

# Cortisone Glaucoma at IOTA CHU: Epidemiological, Clinical and Therapeutic Study

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## Abstract

**Introduction:** Cortisone glaucoma is a secondary glaucoma iatrogenic open angle induced by corticosteroids administered locally or systemically for chronic conditions, most often inflammatory. **Objective:** The aim of this study was to evaluate the epidemiological, clinical and therapeutic profile of cortisone-induced glaucoma in patients at CHU-IOTA. **Patients and Methods:** This was an 11-month retrospective study from December 1, 2023 to October 30, 2024 in the glaucoma subspecialty department of the CHU-IOTA. The study involved 10 patients (20 eyes) aged at least 10 years old, consenting, monitored for cortisone-induced glaucoma. **Result:** The majority of our patients (70%) were under 21 years old. Men were predominantly represented (80%) compared to 20% women, a sex ratio of 4. The initial eye condition that prompted the use of corticosteroids was allergic conjunctivitis in 80% and uveitis in 20%. Local corticosteroids were implicated in all of our patients and associated with general corticosteroids in only 20%. The interrogation found that the vast majority of our patients had been taking discontinuous and uncontrolled self-medication for more than 5 years. Visual function was impaired (6 of 20 eyes had visual acuity < 1/10) associated with significant impairment in CV. Associated cortisone cataract was found in 70% of patients. **Conclusion:** Cortisone-induced glaucoma is a serious condition due to the blindness it causes and its high frequency in young people.

## Keywords

Corticosteroids, Glaucoma, CHU-IOTA

## 1. Introduction

Cortisone glaucoma is a secondary glaucoma iatrogenic open angle induced by corticosteroids administered locally or systemically for chronic conditions, most often inflammatory [1].

It is often resistant to treatment with the risk of progression to blindness. It is a serious condition, especially in children (subjects at high surgical risk) [2].

The incidence of corticosteroid glaucoma appears to be increasing, due to the frequent use of local corticosteroids in the treatment of allergic conjunctivitis and intravitreal injections in the treatment of macular edema, serous detachments, or choroidal neovascularization [3].

It is estimated that approximately 30% to 40% of the general population is likely to present ocular hypertension linked to the taking of corticosteroids but that this proportion increases to 90% in a population of individuals also presenting primary open-angle glaucoma [4].

Cortisone glaucoma is a reality, its frequency is estimated at 1.4% of all glaucomas [5].

It is more often related to prolonged local corticosteroid therapy, given for chronic eye conditions, of which allergic conjunctivitis is the main cause [6].

Genetic predisposition, corticosteroid therapy modalities, and certain patient-related factors appear to be determining factors in the induction and development of corticosteroid glaucoma. The best treatment at present remains prevention, ensuring adequate monitoring of any local or systemic corticosteroid therapy [7].

The aim of this study is to evaluate the epidemiological, clinical, therapeutic and evolutionary profile of cortisone-induced glaucoma in patients at CHU-IOTA.

## 2. Patients and Methods

This is an 11-month retrospective study from December 1, 2023 to October 30, 2024 in the glaucoma subspecialty department of the CHU-IOTA.

The study involved 10 patients (20 eyes) aged at least 10 years consenting, monitored for cortisone glaucoma. The diagnosis of corticosteroid glaucoma was made in the presence of intraocular pressure greater than 21 mmHg, associated with an open iridocorneal angle, papillary excavation  $\geq 0.4$  and an alteration of the visual field after prolonged use of corticosteroids.

Excluded from this study were patients under 10 years old, not followed in this department and those diagnosed with another type of glaucoma.

We present an epidemiological and clinical study with evaluation of the importance of functional impairment at the time of discovery of the disease (visual acuity). We also present our therapeutic results (a drop in pressure under treatment with IOP < 21 mmHg and a stable CV with MD between 3 - 6 years at least 2 to 3 examinations spaced over 1 to 2 years show an absence of progression).

The survey was carried out with the authorization of the General Management of CHU-IOTA through the training department.

All patients gave their free and informed consent to participate in the study.

Data were collected on individual survey forms.

