ORIGINAL ARTICLE

A Drug Utilization Study in Glaucoma Patients in a Tertiary Care Hospital of Central India

Mahajan HM[1], Honrao R [2], Borkar AS [3], Badwaik RT[4], Chopade SS[5], Surwase P[6]

1- Junior Resident, Pharmacology, NKP Salve Institute of Medical Sciences, Nagpur, (MS), India.
2- Junior Resident, Pharmacology,Kempegowda Institute of Medical Sciences, Bangalore, Karnataka.
3- Professor and Head, Pharmacology, NKP Salve Institute of Medical Sciences, Nagpur, (MS), India.
4- Associate Professor, Pharmacology, NKP Salve Institute of Medical Sciences, Nagpur, (MS), India.
5- Assistant Professor, Pharmacology, Dr. UlhasPatil Medical College, Jalgaon, (MS), India.
6- Junior Resident, Pharmacology, NKP Salve Institute of Medical Sciences, Nagpur, (MS), India.

Abstract

Glaucoma is considered as a chronic progressive and usually symptomatic disease that destroys retinal cells and is one of the leading cause of preventable blindness worldwide, including India according to World Health Organization (WHO) studies. Although dawn of newer topical agents have modernized the management of glaucoma, the cost of these drugs pose a major hindrance to successful treatment since it limits entrie and amenability. ***AIMS AND OBJECTIVES:*** *To analyze current prescribing trends in anti-glaucoma drugs, to perform a drug utilization study using WHO parameters, to identify drugs per prescription, category wise identification of drugs prescribed.* ***MATERIALS AND METHODS:*** *The present study was a retrospective cross sectional, observational record based study carried out at NKPSIMS & RC, Nagpur, India.* ***RESULTS:*** *Out of total 405 records assessed, 275 were males (68%) and 130 were females (32%). Average number of drugs per prescription was 1.8 while the average cost of therapy per prescription came out to be 54.4 Rs.Amongst them most commonly used drug was timolol which was used in 80 patients followed by pilocarpine (68 patients) and brimonidine (35 patients). In males timolol was most commonly prescribed while in females timolol, pilocarpine and betaxolol shared a dominated use. Least prescribed drugs were topical atropine (2 patients), both overall and in males, while dexamethasone was used least in females (1 patient).* ***CONCLUSION:*** *Awareness regarding use of generics on a large scale should be done, keeping in mind only sole purpose- to increase the benefit of the patient, decrease cost of the treatment and decrease side effects without affecting efficacy.*

Keywords: Glaucoma, Drug utilization study, WHO.

Address for correspondence: Dr. H. M. Mahajan, Junior Resident, Department of Pharmacology, NKP Salve Institute of Medical Sciences, Hingna Road, Digdoh Hills, Nagpur, (MS), India. **E-MAIL ID:** hm2nazi@gmail.com
Phone no: +919822611369

Introduction

Glaucoma is considered as a chronic progressive and usually symptomatic disease that destroys retinal cells and is one of the leading cause of preventable blindness worldwide, including India according to World Health Organization (WHO) studies.[1] Near about 60 million people are already suffering from glaucoma, while this figure is likely to rise to 80 million by 2020.[3]Increased intraocular pressure (IOP), advanced age, myopia family history are some of the risk factors for the disease.[4]Increased IOP is high IOP is the robust recognized risk factor for glaucoma but it is neither mandatory nor adequate to induce optic neural damage, since it is in normal range in about 40% patients of glaucoma. Moreover, minimum 40 mm Hg of IOP is considered significant, because damage

occurs most commonly at this level of IOP and after this level there is dose-response type of relation between rise in IOP and risk of ocular damage. Secondly, in initial stages of the disease it is arduous to detect any optic nerve impairment. In developing country like Indian early 40% of total health care expenditure is shared by expense on drugs, out of which few are not necessary to use and also costly, thus leading to doubling of this expenditures per 4 years and doubling of GNP (Gross National Product) per 16 years.[5]It is thus imperative to apprehend that incongruous drug use may be considered as prospective menace and superfluous disbursement on the part of patients.[6]Although dawn of newer topical agents have modernized the management of glaucoma, the cost of these drugs pose a major hindrance to successful treatment since it limits entrée and amenability.[7,8,9]Such medication passivity may lead to hastening of visual deterioration, in which case expensive and perilous surgical intervention may be the only applicable modality of treatment.**[10]**Drug utilization includes everything in between marketing of drug to its use in community with particular weightage given to its effects from socio-economic and medical point of view.[1]A unpretentious, economic and supple way to evaluate the eminence of prescriptions is done by use of Drug Utilization 90% (DU 90%), which identifies drugs occupying 90 % of total volume of prescription, which is defined using Daily Defined Dose (DDD).[11]The other 10% of the drugs are the ones which are used in resistant cases which are not amenable to orthodox treatment options, or if patient is allergic to those medications or experiencing adverse reactions.[12] Consistent periodical assessment of drug utilization trends in glaucoma is vital in order to upsurge cost effectiveness, therapeutic usefulness, cogent use of drugs while decreasing adverse effects and providing results of the same to the prescribing physicians at the same time.[13]Such anti-glaucoma medication drug utilization studies are scant in India.[14] Hence the contemporary study was commenced at a tertiary care teaching hospital of central India in order to evaluate tessellations in anti-glaucoma drugs prescription and perform drug utilization study. This was done by using World Health Organization

(WHO) demarcated indicators and guidelines to conduct drug utilization studies. The principle aim of such studies is to generate a database of current prescribing trends, to identify fallacies and to plan strategies to rectify such shortcomings and to achieve a defined endpoint i.e. increasing benefit of patients and reducing costs and side effects.

