

Assessment of Antimicrobial Prescribing in Ophthalmology Outpatient Department of a Tertiary Care Hospital

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Abstract

Background: Analysing drug prescribing pattern is crucial to prevent antibiotic resistance in community. The study aims to analyse the pattern of antibiotic drug prescription in outpatient department (OPD) of Ophthalmology.

Methods: It was an observational study done over 3 months period in OPD of Ophthalmology DMGMC & H. Data were collected from case record form for demographic profile, nature of disease and type of antibiotic prescribed and route of administration.

Results: A total of 250 patients were analysed from Ophthalmology OPD. Maximum patients belonged to 20-50 years (66.8%). The proportion of male (58%) as compared to females (42%). Average drug prescription was 1.08. Most commonly used antibiotic was Moxifloxacin. Maximum patients were diagnosed with conjunctivitis (22.8%) followed by external hordeolum (16%), cataract (12%) blepharitis (10%) and dacryocystitis (10% each). Among antibiotics fluoroquinolones were used most (42.08%), followed by broad spectrum antibiotic chloramphenicol (20.8%) followed by aminoglycosides (16.8%). Maximum number of drugs were administered in topical form (64.8%).

Conclusion: The present study found that fluoroquinolone antibiotic was prescribed maximum. Most common dosage form of prescribed drug was eye drop. Antibiotics need to judiciously used in all OPD set up to prevent drug resistance.

Keywords: Prescribing patterns, Out-patients in Ophthalmology, drug resistance.

Introduction

Prescribing pattern of drugs needs to be periodically monitored to identify the irrational and inappropriate use of drugs in medical practice

which might affect the therapeutic efficacy and safety of prescribed medicines.^{1,2} Rational use of drugs indicates that the patients are prescribed drugs according to their clinical needs at adequate doses for the appropriate duration. Irrational use of drugs

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in the form of overprescribing, under prescribing or misuse might result in health risks to the patients and wastage of limited resources in the health care system. Thus, evaluation of prescribing pattern helps prescribers to improve their prescribing practice and consequently promotes rational use of drugs.^{3,4} To achieve that goal, WHO and International Network for Rational Use of drugs (INRUD) have defined some standard drug prescribing indicators.⁵ Topical antimicrobials play a significant role in treatment of several eye problems like acute conjunctivitis, infective corneal ulcers, blepharitis, hordeolum, ophthalmia neonatorum, iridocyclitis etc. as well as for postoperative prophylaxis after eye surgeries. Fluoroquinolones (moxifloxacin, ciprofloxacin, gatifloxacin) aminoglycosides (tobramycin, neomycin), chloramphenicol, polymyxin B antibiotics, acyclovir, ganciclovir, amphotericin B, nystatin etc are commonly used ophthalmic antimicrobial agents in ocular therapy. Overuse, inappropriate use of ocular topical antibiotics has always been a concern over countries which may lead to the development of antimicrobial drug resistance alongside increasing the cost burden too.⁶⁻¹⁰ Keeping this in mind, the present study was done with the aim to evaluate the prescribing pattern of ophthalmic antimicrobial drugs in patients presenting to Ophthalmology outpatient department of a tertiary care hospital.

The study aims to analyse the prescription pattern of ophthalmic antimicrobials in outdoor patients of ophthalmology department and to analyze the socio demographic parameters of the patients.

Methodology

Patients attending Ophthalmology outpatient department (OPD) of tertiary care hospital prescribed at least one ocular topical antimicrobial agent was included the study. 250 study participants were included in three months after getting ethics committee clearance. It was an observational study, data collected from case record form, patient consent form and informed consent form after getting ethics committee approval. Relevant information was noted down in case record form.

Inclusion Criteria were patients prescribed with at least one ocular topical antimicrobial agent in ophthalmology OPD, age \geq 18 years.

Exclusion Criteria were patients not willing to participate or not giving informed consent. pregnant and lactating women. patients with associated psychiatric illnesses.

