conjunctivitis was second most diagnosed disease and the Mohanty and Mohaptra⁸ stated that corneal ulcer was maximum diagnosed in their study also showed different pattern of diagnosis than present study.

Among total 144 antimicrobial drugs prescribed, the FDC of antimicrobial (40%) was prescribed maximum followed by fluroquinolone (19%), aminoglycosed (13%), broad spectrum (12%), macrolide (9%), antiviral (7%), analyzation of 144 antimicrobial prescribed, the antimicrobial from different classification were moxifloxacin (9%), ciprofloxacin (6%), gatifloxacin (4%), tobramycin (9%), neomycin (4%), chloramphenicol (12%), azithromycin (5%), polymixin (4%), acyclovir (7%), tobramycin plus loteprednol (23%) and ciprofloxacin plus prednisolone (17%). The maximum antimicrobial prescribed in the present study is similar to previous studies shown by Topno et al.,³ Dutta et al.⁴ and Mohanty and Mohaptra⁸ They differ in FDCs prescribed in the present study. The previous study showed lower incidence of FDCs.^{4,8} Among 296 drugs, maximum drugs prescribed in eye drops (72%), followed by eye ointment (16%) and remaining were prescribed in tablet/capsule form (12%). The study by Mohanty and Mohaptra⁸ showed larger number drugs prescribed in eye drops (96.3%), but tablet form was not prescribed in their study.

The overall study showed lower incidence of antimicrobial prescription pattern, but the present study showed high number FDCs of antibiotic with steroids was prescribed, is a need to be corrected. As antibiotic resistance emerging day by day and to enhance rational prescribing patterns of antimicrobial, similar studies need to be conducted. The present study showed good future scope to conduct similar studies.

Limitation

It was quantitative type of studies, and the present study does not evaluates duration of drug therapy, appropriate choice of antibiotic in particular disease and calculation of cost are the some limitation of the present study.

CONCLUSION

The present conclude FDC of antibiotic was prescribed maximum. Most common dosage form of prescribed drug was eye drop. Prescription of drugs by brand name was a matter of concern. There is need to conduct similar studies across the country and around the globe to enhance rational prescribing of antimicrobial.

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Conflict of interest: None declared

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

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