



SIDE EFFECTS OF LOCAL CORTICOSTEROID THERAPY (MAXIDROL AND CHIBROCADRON EYE DROPS) AMONG PATIENTS WITH ALLERGIC CONJUNCTIVITIS. A STUDY DONE IN KUTH, KIGALI RWANDA

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Abstract

Aim: The purpose of this research study was to find out the side effects of local corticosteroids (maxidrol and chibrocadron eye drops) among patients with allergic conjunctivitis at KUTH.

Objectives: The objectives of the study involved were; to determine the prevalence of allergic conjunctivitis at KUTH, to assess allergic conjunctivitis rate and associated subject's occupation, to determine side effects of maxidrol and chibrocadron eye drops on patients with allergic conjunctivitis and finally to suggest the possible recommendations from the study

Results: The study revealed that the prevalence of allergic conjunctivitis in KUTH from 1st July up to 31st December was 30.5%. Then, the disease affected all age groups even if the majority were between 21 and 25 years old. It has also affected both genders with predominance of female (55%) and it was more prevalent in educated people where students have had a significant percentage of allergic conjunctivitis about 55.6 % compared to the rest of the population.

Furthermore, there was an increased in IOP less than 6 mmHg elevation among 139 patients (86.9%) and IOP has increased more than 6-15 mmHg elevation among 21 patients (13.1%). In addition to raised IOP, there was also 14 patients (8.8%) who have had steroids induced cataract. Fortunately, there was no secondary ocular infection due to maxidrol or chibrocadron eye drops administration.

Conclusion: The study has revealed that both sexes were affected with predominance of females and allergic conjunctivitis was more associated with daily occupation of the patients. In addition, the study has also shown that allergic conjunctivitis has different presenting symptoms like redness, itching, foreign body sensation, photophobia and tearing. Then, it can co exist with other allergic disease such as allergic rhinitis and asthma. Furthermore, it has been revealed that 13.1 % of patients have had steroids induced intraocular hypertension while 14 patients (8.8%) had cataract secondary to long term use of Maxidrol and chibrocadron eye drops. Fortunately, there were no secondary ocular infections due to corticosteroids.

Key Words: steroids induced intraocular pressure (IOP) and steroids induced cataract

INTRODUCTION

Background

The study was describing the side effects of local corticosteroid therapy among patients with allergic conjunctivitis, specifically focusing on the impacts of ophthalmic use of corticosteroid (maxidrol and chibrocadron eye drops).

Ocular allergy represents one of the most common conditions encountered by allergists and ophthalmologists¹. In general, it is estimated that ocular allergies affect 5-22% of the population depending on the geographical setting and on the age of the population studied².

Thus, in practice, approximately 6% of consultations of general practitioners concern inflamed or red eye, half of which are caused by ocular allergy³.

However, a study done in Northern Greece showed that the allergic background of conjunctivitis is usually overlooked, hence, allergic conjunctivitis is often under diagnosed and consequently under treated except when it is severe⁴.

In addition, most common pharmacological treatment mainly includes the prescription of topical ocular mast cell stabilizers or antihistamines and in more severe cases corticosteroids, immunosuppressant drugs and immunotherapy as well⁵. Furthermore, prevention of the allergens, early recognition of the disease, proper use of the medications and follow up, can decrease the complications of allergic conjunctivitis and ocular corticosteroids induced complications.

In the present study, effects of local corticosteroid therapy among patients with allergic conjunctivitis were evaluated. Basically, an outpatient unit in Kigali University Teaching Hospital (KUTH) was considered.

Review of past studies

Topical ophthalmic corticosteroids have been reported to be the most effective in the treatment of severe and chronic forms of ocular allergy⁶, providing effective relief of a broad range of symptoms of ocular inflammation⁷⁻¹⁰.

