Original Research Article

The Use of Topical Chloramphenicol for Eye diseases in the Outpatient setting

ABSTRACT

Aim: The present study was conducted to evaluate the outpatient prescribing pattern of ophthalmic chloramphenicol in a public hospital in Alkharj.

Methodology: This is a retrospective study that includes reviewing the electronic prescriptions of ophthalmic chloramphenicol among outpatients in a public hospital in Alkharj.

Results: During the study period from 1st of January 2018 to the end of June 2018, 168 patients received ophthalmic chloramphenicol. More than 50 % of them were males and the age of 55.95% of them was less than 20 years. More than 46% of the ophthalmic chloramphenicol prescriptions were prescribed for 7 Days and 39.29% were prescribed for 5 days. More than 83%of the prescriptions were prescribed by emergency department.

Conclusion: The present study showed that ophthalmic chloramphenicol was uncommonly prescribed in Al-Kharj. Further studies are needed to explore the appropriateness of its prescribing and its use in order to decrease the bacterial resistance and to increase its efficacy

KEYWORDS: Antibiotics, chloramphenicol, ophthalmic, outpatient, prescribing.

INTRODUCTION

Antibiotics are drugs that help stop the infections that are caused by bacteria. They kill the bacteria or keep them from copying themselves or reproducing [1]. Numerous mild bacterial infections get better on their own without

using antibiotics. Moreover, if the infection is viral such as colds and flu, and most coughs and sore throats, antibiotics will not work for these infections [2]. So, antibiotics are no longer routinely used to treat ear infections in children, chest infections, and sore throats [2].

Antibiotics are used frequently in different settings and in several infections, they are used excessively. For example, in U.S. doctors' offices and emergency departments, at least 28% of antibiotic courses prescribed each year are unnecessary [3]. A previous study showed that antibiotics were prescribed commonly in the outpatient setting in Riyadh [4]. Moreover, another study found that antibiotics were prescribed frequently in the outpatients setting in Al-Kharj [5]. Although antibiotics can save lives, any time they are used, they can cause several side effects as well as they contribute to the development of antibiotic resistance [3].

Several topical antibiotics are available and are used in preventing infections caused by bacteria [6]. A previous study in the outpatient setting in Riyadh showed that 14% of the antibiotic Prescriptions include a topical dosage forms (including drops and other topical dosage forms) [4]. Banerjee and Argáez reported that there is some concern regarding the use of antibiotics because of the possible development of antibacterial resistance in the long term [6]. Moreover, other study informed that the leading cause for antimicrobial resistance is the inappropriate usage of antimicrobials and that the resistance can occur by using systemic or topical antibiotics [7].

Chloramphenicol is a semisynthetic, broad-spectrum antibiotic that is derived from Streptomyces venequelae and has a bacteriostatic activity. It diffuses through the bacterial cell wall and binds to the bacterial 50S ribosomal subunit reversibly [8]. Chloramphenicol is used in the management of serious infections in different parts of the body and in sometimes it is given with other antibiotics [9]. However, chloramphenicol should not be used for colds, flu, other virus infections, sore throats or other minor infections, or to prevent infections [9]. Ophthalmic chloramphenicol is used to treat eye infections (such as conjunctivitis) and comes as eye drops or eye ointment. Other forms of chloramphenicol include ear drops, capsules and as an intravenous injection [10].

Topical application of chloramphenicol could lead to several adverse effects such as leukemia and aplastic anemia that have been contested by controlled trials [11,12]. Moreover, other study showed that several patients have suffered cases of dermatitis following chloramphenicol application, which, being mistaken initially for wound infections, has had potentially deleterious health consequences [13].

Looking into the increasing importance of drug utilization studies, there was a need to conduct a similar study for different antibiotics including chloramphenicol. So, the present study was conducted to evaluate the outpatient prescribing pattern of ophthalmic chloramphenicol in a public hospital in Alkharj.

METHODOLOGY

This was a retrospective study that included reviewing the electronic prescriptions of ophthalmic chloramphenicol among outpatients in a public hospital in Alkharj. The inclusion criteria included outpatient prescriptions that contained ophthalmic chloramphenicol in the study period from 1st of January 2018 to the end of June 2018. Exclusion criteria included all of the inpatient prescriptions in addition to the outpatient prescriptions that didn't contain an ophthalmic chloramphenicol dosage form.

The collected data included the demographic data of patients, the number of ophthalmic chloramphenicol prescriptions that were prescribed during different months of the study, duration of ophthalmic chloramphenicol use, the prescribed dosage forms of ophthalmic chloramphenicol, the level of prescribers, and the departments that prescribed ophthalmic chloramphenicol.

The data were collected and analyzed by Excel spreadsheet software and the descriptive data were represented as frequencies and percentages.