Data Analysis: Data will be entered in Microsoft Excel. Data will be analysed in SPSS version 21, through appropriate statistical tests.

Ethical Considerations: The study proposal along with other relevant documents would be submitted to institutional ethics committee (IEC) for review and approval. The study will commence after such approval is obtained.

In case of multiple antibiotic usage, each drug was noted with its route of use. In case of corneal ulcer, scraping was done and sent for microbiological evaluation. After immediate analysis of bacterial or fungal element, only fungal ulcers were excluded from the study. After 7 days of culture sensitivity if there was any change in sensitivity pattern, different antibiotic was included. Sampling was sent for suppurative diseases and endophthalmitis patients also.

Results

There are 250 patients in the study group, 105 (42%) females and 145 (58%) males.

Table 1 showed age distribution of study sample. It is evident that highest number of cases presenting in OPD are between 20 to 50 years of age.

Table 1: Age Distribution

Age	
< 20	31 (12.4%)
20-50	167 (66.8%)
50	52 (20.8%)

Distribution of diseases are shown in table 2. Its evident from this that most common usage of antibiotics is conjunctivitis (22.8%) followed by external hordeolum (16%), cataract (12%) blepharitis (10%) and dacryocystitis (10%each), blepharitis(10%).

Table 2: Distribution of disease

External hordeolum	40 (16%)
Blepharitis	25 (10%)
Corneal Ulcer	20 (8%)
Conjunctivitis	57(22.8%)
Cataract (pre-operative)	30 (12%)
Chemical burn	5 (2%)
Internal hordeolum	18 (7.2%)
Preseptal Cellulitis	23 (9.2%)
Dacryocystitis	25 (10%)
Endophthalmitis	5 (2%)
Orbital cellulitis	2 (0.8%)

Table 3 described the usage of different classes of antibiotics. It depicted that fluoroquinolones were used most in OPD (42.08%), followed by broad spectrum antibiotic chloramphenicol (20.8%) followed by aminoglycosides (16.8%). Among fluoroquinolones, Moxifloxacin is used most commonly 26%.

Table 3: Antibiotic usage Pattern

Fluroquinolones	Moxifloxacin	65 (26%)
	Ciprofloxacin	30 (12%)
	Gatifloxacin	35 (14%)
	Basifloxacin	2 (.08%)
Aminoglycosides	Tobramycin	35 (14%)
	Gentamycin	5 (2%)
	Amikacin	2 (.8%)
Cephalosporin	Cefazoline	3 (1.2%)
	Ceftazidime	2 (.8%)
	Ceftriaxone	5 (2%)
Tetracycline	Doxycycline	14 (5.6%)
Macrolides	Azithromycin	15 (6%)
Miscellaneous	Chloramphenicol	52 (20.8%)
	Vancomycin	5 (2%)

It is seen from table 4 that most common mode of delivery is topical (36.8%), followed by oral (34.4%) and ointment (28%), intracameral was least commonly used (in this study). It was used in only refractive corneal ulcer with hypopyon.

Table 4: Routes of drug use

Drop	92 (36.8%)
Ointment	70 (28%)
Oral	86 (34.4%)
Intravenous	10 (4%)
Sub conjunctival	5 (2%)
Intravitreal	5 (2%)
Intracameral	2 (0.8%)

Discussion

In our study, we have analysed prescriptions of total 250 patients in ophthalmology outpatient department who were prescribed a total of 410 drugs out of which 270 drugs were antibiotics. Our Study showed 66.8% patients were in the age group of 20-50 with male preponderance (58%). Similar demographic data were found in other studies.¹¹⁻¹³

We found an average of 1.08 antibiotics per prescription. Multidrug therapy was in 35.2% prescriptions and polypharmacy was less in our study (5.2%). The degree of polypharmacy is average number of drugs per prescriptions. This index is an important tool to analyse cost effectiveness of therapy. It was also low in our study. It was comparable to previous studies.^{14,15} It is higher in Vaniya et al.¹⁶