Aims and Objectives

The aims of present study are:
1. To analyze current prescribing trends in anti-glaucoma drugs
2. To perform a drug utilization study using WHO parameters
3. To identify drugs per prescription
Category wise identification of drugs prescribed

Materials and Methods

The present study was a retrospective cross sectional, observational record based study carried out at NKPSIMS & RC, Nagpur, India. The study was commenced after taking approval from Institutional Ethics Committee (IEC). The study duration was of 1 year from June 2014 to June 2015. A total of 405 records were analyzed and were obtained from Medical Records Department (MRD) and Outpatient department (OPD). Relevant information like demographic details, diagnosis ,category wise medications, their dose, route of administration, average number of drugs per prescription, number of drugs prescribed as generics was extracted and entered in pre-designed and pre-validated information sheets. All the patients of either sex with a diagnosis of glaucoma irrespective of age were included. All the collected data was analyzed using Microsoft Excel 2013.

Results

(Table 1) Out of total 405 records assessed, 275 were males (68%) and 130 were females (32%). Average number of drugs per prescription was 1.8 while the average cost of therapy per prescription came out to be 54.4 Rs. None of the medications were prescribed as generics. (Table 2) All the drugs were labelled with WHO

allotted ATC codes. Amongst them most commonly used drug was timolol which was used in 80 patients followed by pilocarpine (68 patients) and brimonidine (35 patients). In males timolol was most commonly prescribed while in females timolol, pilocarpine and betaxolol shared a dominated use. Least prescribed drugs were topical atropine (2 patients), both overall and in males, while dexamethasone was used least in females (1 patient). Category wise beta blocking agents shared numeruno spot accounting for 36.7 % of total prescriptions. Miotics, alpha blocking agents and antimicrobials were next major contributors accounting to 16,7%, 16 % and 14.5% of total prescriptions respectively. Least prescribed class was anti-inflammatory drugs and tear substitutes.

Table- 1: Showing demographic and prescribing indicators.

Demographic and prescribing indicators

Characteristics	Values n (%)
1. Males	275(68)
2. Females	130(32)
3. Average number of drugs per prescription	1.8
4. Average cost per prescription	54.4 Rs
5. % of drugs precribed as generics	0

Table- 2: Showing anti-glaucoma drugs used along with their ATC codes.

Antiglaucoma drugs	ATC code	Used in n		
		Male	Female	Total
Timolol	S01ED01	60	20	80
Pilocarpine	S01EB01	48	20	68
Brimonidine	S01EA05	40	16	56
Betaxolol	S01ED02	33	21	54
Levobunolol	S01ED03	12	3	15
Latanoprost	S01EE01	11	9	20
Apraclonidine	S01EA03	5	4	9
Acetazolamide (oral)	S01EC01	6	4	10
Tear substitute	S01XA20	4	3	7
Homatropine topical	S01FA05	15	6	21
Moxifloxacin topical	S01AE07	5	7	12
Ciprofloxacin topical	S01AE03	21	10	31
Gatifloxacin topical	S01AE06	12	4	16
Atropine topical	S01FA01	0	2	2
Dexamethasone	S01BA01	3	1	4

Discussion

After analyzing 405 prescriptions of patients suffering from glaucoma, we found male preponderance in male: female ratio of 2.2:1 with maximum patients in the age group of 30-45 years. This findings are in contrast with findings of other such study,[15] where male: female ratio was found to be 1:1 and age group with maximum number of patients was found in 45-60 years age. Prescription of medication is a connecting link between physician and patients which gives us the knowledge regarding whereabouts of existing healthcare delivery and it echoes physician's stance towards disease approach.[16,17] Drugs are invented with an aim

to benefit the patient, but unfortunately many times they are used irrationally leading to increased cost and side effects.[18] In our study maximum patients were diagnosed with primary open angle glaucoma. Most common prescribed drugs in the present study were beta blocking agents, Miotics and antimicrobials. This findings are different from that of other studies[16,19] and corroborating with similar study.[20] The high use of antimicrobials can be justified by presence of co-existing infections or as preventive modality of treatment. It has been endorsed that average number of drugs per prescription should be ≤ 2. The findings of the present study is in compliance with above recommendations. (1.8 drugs per prescription) Most of the medications were administered in topical form and its large scale use in glaucoma can be reasonably favored due to its site specific action, less systemic absorption and decreased side effects. One worriful fact in the present study was that no drug was prescribed as generic, which is in contrast to the findings of other such studies.[21,22] This may be due to influence of lucrative gifts or regular Medical Representative visits to the physicians, although generics are less expensive and equally efficacious as their branded counterparts.

Conclusion

Awareness regarding use of generics on a large scale should be done, keeping in mind only sole purpose- to increase the benefit of the patient, decrease cost of the treatment and decrease side effects without affecting efficacy.

Conflict of Interest: None declared
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