However, ophthalmic corticosteroids should be considered as a last resort in extreme situations of the disease, because prolonged use of these topical agents can be associated with certain local and serious side effects, including increase in

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intraocular pressure (IOP), glaucoma, cataracts, delayed wound healing, exacerbations of viral infections of the conjunctiva and susceptibility to secondary infection as well¹¹. In addition, once allergic conjunctivitis has been diagnosed and treatment has been initiated, the patient requires follow-up care. Then, the frequency of follow-up visits varies with the severity of the condition, the diversity of etiologies considered, and the potential for ocular morbidity. Follow-up should be designed for careful monitoring of disease progression and verification that the selected treatment regime is effective.

Moreover, alteration of therapy, when needed, as well as recognition of adverse side effects, reevaluation of the condition and its response to treatment at regular intervals, are integral to successful patient management¹² Hence, the duration of treatment should be limited to 1-2 weeks and then, the patient should be monitored by an ophthalmologist¹³ In general, it is estimated that ocular allergies affect 5-22% of the population¹⁴.

A study done specifically in the USA showed that ocular allergy is estimated to affect 15-20% of the general population¹⁵. Then; the eye is a common site and target for the development of an allergic inflammatory disorder, in spite of the fact that tears may prevent the impact of allergens, such as pollens, on its surface¹⁶.

Furthermore, conjunctivitis is a disease process that has a variety of etiologies, clinical features, and treatments. Therefore, professional care is needed for accurate diagnosis and effective treatment. Indeed, appropriate treatment for conjunctivitis may increase patient comfort, reduce the duration of infection, help to prevent the spread of infection, to reduce the socioeconomic cost of conjunctivitis, and to reduce the incidence of associated adverse complications in untreated cases.

Another study done in Asia Pacific Region showed that **red eye** is the most common sign of allergic conjunctivitis and the other common symptoms are watery eyes (88%), itching (88%), redness (78%), soreness (75%), swelling (72%) or stinging (65%)¹⁷.

In other side, the study done in an outpatient unit in Thessaloniki, Northern Greece (Europe), showed that among all allergic patients consulted, 40.11% had allergic conjunctivitis and those with allergic conjunctivitis, 94.14% had allergic conjunctivitis in conjunction with asthma or rhinitis or both¹⁸.

Recently, a study has been made of the prevalence for allergic conjunctivitis in a population between 13-14 years of age in Curitiba (Brazil) and in this study, 17% of the subjects presented ocular symptoms of allergic conjunctivitis, with a similar frequency in both sexes, then all the patients with conjunctivitis also had rhinitis¹⁹.

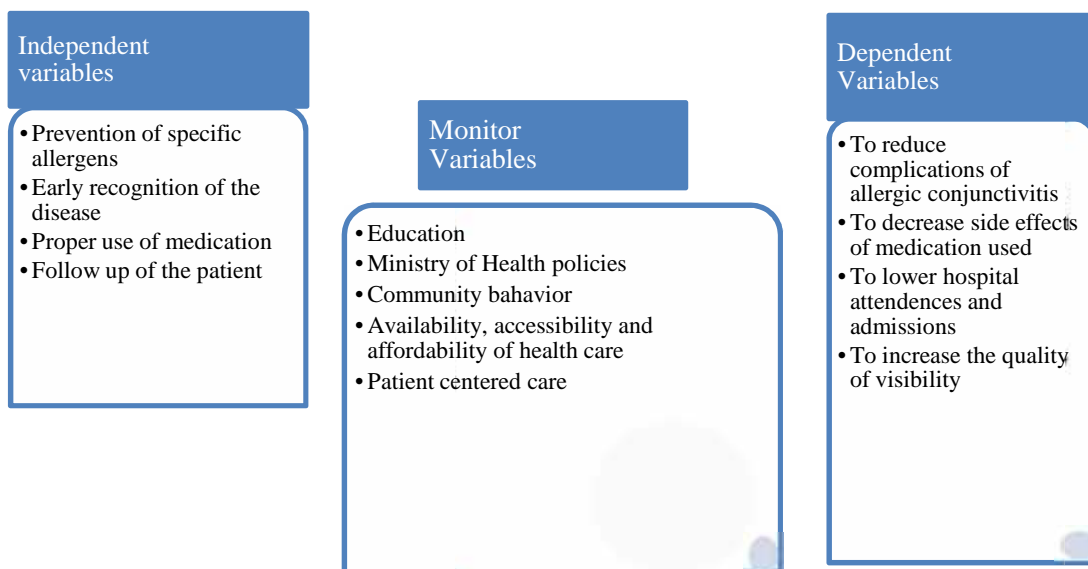
Again, there was a retrospective study in Australia and the prevalence of allergic conjunctivitis was 7.6% by considering all allergic patients consulted²⁰.