The antibiotics were all prescribed in generic name considering mostly availability of medicine in health care facility. There are various brands of same antibiotics available. Their bioavailability, potency and variability in clinical response may be one of the major contributors to drug resistance. These are confounding factors for clinical outcome and need for multidrug therapy and potential cause of drug resistance.¹⁷

Analysis of total 250 patients prescription showed that 22.8% patients were diagnosed with conjunctivitis followed by external hordeolum (16%), cataract (12%) blepharitis (10%) and dacryocystitis (10% each). Shakuntala et al found 34% of patients were diagnosed with conjunctivitis (maximum no), followed by dacryocystitis (21%), blepharitis (16%).¹⁷ The study conducted by Vaniya et al. showed that eyelid diseases (30%) were diagnosed maximum in their study.¹⁶

In our study antibiotic monotherapy was most commonly used. Among 250 patients, only 4(1.6%) patients had two antibiotics and another 4 patients had three antibiotics. This is significantly lower than previous studies where two-drug therapy was the most common pattern used.¹⁴⁻¹⁷ Monotherapy was used due to various reasons. First was disease spectrum. Conjunctivitis, cataract, hordeolum, preseptal cellulitis included majority of disease requiring only monotherapy, corneal ulcer treatment had specific therapy. Whereas, diseases like Endophthalmitis, orbital cellulitis requiring polytherapy were less in number.

Secondly, poor patient profile, dependency on hospital available drugs only.

Thirdly, to avoid polypharmacy during rational prescribing.

Fluroquinolones were used most in OPD (42.08%), followed by broad spectrum antibiotic chloramphenicol (20.8%) followed by aminoglycosides (16.8%). Cephalosporins were used in 4% of cases. Among fluroquinolones, Moxifloxacin is used most commonly 26%. It is similar to previous studies.¹⁴⁻¹⁷ They found Fluroquinolones were most commonly used class of antibiotics with 86% followed by aminoglycosides (21%), next is beta-lactam antibiotics (28%), shows similar prescription by Vaniya et al. (66.7%) and Jadhav et al. (60%) and a study by Jai et al. (68%).¹⁴⁻¹⁷

Other commonly used antibiotics are broad spectrum chloramphenicol (208%), Gatifloxacin (14%) which is similar to study by Jadhav et al.¹⁴ In this study, ciprofloxacin is used in 12% of cases, it was most commonly used by Vaniya et al. and Jai et al.^{15,16}

Among 270 were antibiotics prescribed, Most common mode of administration was eye drops (36.8%), followed by oral (34.4%) and ointment (28%). In Shakuntala et al 69% of drugs prescribed in the form of eye drops followed by ointment (15%) and 12% were prescribed in the form of tablet/capsule and parenteral use is 4%. In a study by Vaniya et al almost same findings were found.¹⁶

Conclusion

Rational use of drugs implies that drugs are given for appropriate indications, dose, duration to appropriate patients which enhances efficacy, safety, tolerability, compliance and minimise side effects, misuse, cost burden in therapy. Evaluation of prescribing pattern, helps to evaluate several aspects of drug use which ultimately helps prescribers to improve their prescribing practice and consequently promotes rational prescribing. Irrationalities in antimicrobial prescribing habits has been linked to emerging resistance of ocular antimicrobials specially antibiotics. Topical ophthalmic antimicrobials contribute a major chunk in managing several eye conditions as there is always high chance of secondary

microbial infections in eye which if not controlled can impose a threat on vision. The choice of the appropriate antimicrobial agent should depend on clinical diagnosis, suspected infective agent, and its predicted sensitivity. There is dire need to use topical antimicrobials for eye diseases judiciously as many of them have no suitable formulation for ocular use till date and drug resistance will create a serious issue in patient management. Thus, it becomes necessary to study the prescription pattern of antimicrobial drugs for ocular use at periodic intervals.

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