The variables assessed included: sex, age, visual acuity, and IOP.

The data were analyzed using SPSS 26.0 software. Word processing was done with Microsoft Word and graphic representations were made from Excel spreadsheets.

The statistical tests used were not used in our study because no comparison was planned to assess the association of corticosteroid glaucoma with the other variables studied.

### 3. Results

We collected 10 patients in our study, *i.e.* 20 eyes.

The sexmales were predominantly represented (80%) against 20% of women, *i.e.* a sex ratioM/Fof 4 (Figure 1).

The majority of our patients (70%) were under 21 years old, *i.e.* aaverage age of 22.1 years with extremes of 10 to 45 years (Figure 2).

In our study, the initial ocular condition that prompted the use of corticosteroids was allergic conjunctivitis in 80% followed by uveitis in 20% (Table 1).

Local corticosteroids were implicated in 100% of our patients and associated with general corticosteroids in only 20% of our patients.

All of our patients, 100%, used Dexamethasone alone or in combination eehas other therapeutic class on a harded from 3 to 5 years old.

The interview revealed that the vast majority of our patients, *i.e.* 80%, were on discontinuous and uncontrolled self-medication of corticosteroid therapy (Table 2).

Visual function was severely impaired (11 out of 20 eyes had visual acuity < 1/10 or 55%) associated with significant impairment in CV (4 out of 20 eyes or 20% had MD > 12) (Table 3, Table 4).

The average follow-up duration of our patients was 25.7 months with extremes of 4 to 60 months.

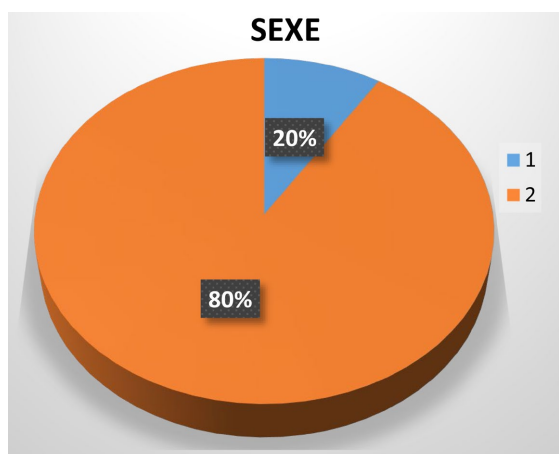
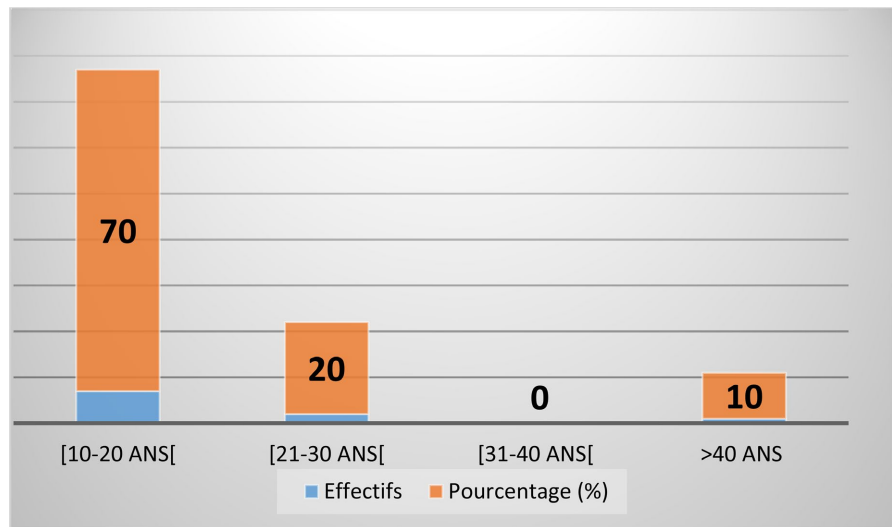


Figure 1. Distribution of patients by sex.