In Africa, the prevalence of allergic conjunctivitis has gained the dimension to be recognized as a public health problem and the study done in Ghana; to determine the epidemiological profile and other associated ocular surface disorders of patients with allergic conjunctivitis then its pharmacological management revealed that, the prevalence of allergic conjunctivitis was 9.1% with females constituting 61.8%; Hence, proper management with anti-allergic medications is vital to prevent the development of ocular complications²¹.

In Rwanda, on the basis of Ministry of Health Annual Health Statistics Booklet in 2011, that was published in August 2012 allergic conjunctivitis is among the top ten causes of morbidity in all district hospitals on the **percentage of 7%** of all cases of allergic conjunctivitis compared to other eye diseases that occupied 5% (22). Therefore, associated costs for management have increased substantially as more of the populations require treatment for allergies²³.

Conceptual framework

This study is included in a broad framework (set of ideas and beliefs) which can be used in other to decide what to do considering both independent and dependent variables, and then by intervening with monitor variables as illustrated below:



Critical Review

Reviewed literature demonstrates prevalence of allergic conjunctivitis by considering different regions worldwide¹⁴⁻²². Then, topical ophthalmic corticosteroids have been reported to be the most effective in the treatment of severe and chronic forms of allergic conjunctivitis²⁴, but corticosteroids have been shown to exert (cause) an ocular hypertensive response relative to the intraocular potency of the steroid²⁵. For example, when treated with topical steroids for 4–6 weeks, 5% of the population demonstrates a rise in IOP greater than 16 mmHg and 30% have a rise of 6–15 mmHg²⁶. Therefore, Researcher wanted to find out the situation in Rwanda.

Summary and gaps to be filled by the study

Prolonged use of corticosteroids may result in glaucoma with damage to the optic nerve, defects in visual acuity and visual fields, and then in posterior sub capsular cataract formation. In addition, long-term use of topical corticosteroids may also suppress the host immune response and thus increase the hazard of secondary ocular infections.

If this product is used for 10 days or longer, intraocular pressure should be routinely monitored even though it may be difficult in children and uncooperative patients. Steroids should be used with caution in the presence of glaucoma. Then, intraocular pressure should be checked frequently.

Therefore, on the basis of the studies done elsewhere, this present study was demonstrating the prevalence of allergic conjunctivitis at KUTH by evaluating also the sides effects of maxidrol and chibrocadron eye drops. Thus, recommendations and measures to take were given to avoid misuse and mismanagement of allergic conjunctivitis in Rwanda especially in KUTH.

Methods

Study design

This was a prospective cohort study that was conducted at KUTH Ophthalmology Department, for determining the side effects of local steroid-therapy (maxidrol and chibrocadron eye drops) among patients treated at KUTH from July to December 2014. Local steroids are known to cause ocular hypertension, glaucoma, cataract and secondary eye infections. Our aim in this study was to look for all these sides effects with the help of an ophthalmologist supervising this research paper. We didn't measure the efficacy of those drugs.

Study setting

The study setting was Kigali University Teaching Hospital (KUTH) that is located in Nyarugenge district, within Kigali city, the capital of Rwanda. In addition, the ophthalmology unit at KUTH has two equipped rooms for consultation that receive patients from

different regions of Rwanda and from other departments within KUTH.

Target Population

All patients that were consulting the Ophthalmology department at KUTH during the study period were our target population.

Accessible population

All patients with allergic conjunctivitis consulted, treated and followed by an Ophthalmologist from 1st July to 31st December 2014.

Selection criteria

All patients with allergic conjunctivitis on ophthalmic corticosteroid (either maxidrol or chibrocadron eye drops) followed by Ophthalmologist frequently.

