

Ptosis Following the use of Dexamethasone-Based Eye Drops

Amal Habchane^{1*}, Soukaina Khatem¹, Ayyoub Alioua^{2, 1}, Leila Oussaih³, Oumaima Maghnouj³, Illias Tazi³, Sanaa Zaoui^{1, 4}

¹Department of Pharmacology and Toxicology, Clinical Research Center, Mohammed VI University Hospital, Marrakesh, Morocco

²Faculty of Medicine and Pharmacy, Science and Technology and Medical Sciences, Bioscience, and Health Laboratory, Cadi Ayyad University, Marrakech, Morocco

³Department of Clinical Hematology, Mohammed VI University Hospital, Marrakesh, Morocco

⁴Faculty of Medicine and Pharmacy, Bioscience and Health Laboratory, Cadi Ayyad University, Marrakesh, Morocco

DOI: [10.36347/sjmcr.2024.v12i02.020](https://doi.org/10.36347/sjmcr.2024.v12i02.020)

| Received: 25.12.2023 | Accepted: 29.01.2024 | Published: 23.02.2024

*Corresponding author: Amal Habchane

Department of Pharmacology and Toxicology, Clinical Research Center, Mohammed VI University Hospital, Marrakesh, Morocco

Abstract

Case Report

Ptosis is a known adverse reaction of local ocular corticosteroids, mainly due to those administered by local injections. Topical corticosteroid eye drop-induced ptosis is becoming increasingly observed in ophthalmology practice. We report the case of a 6-year-old child hospitalized in the Hematology Department for first consolidation chemotherapy for acute myeloblastic leukemia, who received local corticosteroids via dexamethasone eye drops for ocular prevention and who presented five days later with bilateral ptosis of abrupt onset. Given the normality of ophthalmological examination and cerebral CT scan, and following an adverse drug reaction causality assessment, incrimination of Dexamethasone was suspected and thus it was stopped. The ptosis improved rapidly and disappeared after one week. Ptosis is a little-known adverse effect of corticosteroid eye drops in our context; therefore, more vigilance is required to better understand and manage it.

Keywords: Corticosteroid-induced, Dexamethasone, Eye Drops, Ptosis, Case Report.

Copyright © 2024 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Corticosteroids are widely used for the treatment of ocular pathologies, mainly ocular inflammatory diseases, such as uveitis, macular edema, Posner-Schlossman syndrome, keratitis, and eyelid and orbit inflammatory lesions (L. Zhang *et al.*, 2016; Zhu *et al.*, 2017). It may also be used to prevent ocular toxicity in some patients undergoing chemotherapy (DA_Gemtuzumab_Ozogamycin_Mylotarg_Acute_Myeloid_Leukaemia_AML.Pdf, n.d.). Nevertheless, there is a variety of ocular and systemic adverse reactions associated with the use of periocular corticosteroids. These include cataracts, delayed wound healing, and orbital fat atrophy (Zhu *et al.*, 2017; Haeck *et al.*, 2011; Al Dhibi & Arevalo, 2013; Uchiyama *et al.*, 2014; Song *et al.*, 2008). Ptosis is also known to be induced by local corticosteroid therapy; it is primarily due to corticosteroids administered by local injections (Zhu *et al.*, 2017; Song *et al.*, 2008). Ptosis induced by the topical use of corticosteroids via eye drops is becoming more and more noticed in ophthalmology practice (X. Zhang *et al.*, 2020). We here report a case of ptosis following the use of Dexamethasone-based eye drops.

CASE REPORT

A six-year-old patient was admitted to the Hematology Department for first consolidation chemotherapy for acute myeloblastic leukemia (AML). He was given Cytarabine, Ondansetron, and Omeprazole for his consolidation protocol. He was also put on Miconazole oral gel for oral fungal infection prevention and eye drops containing a combination of Neomycin and Dexamethasone for ocular protection.

Five days after the initiation of treatment, the patient woke up with bilateral blepharoptosis, of abrupt onset, associated with mild edema without any other symptoms.

An ophthalmological opinion was sought and a complete ophthalmological examination was performed, revealing no abnormality. The patient also underwent a brain CT scan without contrast injection, which came back normal. Drug-induced ptosis was then suspected, given the negative results of examinations, and an adverse drug reaction causality assessment was conducted resulting in high suspicion of Dexamethasone incrimination.

All the drugs taken by the patient were evaluated for adverse drug reaction causality using the French Method (Arimone *et al.*, 2013; Montastruc, 2022), which involves assigning intrinsic and extrinsic scores. The intrinsic score (I) is determined based on chronological and semiological criteria, and ranges from I0 to I6. The extrinsic score (B) is based on a systematic analysis of reference documents and databases and ranges from B1 to B4. Dexamethasone had the highest score of I3B2, while Cytarabine, Ondansetron, Omeprazole, and Neomycin had a score of I2B1, and Miconazole had a score of I1B1.

Withdrawal of Dexamethasone was recommended and performed. The patient was put on Tobramycin eye drops along with eye lavage with saline solution. His ptosis had rapidly improved and disappeared after one week.

DISCUSSION

Corticosteroid therapy is widely used in ophthalmology. Studies have reported that local corticosteroid injections, including posterior sub-Tenon, intracameral, and subconjunctival injections, can lead to ptosis (Zhu *et al.*, 2017; Song *et al.*, 2008).