**Figure 2.** Distribution of patients by age.

**Table 1.** Distribution of patients according to the ocular pathology requiring corticosteroid therapy.

Eye pathology	Effective	Fresequece (%)
allergic conjunctivitis	8	80
uveitis	2	20
<b>Total</b>	<b>10</b>	<b>100</b>

**Table 2.** Distribution of patients according to the route, type, conduct and duration of corticosteroid therapy used.

	Effective	Fresequece (%)
<b>Route used</b>		
Local	8	80
Local and general	2	20
<b>Type of corticosteroid</b>		
Dexamethasone	10	100
<b>Duration</b>		
1 - 2 years	2	20
3 - 4 years	4	40
>5 years	4	40
<b>Corticosteroid therapy management</b>		
under medical prescription	0	0
Self-medication	8	80
Both	2	20

**Table 3.** Patient distribution according to the AVLSC.

AVSC	OD		OG	
	Staff	Frequency %	Effective	Frequency %
PPL	1	10	1	10
PL to VBM	1	10	1	10
1/20 - 1/10	1	10	1	10
1/10 has 3/10	3	30	2	20
3/10 has 5/10	1	10	0	0
>5/10	3	30	5	50
<b>Total</b>	<b>10</b>	<b>100</b>	<b>10</b>	<b>100</b>

**Table 4.** Distribution of patients according to anti-glaucoma drug and surgical treatment.

Treatment	Effective	Frequency (%)
<b>Medicinal</b>		
Monotherapy	8	80
Bitherapy	2	20
<b>Surgical OD OG</b>		
Trabeculectomy	0	1
Deep sclerotomy	1	1
Not realized	9	8

Intraocular pressure was stable under treatment between 10 has 20 mmHg (16 eyes/20 or 80%), high despite treatment >30 mmHg (4 eyes/20 or 20%) (**Table 5**).

Associated cortisone cataract was found in 70% of our patients (**Table 6**).

Advanced papilla involvement was found in 13 out of 20 eyes with a cup/disk ratio ranging from 0.7 to 1.0 (**Table 7**).

Medical treatment with beta-blocker and/or prostaglandin eye drops alone was successful in balancing eye pressure in 80% of our patients.

Trabeculectomy was performed (1 eye) and deep sclerectomy (2 eyes) following failure of medical treatment (**Table 8**).

**Table 5.** Distribution of patients according to IOP under treatment.

PIO	OD		OG	
	Staff	Frequency %	Effective	Frequency %
10 - 20	8	80	8	80
21 - 30	0	30	0	00
31 - 40	1	10	2	20
>40	1	10	0	00
<b>Total</b>	<b>10</b>	<b>100</b>	<b>10</b>	<b>100</b>

**Table 6.** Distribution of patients according to excavation.

CD	OD		OG	
	Staff	Frequency %	Effective	Frequency %
<0.4	0	00	0	<b>80</b>
0.4 - 0.7	3	30	4	<b>40</b>
>0.7	7	70	5	<b>50</b>
C/D 1	0	00	1	<b>10</b>
<b>Total</b>	<b>10</b>	<b>100</b>	<b>10</b>	<b>100</b>

**Table 7.** Distribution of patients according to the association of cataracts with cortisone-induced glaucoma.

Corticosteroid-induced cataract	Effective	Frequency (%)
Yes	7	<b>70</b>
No	3	30
<b>Total</b>	<b>10</b>	<b>100</b>

**Table 8.** Distribution of patients according to CV alteration.

Average deviation MD	OD		OG	
	Staff	Frequency%	Effective	Frequency %
6 - 12	6	60	6	<b>60</b>
>12	1	10	1	<b>10</b>
Unrealized CV	3	30	3	<b>30</b>
<b>Total</b>	<b>10</b>	<b>100</b>	<b>10</b>	<b>100</b>

#### 4. Discussion

Our study presented some limitations and shortcomings, the reasons for which include:

- The small sample size: because it is a pilot study which was carried out in a single consultation unit of the CHU-IOTA, that is to say the glaucoma subspecialty unit.
- The retrospective nature: the lack of logistics for the long-term monitoring of our patients.