Exclusion criteria

- All patients with previous ocular surgical procedure, immune suppressed patients, young children and uncooperative patients.
- All patients who refused to consent for the study.

Procedure

On arrival, all patients with allergic conjunctivitis have had a clinical examination in which patients were asked about chief complaints and past ocular medico surgical history. Then, a quick systemic examination and visual acuity exam were done, including anterior and posterior segment examination. Visual field examination have been done in case it was necessary. In addition, patients were followed by the Ophthalmologist during a period between four to eight weeks for regular check up.

Then, all findings from files of patients consulted during the study period were collected; analyzed and interpreted by him.

Ethical consideration

The evaluation was not affecting the rights and welfare of the subjects; all patients have been signing a consent form before participating in the study. In addition, prior to the study, the protocol was submitted to KUTH research committee for review and approval.

Confidentiality of patients' data was ensured, where all form data collection were having ID number instead of names. Then, they were kept in the ophthalmology department at KUTH.

Data management and analysis

Patients' data were entered in Microsoft Excel, and then exported to SPSS 16.0 version for analysis. In addition, P value less than 0.05 ($P < 0.05$), was considered as significant at 95% confidence interval. Then, text was written in Microsoft word.

RESULTS

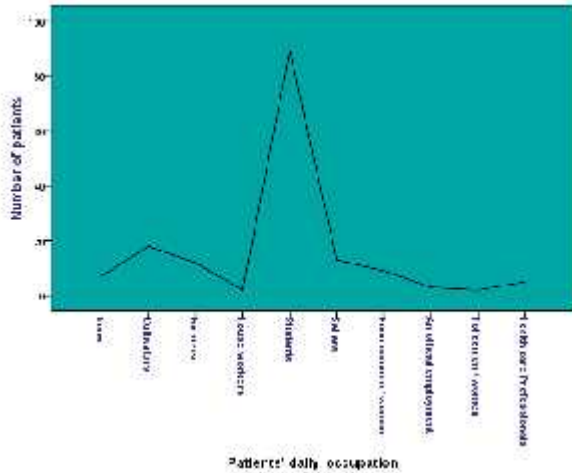


Figure 1 Illustration of Patients' daily occupation

The figure 1 illustrates patients' daily occupation. It is clear that majority of the patients were Students as it is illustrated by the highest level of the figure. The second groups of patients are Cultivator compared to the Sellers that occupy the third position on the figure 4. In addition, the lowest level of the participants is occupied by House workers, Policemen/women and Health care professionals as it is illustrated.

Table 1 Correlation between patients' daily occupation and allergic conjunctivitis

Occupations	Frequency of patients' daily occupation	Percentage of allergic conjunctivitis
None	7	4.4 %
Cultivators	18	11.2 %
Farmers	12	7.5 %
House workers	2	1.2 %
Students	89	55.6 %
Sellers	13	8.1 %
Businessmen / women	9	5.6 %
An official employment	3	1.9 %
Policemen / women	2	1.2 %
Health care Professionals	5	3.1 %
Total	160	100.0 %

Source: Primary data

The table 3 demonstrates the correlation between patients' daily occupation and allergic conjunctivitis. Patients who have no daily occupation have allergic conjunctivitis at the level of 4.4 %. Those who are daily Cultivators, they develop allergic conjunctivitis at the proportion of 11.2 %. Then, Farmers can have allergic conjunctivitis at 7.5 % whereas House workers have it at the extent of 1.2 %.

In addition, Students have a significant percentage of allergic conjunctivitis of about 55.6 %. The Sellers have 8.1 %, Businessmen/ women have 5.6 %, Policemen/ women have 1.2 % and finally Health care professionals have 3.1 %.

Therefore, the first three groups with high prevalence are: Students more than half (55.6 %), followed by Cultivators (11.2 %) and finally the Sellers (8.1 %).