The two most frequently incriminated molecules are Triamcinolone and Dexamethasone (Zhu *et al.*, 2017). The time to onset is 0 to 49 months after injection, according to previous studies (Song *et al.*, 2008).

Ptosis induced by corticosteroid-based eye drops is becoming more and more noticed in ophthalmology practice as reported in the literature. As a matter of fact, according to Zhang *et al*, ptosis is frequently observed following chronic administration of more than 2 months of corticosteroid-based eye drops in the Chinese population (X. Zhang *et al.*, 2020). However, in our case, the duration of exposure to dexamethasone eye drops was inferior to that, being of 5 days.

Data regarding the pathophysiology of corticosteroid-induced ptosis remain limited, and its mechanism is still poorly understood (Zhu *et al.*, 2017; Song *et al.*, 2008). Some researchers have suggested that topical corticosteroids may have a direct effect on the levator palpebrae superioris muscle or Müller's muscle (Zhu *et al.*, 2017; Song *et al.*, 2008). Others have hypothesized that vehicles used in topical steroid preparations could induce acute myopathic ptosis (Zhu *et al.*, 2017). However, there is currently insufficient evidence to sustain either of these hypotheses (Zhu *et al.*, 2017).

Reconstructive surgery is an effective treatment for ptosis induced by long-term local corticosteroid administration (Zhu *et al.*, 2017; X. Zhang *et al.*, 2020). It can also improve after discontinuation of

corticosteroids, as was the case for our patient (X. Zhang *et al.*, 2020).

CONCLUSION

In this study, we have reported a case of ptosis following short-term administration of Dexamethasone-based eye drops. Ptosis is a poorly known adverse effect of corticosteroid eye drops in our context and further vigilance should be accorded to it for better comprehension and appropriate management.

REFERENCES

- Zhang, L., Wang, W., Gao, Y., Lan, J., & Xie, L. (2016). The Efficacy and Safety of Current Treatments in Diabetic Macular Edema: A Systematic Review and Network Meta-Analysis. *PLoS ONE*, *11*(7), e0159553. <https://doi.org/10.1371/journal.pone.0159553>
- Zhu, Y., Sun, C., Zhang, X., & Shentu, X. (2017). Ptosis induced by topical steroid eye drops. *Medicine*, *96*(51), e9288. <https://doi.org/10.1097/MD.00000000000009288>
- DA_Gemtuzumab_Ozogamycin_Mylotarg_Acute_Myeloid_Leukaemia_AML.pdf. (n.d.). Retrieved January 12, 2024, from https://www.clatterbridgecc.nhs.uk/application/files/3716/9417/1618/DA_Gemtuzumab_Ozogamycin_Mylotarg_Acute_Myeloid_Leukaemia_AML.pdf
- Haeck, I. M., Rouwen, T. J., Timmer-de Mik, L., de Bruin-Weller, M. S., & Bruijnzeel-Koomen, C. A. (2011). Topical corticosteroids in atopic dermatitis and the risk of glaucoma and cataracts. *Journal of the American Academy of Dermatology*, *64*(2), 275–281. <https://doi.org/10.1016/j.jaad.2010.01.035>
- Al Dhibi, H. A., & Arevalo, J. F. (2013). Clinical trials on corticosteroids for diabetic macular edema. *World Journal of Diabetes*, *4*(6), 295–302. <https://doi.org/10.4239/wjd.v4.i6.295>
- Uchiyama, E., Papaliadis, G. N., Lobo, A. M., & Sobrin, L. (2014). Side-effects of anti-inflammatory therapy in uveitis. *Seminars in Ophthalmology*, *29*(5–6), 456–467. <https://doi.org/10.3109/08820538.2014.959203>
- Song, A., Carter, K. D., Nerad, J. A., Boldt, C., & Folk, J. (2008). Steroid-induced ptosis: Case studies and histopathologic analysis. *Eye (London, England)*, *22*(4), 491–495. <https://doi.org/10.1038/sj.eye.6702667>
- Zhang, X., Zhang, M. F., Zhao, D. C., & Liu, X. W. (2020). Corticosteroid eyedrops induced blepharoptosis and atrophy of levator muscle. *Graefe's Archive for Clinical and Experimental Ophthalmology Albrecht Von Graefes Archiv Fur Klinische Und Experimentelle Ophthalmologie*, *258*(5), 1081–1086. <https://doi.org/10.1007/s00417-020-04622-x>
- Arimone, Y., Bidault, I., Dutertre, J. P., Gérardin, M., Guy, C., Haramburu, F., Hillaire-Buys, D.,

Meglio, C., Penfornis, C., Théophile, H., Valnet-Rabier, M. B., & Cercle de Réflexion sur l'Imputabilité (CRI). (2013). Updating the French method for the causality assessment of adverse drug reactions. *Thérapie*, 68(2), 69–76. <https://doi.org/10.2515/therapie/2013016>

- Montastruc, J. L. (2022). Pharmacovigilance and drug safety: Fair prescribing and clinical research. *Thérapie*, 77(3), 261–263. <https://doi.org/10.1016/j.therap.2022.03.001>