In our study, the sex males were predominantly represented (80%) against 20% of women, *i.e.* a sex ratio M/F of 4.

This predominance corroborates that of Imane Hamafi *et al.* [2] in Morocco who found 57.14% in their study.

The majority of our patients (70%) were under 21 years of age. The mean age of patients was 22.1 years, with extremes ranging from 10 to 45 years.

The average age of our patients is comparable to that of F. El Ibrahimy [8] and

that of Charif

Chefchaoui [6] in Morocco who were respectively 19 and 21 years old.

Children and adolescents were mainly affected by corticosteroid glaucoma in several studies. This may be explained by the fact that this group of subjects has more allergic conjunctivitis requiring repeated corticosteroid therapy over several years.

In our study, the initial eye condition that prompted the use of corticosteroids was allergic conjunctivitis in 80% followed by uveitis in 20%.

Our result is comparable to that of Imane Hamafi *et al.* [2] who found 82.60% allergic conjunctivitis followed by 13.04% uveitis.

Other conditions have been found by several authors:

- Uveitis, chalazion has repetition, blepharitis, Episclerite [2].
- Intravitreal injection into the cystoid macular edema, diabetic macular edema, macular edema due to central retinal vein occlusion and choroidal neovascular membrane [9].

Local corticosteroids were implicated in 100% of our patients and associated with general corticosteroids in only 20% of our patients.

This result is close to that of M.-A. El Afrit in Tunisia [1] which found 65.21% of local corticosteroid therapy against 34.78% of general corticosteroid therapy.

Most cases reported in the literature are related to topical corticosteroids. However, systemic corticosteroids are also responsible for corticosteroid-induced glaucoma in certain pathological cases.

These results are explained by the fact that the topical route is frequently used and therefore causes cortisone glaucoma.

The interview found that the vast majority of our patients, *i.e.* 80%, were on discontinuous and uncontrolled self-medication with corticosteroid therapy.

F. El Ibrahim *et al.* [8] also found a notion of discontinuous and uncontrolled self-medication in all of their patients 100%.

All our patients, 100%, used the dexamethasone alone or in combination to another class on a harded between 3 and 5 years old.

In Sweta's study VD *et al.*, a prolonged-release dexamethasone intravitreal implant was used in 80 patients over a 2-year period, and an IOP peak was observed in 18.62% of them [9].

The same constants were made by M.-A. El Afrit [1] in Tunisia which found In his series, use of cortisone treatment between 2 months and 13 years.

Visual function was severely impaired (11 out of 20 eyes had visual acuity < 1/10 or 55%) associated with significant impairment in CV (4 out of 20 eyes or 20% had MD > 12).

Intraocular pressure was stable under treatment between 10 has 20 mmHg (16 eyes/20 or 80%), high despite treatment >30 mmHg (4 eyes/20 or 20%).

The mean IOP was 38 to 12 mmHg in the study. Prdhnya Senal in India [10].

This high IOP in cortisone-induced glaucoma explains its severity and rapid progression in the absence of adequate treatment.

Associated cortisone cataract was found in 70% of our patients.

Imane Hamafi *et al.* [2] made the same remark: 32% of patients had an associated cortisone cataract.

Advanced papilla damage is found in 13 out of 20 eyes, or 65%. with a cup/disk ratio varying from 0.7 to 1.0.

Our study is comparable has that of Imane Hamafi *et al.* [2] who found a Pathological excavation of the papilla in 17 eyes with a cup/disk ratio ranging from 0.4 to 1.0.

Medical treatment with beta-blocker and/or prostaglandin eye drops alone was successful in balancing eye pressure in 80% of our patients.

Among the 10 eyes included, 3 eyes were treated with filtering surgery (15%), trabeculectomy in 1 eye (5%) and deep sclerectomy in 2 eyes (10%) due to failure of medical treatment.

Price MO *et al.* included 211 non-glaucomatous patients who underwent Descemet endothelial ketoplasty (DSEK) and used long-term topical prednisolone acetate to prevent graft rejection. Of the 211 eyes, 35 eyes were treated for glaucoma, 28 (80%) were treated medically, and 7 (20%) underwent filtration surgery [11].