Table 2 Demonstration of patients' allergic eye symptoms

Allergic eye symptoms	Frequency of patients 'eye complaints	Percentage of allergic patients
Pain and itching	43	26.9 %
Foreign body sensation	7	4.4 %
Redness	75	46.9 %
Photophobia and tearing	15	9.4 %
Discharge	8	5.0 %
Visual difficulty	12	7.5 %
Total	160	100.0 %

Source: Primary data

In the Ophthalmology out Patients Department (OPD), Patients presents different allergic eye symptoms. The table 4 summarizes patients' allergic eye symptoms. Those who present pain and itching were 43 patients (26.9 %), patients with foreign body sensation were 4.4%. In addition, patients who presented redness were 75 patients (46.9%). It is the most common ocular manifestation of allergic conjunctivitis. However, photophobia and tearing were 9.4% whereas discharge and visual difficulty were 5.0% and 7.5% respectively.

Table 3 Existence of allergic conjunctivitis alone or with other allergic co- morbidities like rhinitis and asthma.

Alternatives	Frequency of patients	Percentages
Having allergic co-morbidities (rhinitis and asthma)	76	47.5 %
Not having allergic co-morbidities (rhinitis or asthma)	84	52.5%
Total	160	100.0%

It happens that allergic conjunctivitis co exists with allergic rhinitis and asthma. The table 5 shows that, patients who had allergic co-morbidities (rhinitis and asthma) were 76 patients (47.5%) whereas those who did not have allergic co-morbidities were 84 patients (52.5%).

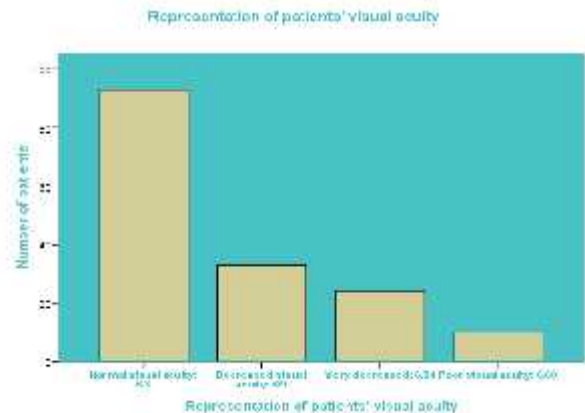


Figure 2 Representation of patients' visual acuity

Persons may present different visual acuity. The figure 5 represents patients' visual acuity as it was taken during the study period. Majority of the subjects had normal visual acuity (6/6). In addition, some patients had a decreased visual acuity represented by 6/9. However, there was a small group of patients with much decreased visual acuity (6/24) and poor visual acuity represented by 6/60.

Visual field exam performance

The visual field examination is not a routine test because of lack of visual field machine. It has not been asked to almost all patients because if it is asked, it has to be done elsewhere. However, for some few patients to whom it has been asked, it revealed normal findings.

Slit lamp examination for anterior segment performed

The slit lamp examination is a routine eye examination and it has been performed to all patients. It revealed allergic conjunctivitis for all patients confirmed by the Ophthalmologist.

Table 4 Patients' fundoscopic findings

Findings of fundoscopy	Number of patients	Percentage of findings
Normal fundoscopy	128	80.0 %
Evidence of Glaucoma (increased cupping)	21	13.1 %
Optic disc Oedema	3	1.9 %
Maculopathy	5	3.1 %
Impossible Fundoscopy	3	1.9 %
Total	160	100.0 %

Source: primary data

Fundoscopy was done for all patients. The table 6 shows that it was normal for 128 patients (80.0%). However, it was revealed evidence of Glaucoma by increased cupping for 21 patients (13.1%). In addition, a small number of patients had optic disc oedema (1.9%) and maculopathy (3.1%), whereas it was not possible to do fundoscopy only for 3 patients (1.9%)

Table 5 Measurement of IOP before steroids of the right eye

IOP	Number of patients	Percentage of patients' IOP
IOP is 8	3	1.9 %
IOP is 9	1	0.6 %
IOP is 10	8	5.0 %
IOP is 11	7	4.4 %
IOP is 12	94	58.8 %
IOP is 13	1	0.6 %
IOP is 14	25	18.1 %
IOP is 15	3	1.9 %
IOP is 16	5	3.1 %
IOP is 17	3	1.9 %
IOP is 18	6	3.8 %