RESULTS and DISCUSSION

During the study period from 1st of January 2018 to the end of June 2018, 168 patients received ophthalmic chloramphenicol. More than 50 % of them were males and the age of 55.95% of them was less than 20 years. Table 1 shows the personal data of the patients.

Table 1. The personal data of the patients.

Variable	Category	Number	Percentage
Gender	Male	87	51.79
	Female	81	48.21
Age	Less than 10	60	35.71
	10-19	34	20.24
	20-29	24	14.29
	30-39	24	14.29
	40-49	21	12.50
	50-59	1	0.59
	More than 60	4	2.38
Nationality	Saudi	139	82.74
	Non- Saudi	29	17.26

Table 2 shows the number of ophthalmic chloramphenicol prescriptions that were prescribed during different months of the study. More than 18% of the prescriptions were prescribed in April and 17.26% of the prescriptions were prescribed in March.

Table 2. The number of ophthalmic chloramphenicol prescriptions that were prescribed.

Month	**Number**	**Percentage**
Jan	27	16.07
Feb	28	16.67
March	29	17.26
April	31	18.45
May	26	15.48
June	27	16.07

Table 3 shows the duration of ophthalmic chloramphenicol use. More than 46% of the ophthalmic chloramphenicol prescriptions were prescribed for 7 Days and 39.29% were prescribed for 5 days.

Table 3. The duration of ophthalmic chloramphenicol use.

Duration	**Number**	**Percentage**
14 Days	2	1.19
13 Days	1	0.59
7 Days	78	46.43
5 Days	66	39.29
4 Days	5	2.98
3 Days	16	9.52

Table 4 shows the prescribed dosage forms of ophthalmic chloramphenicol. More than 52% of ophthalmic chloramphenicol prescriptions were prescribed as eye drops.

Table 4. The prescribed dosage forms of ophthalmic chloramphenicol.

Dosage form	**Number**	**Percentage**
Eye Drops	88	52.38
Eye Ointment	80	47.62

Table 5 shows the level of prescribers who prescribed ophthalmic chloramphenicol. More than 98% of the prescribers were residents.

Table 5. The level of prescribers.

Prescribers Level	**Number**	**Percentage**
Specialist	2	1.19
Resident	165	98.22
Consultant	1	0.59

Table 6 shows the departments that prescribed ophthalmic chloramphenicol. More than 83%of the prescriptions were prescribed by emergency department.

Table 6. The departments that prescribed ophthalmic chloramphenicol.

Departments	**Number**	**Percentage**
Emergency	141	83.93
Ophthalmology	26	15.48
Nephrology	1	0.59
Total	**168**	100

Ophthalmic chloramphenicol was prescribed uncommonly in Alkharj. Lam et al informed that topical chloramphenicol has been widely used in the treatment and prevention of superficial eye infections due to its broad spectrum of activity and low cost and is still widely used in many other countries [14]. McGhee and Anastas informed that there is a widespread ocular use of topical chloramphenicol [15]. In contrast to that, Ahmed reported that the most frequently used medicines in the outpatient ophthalmology department in Al-Kharj were *a*rtificial tears eye drops, olopatadine, fusidic acid and fluorometholone and that chloramphenicol *is* used by only 3.09% of the patients who visited outpatient ophthalmology department [16].

More than 46% of the ophthalmic chloramphenicol prescriptions were prescribed for 7 Days and 39.29% were prescribed for 5 days. This is rational because eye drops and eye ointment should not be used for more than a week, unless recommended by the doctor [10].

More than 83%of the prescriptions that contain ophthalmic chloramphenicol were prescribed by emergency department. This is rational because antibiotics in general are prescribed commonly in emergency department. Kerina et al stated that antibiotics are some of the most frequently prescribed drugs in the emergency department with over one in three antibiotic prescriptions in the emergency department being assessed as inappropriate [17]. Centers for Disease Control and Prevention informed that emergency physicians are among the top 5 prescribers of antibiotics with an estimated 14.7 million antibiotic prescriptions written yearly [18]. Vieira and Capela reported that there is a trend towards antibiotic over-prescription at the emergency department and that almost half of the antibiotic prescriptions at the emergency department were incorrect for the established diagnosis, according to the available guidelines [19].

It should be noted that antibiotics such as chloramphenicol treat only bacterial infections. So, ophthalmic chloramphenicol will not work for other types of eye infections such as viral infections [20]. Furthermore, the unnecessary use or misuse of any antibiotic such as chloramphenicol can lead to its decreased effectiveness [20]. Moreover, the use of chloramphenicol drops and ointment can cause eye irritation, stinging and others adverse effects [21], so it should be used correctly.

CONCLUSION

The present study showed that ophthalmic chloramphenicol was uncommonly prescribed in Al-Kharj. Further studies are needed to explore the appropriateness of its prescribing and its use in order to decrease the bacterial resistance and to increase its efficacy.

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