## 5. Conclusions

Cortisone glaucoma is a serious condition due to the blindness it can cause and its high frequency in young people, especially those suffering from allergic conjunctivitis.

In our study, all of our patients used corticosteroids unsupervised and developed corticosteroid-induced glaucoma.

Among them, 20% of eyes had advanced glaucoma with a MD > 12 and impaired visual function (visual acuity < 1/10 in 11 out of 20 eyes or 55%).

Cortisone cataracts developed in 70% of our patients.

Despite maximum drug treatment, 3 out of 20 eyes were operated on to lower IOP.

Therefore, measures must be taken collectively by ophthalmologists to prevent the misuse of corticosteroids and by patients on education to stop self-medication.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- [1] El Afrit, M., Mazlout, H., Trojet, S., Larguech, L., Megaieth, K., Belhaj, S., *et al.* (2007) Glauome cortisonique: Étude épidémiologique, clinique et thérapeutique. *Journal Français d'Ophtalmologie*, **30**, 49-52.  
[https://doi.org/10.1016/s0181-5512\(07\)89550-7](https://doi.org/10.1016/s0181-5512(07)89550-7)
- [2] Imane, H., *et al.* (2020) Cortisone-Induced Glaucoma in Children: Epidemiological, Clinical, Therapeutic and Evolutionary Profile.  
<https://www.sfo-online.fr/media/le-glaucome-cortisonique-chez-lenfant-profil-epidemiologique-clinique-therapeutique-et>

- 
- [3] Jonas, J., Degenring, R., Kreissig, I., Akkoyun, I. and Kampeter, B. (2005) Intraocular Pressure Elevation after Intravitreal Triamcinolone Acetonide Injection. *Ophthalmology*, **112**, 593-598. <https://doi.org/10.1016/j.ophtha.2004.10.042>
- [4] Becker, B. (1965) Intraocular Pressure Response to Topical Corticosteroids. *Investigative Ophthalmology & Visual Science*, **4**, 198.
- [5] Bechtoille, A. (1988) Glaucoma. Edition Jallerenard.
- [6] Charif Chefchaoui, M., et al. (1998) Cortisone Glaucoma in Allergic Conjunctivitis. *Maghreb Medicine*, No. 71, 20-22.
- [7] Chakib, A. (2013) Cortisone-Induced Glaucoma Literature Review. *Journal of the Moroccan Society of Ophthalmology*, **22**, 87-91.
- [8] El Ibrahimy, F., et al. (2019) Steroid Glaucoma in Vernal Keratoconjunctivitis. *French Journal of Ophthalmology*, **42**, 195-197.
- [9] Sweta, V., Shibi Dev, B. and Sandhya, R. (2022) Secondary Glaucoma after Intravitreal Dexamethasone Implant (Ozurdex) Injection in Patients with Retinal Disorder: A Retrospective Study. *Indian Journal of Ophthalmology*, **70**, 585-589. [https://doi.org/10.4103/ijoo.ijoo\\_684\\_21](https://doi.org/10.4103/ijoo.ijoo_684_21)
- [10] Sen, P., Jain, S., Mohan, A., Shah, C., Sen, A. and Jain, E. (2019) Pattern of Steroid Misuse in Vernal Keratoconjunctivitis Resulting in Steroid Induced Glaucoma and Visual Disability in Indian Rural Population: An Important Public Health Problem in Pediatric Age Group. *Indian Journal of Ophthalmology*, **67**, 1650-1655. [https://doi.org/10.4103/ijoo.ijoo\\_2143\\_18](https://doi.org/10.4103/ijoo.ijoo_2143_18)
- [11] Price, M.O., Price, D.A. and Price, F.W. (2023) Long-term Risk of Steroid-Induced Ocular Hypertension/Glaucoma with Topical Prednisolone Acetate 1% after Descemet Stripping Endothelial Keratoplasty. *Cornea*, **43**, 323-326. <https://doi.org/10.1097/ico.0000000000003312>