Source: primary data

The IOP has been measured before and after use of corticosteroids eye drops. The table 7 shows the measurement of IOP before steroids eye drops use of the right eye. It shows that IOP for the right eye varied between 8 mmHg (1.9%) and 18 mmHg (3.8%) before the use of medication. In addition, it shows that majority of patients (58.5 %), had IOP equals to 12 mmHg whereas another small group of patients (18.1%), had 14 mmHg. Hence, the IOP was normal for

almost all patients before the use of Maxidrol and chibrocadron eye drops to the right eye.

Table 6 Measurement of IOP before steroids of the Left eye

IOP	Number of patients	Percentage of patients' IOP
IOP is 8	2	1.2 %
IOP is 9	1	6 %
IOP is 10	8	5 %
IOP is 11	7	4.4 %
IOP is 12	97	60.6 %
IOP is 13	1	6 %
IOP is 14	29	18.1 %
IOP is 15	2	1.2 %
IOP is 16	4	2.5 %
IOP is 17	3	1.9 %
IOP is 18	5	3.1 %
Not possible to take IOP	1	0.6 %

Source: primary data

The measurement of IOP was done also for the left eye before the use of medication. The table 8 shows that, IOP findings were between 8 mmHg (1.2%) and 18 mmHg (3.1%). However, there was a high proportion (60.6%) of patients with IOP equals 12 mmHg. Furthermore, 29 patients (18.1 %) had an IOP of 14 mmHg and it was not possible to measure IOP to only one patient to his left eye before steroids medication. Thus, the IOP was in normal range to almost all patients before the use of steroids eye drops to the left eye.

Table 7 Measurement of IOP after 4 weeks on corticosteroids eye drops Right eye

IOP	Number of the patients	Percentage of patients' IOP
IOP is 12	17	10.6 %
IOP is 13	5	3.1 %
IOP is 14	61	38.1 %
IOP is 15	6	3.8 %
IOP is 16	23	14.4 %
IOP is 17	2	1.2 %
IOP is 18	8	5.0 %
IOP is 19	7	4.4 %
IOP is 20	11	6.9 %
IOP is 21	1	0.6 %
IOP is 22	2	1.2 %
IOP is 23	1	0.6 %
IOP is 23	2	1.2 %
IOP is 25	2	1.2 %
IOP is 26	5	3.1 %
IOP is 27	1	0.6 %
IOP is 28	3	1.9 %
IOP is 29	2	1.2 %
IOP is 30	1	0.6 %
Total	160	100.0 %

Source: primary data

The IOP varied significantly after the use of steroids eye drops in the Right eye. 17 patients had 12 mmHg, 61 patients had 14 mmHg, and 23 patients had 16 mmHg. In addition, 11 patients had 20 mmHg which is the upper limit of normal. However, there is an increased IOP in the right eye

among 20 patients: from 21 mmHg up to 30 mmHg as illustrated.

Table 8 Measurement of IOP after 4 weeks on corticosteroids eye drops Left eye

IOP	Number of patients	Percentage of patients' IOP
IOP is 12	10	6.2
IOP is 13	8	5.0
IOP is 14	72	45.0
IOP is 15	7	4.4
IOP is 16	20	12.5
IOP is 17	1	0.6
IOP is 18	11	6.9
IOP is 19	9	5.6
IOP is 20	8	5.0
IOP is 21	1	0.6
IOP is 22	2	1.2
IOP is 23	1	0.6
IOP is 24	2	1.2
IOP is 25	1	0.6
IOP is 26	1	0.6
IOP is 27	1	0.6
IOP is 28	1	0.6
IOP is 29	2	1.2
IOP is 30	1	0.6
Not possible to take IOP	1	0.6
Total	160	100.0

Source: primary data

The IOP varied significantly after the use of steroids eye drops in the left eye. 10 patients had 12 mmHg, 72 patients had 14 mmHg, and 20 patients had 16 mmHg. In addition, 8 patients had 20 mmHg which is the upper limit of normal. However, there is an increased IOP in the left eye among 13 patients: from 21 mmHg up to 30 mmHg. Furthermore, there was one patient to whom taking IOP to his left eye was not possible. Hence, there was a raised IOP secondary to steroids eye in the left eye.

Assessment of side effects of Maxidrol and Chibrocadron eye drops.

Table 9 Distribution of Patient who have used Maxidrol and Chibrocadron eye drops

Maxidrol / Chibrocadron	Number of patients	Percentages
Patient uses Maxidrol eye drops	84	52.5 %
Patient uses Chibrocadron eye drops	76	47.5 %
Total	160	100.0 %

Source: Primary data

Maxidrol and Chibrocadron have been used to treat allergic conjunctivitis. The table 11 shows that 84 patients (52.5%) have used Maxidrol eye drops whereas 76 patients (47.5%) have used chibrocadron eye drops. Maxidrol had a high prescription rate compared to chibrocadron.

Maxidrol and Chibrocadron eye drops cause an increased IOP. The table 12 illustrates that there was an increase in IOP

less than 6 mmHg elevation of IOP among 139 patients (86.9%). In addition, IOP has increased more than 6-15 mmHg elevation of IOP among 21 patients (13.1%).

Table 10 Illustration of Patients who have steroids induced high IOP and Glaucoma

Responder to Steroids eye drops	Number of patients	Percentages
Less than 6 mmHg elevation of IOP	139	86.9 %
More than 6-15 mmHg elevation of IOP	21	13.1 %
Total	160	100.0

Source: primary data

Table 11 Demonstration of patients who have steroids induced cataract

Alternatives	Number of patients	Percentages
Patient doesn't have steroids induce cataract	146	91.2 %
Patient has steroids induced cataract	14	8.8 %
Total	160	100.0 %

Source: primary data

Maxidrol and chibrocadron eye drops may cause also cataract. The table 13 shows that 146 patients (91.2%) didn't have steroids induced cataract whereas 14 patients (8.8%) developed steroids induced cataract.

Prevalence of allergic conjunctivitis in ophthalmology department since 1st July up to 31st December

The total number of the target population was 160 allergic patients that were consulted and diagnosed by Ophthalmologist to have allergic conjunctivitis. It was those patients that have been treated and followed during the study period. However, the total number of all patients received by Ophthalmologist for any disease during the study period was 525 patients.

Therefore, the prevalence of allergic conjunctivitis in KUTH from 1st July up to 31st December was 30.5%.

DISCUSSIONS

In the present study, both age and sex of participants were considered. The study has shown that the lowest age was 10 years old and the highest age was 71 years old. In addition, the age has a significant consideration in the present study. Hence, we didn't consider patients less than 10 years old because, those patients should be uncooperative while measuring IOP.

Furthermore, the majority of the patients were aged between 21 and 25 years old, whereas there was a small number of patients aged between 51 and 55 years old. However, there is similarity only between two age groups: age 31-35 years old and 41-45 years old.

Then, the study was concerning both males (45%) and females (55%) therefore, females had a high proportion compared to males and this can be explained by their high number countrywide.

The patients' educational level was also considered where 14.4 % of patients had no formal education. Then, patients

with primary education are 24.4 %. Whereas, those with secondary education level are 39.4 % and 21.9 % at the tertiary level. Therefore, allergic conjunctivitis was more associated with daily occupation of the patients. Then, there was a high prevalence in secondary educated people compared to no formal educated patients. That is why Students have a significant percentage of allergic conjunctivitis of about 55.6 % compared to the rest of the population.

In ophthalmology out patients department (OPD), patients have presented different allergic eye symptoms. In addition, patients with redness had a high percentage (46.9%) compared to the rest of allergic eye symptoms. It happens that allergic conjunctivitis co exists with allergic rhinitis and asthma. Then, patients who had allergic co-morbidities (rhinitis and asthma) were 76 patients (47.5%) whereas those who did not have allergic co-morbidities were 84 patients (52.5%).

Moreover, persons may present different visual acuity. Majority of the subjects had normal visual acuity (6/6). In addition, some patients had a decreased visual acuity represented by 6/9. However, there was a small group of patients with much decreased visual acuity (6/24) and poor visual acuity represented by 6/60.

The IOP has been measured before and after use of corticosteroids eye drops. It has been shown that IOP for the right eye varied between 8 mmHg (1.9%) and 18 mmHg (3.8%) before the use of medication. In addition, it shows that majority of patients (58.5 %), had IOP equals to 12 mmHg whereas another small group of patients (18.1%), had 14 mmHg. Hence, the IOP was normal for almost all patients before the use of Maxidrol and chibrocadron eye drops to the right eye. Further, the measurement of IOP was also done for the left eye before the use of medication. Then, IOP findings were between 8 mmHg (1.2%) and 18 mmHg (3.1%). However, there was a high proportion (60.6%) of patients with IOP equals 12 mmHg. In addition, 29 patients (18.1 %) had an IOP of 14 mmHg. Thus, the IOP was in normal range to almost all patients before the use of steroids eye drops to the left eye.

The IOP varied significantly after the use of steroids eye drops in the Right eye. 17 patients had 12 mmHg, 61 patients had 14 mmHg, and 23 patients had 16 mmHg. In addition, 11 patients had 20 mmHg which is the upper limit of normal. However, there is an increased IOP in the right eye among 20 patients: from 21 mmHg up to 30 mmHg. Then, IOP has varied significantly after the use of steroids eye drops in the left eye where 10 patients had 12 mmHg, 72 patients had 14 mmHg, and 20 patients had 16 mmHg. In addition, 8 patients had 20 mmHg which is the upper limit of normal. However, there is an increased IOP in the left eye among 13 patients: from 21 mmHg up to 30 mmHg. Thus, there was a raised IOP secondary to steroids eye drops in the left eye. However, the right eyes were more affected compared to the left eyes.

Either Maxidrol or Chibrocadron eye drops has been used to treat allergic conjunctivitis. Eighty four patients have received maxidrol eye drops at the rate of 52.5%, compared to Seventy six patients who had received chibrocadron eye drops at the extent of 47.5%. Thus, Maxidrol had a high prescription rate compared to chibrocadron eye drops.

Both Maxidrol and Chibrocadron eye drops have caused an increased IOP. Those medications have induced an IOP less than 6 mmHg elevation among 139 patients (86.9%), and then IOP has increased more than 6-15 mmHg elevation among 21 patients (13.1%). Also, Maxidrol and chibrocadron eye drops have caused cataract in 14 patients (8.8%) whereas, 146 patients (91.2%) didn't have steroids induced cataract.

Summary

The prevalence of allergic conjunctivitis in KUTH from 1st July up to 31st December was 30.5%. In addition, the disease affects all age groups even if the majority were between 21 and 25 years old. It also affects both genders with predominance in female (55%). It was also more prevalent in educated people that is why students have a significant percentage of allergic conjunctivitis of about 55.6 % compared to the rest of the population.

Even if steroids are good medications for allergic conjunctivitis, but they exhibit side effects. Those medications have induced an IOP less than 6 mmHg elevation among 139 patients (86.9%), and then IOP has increased more than 6-15 mmHg elevation among 21 patients (13.1%). Also, Maxidrol and chibrocadron eye drops have caused cataract in 14 patients (8.8%). Fortunately, there was no secondary ocular infection due to maxidrol or chibrocadron eye drops administration.

CONCLUSION

In conclusion, the study has revealed that both sexes were affected with predominance of females and allergic conjunctivitis was more associated with daily occupation of the patients. In addition, the study has also shown that allergic conjunctivitis has different presenting symptoms like redness, itching, foreign body sensation, photophobia and tearing. Then, it can co exist with other allergic disease such as allergic rhinitis and asthma. Furthermore, it has been revealed that 13.1 % of patients have had steroids induced intraocular hypertension while 14 patients (8.8%) had cataract secondary to long term use of Maxidrol and chibrocadron eye drops. Fortunately, there were no secondary ocular infections due to corticosteroids.

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