Case report

Through Indian Eyes: A Case Series on Steroid-Induced Secondary Cataract

ABSTRACT

Lichen planus, a chronic autoimmune dermatological disorder, often necessitates the use of topical corticosteroids for symptom management. However, this case series highlights the emergence of topical steroid-induced secondary cataracts in two patients, emphasizing a previously underrecognized complication. Both patients, females aged 36 and 43, presented with gradual vision loss in their left eyes, attributed to prolonged corticosteroid use for lichen planus and skin allergies, respectively. Ophthalmological examinations confirmed the diagnosis, leading to cataract surgeries. The pathogenesis involves complex cellular and molecular mechanisms, emphasizing the need for vigilant monitoring during corticosteroid therapy. Moreover, the lack of stringent reporting systems for adverse drug reactions in India underscores the necessity for comprehensive monitoring to mitigate economic and quality of life burdens. The study emphasizes the importance of judicious corticosteroid use, tapering regimens, and patient education to minimize complications while effectively managing dermatological conditions. This underscores the critical need for heightened awareness, surveillance, and patient-centred approaches to mitigate the risk of corticosteroid-induced secondary cataracts, ensuring optimal therapeutic outcomes and long-term ocular health.

INTRODUCTION

Lichen Planus is a chronic autoimmune inflammatory dermatological disorder that affects both mucosal and cutaneous layers with a global prevalence ranging from 0.5% to 1.0%.[1,2] This condition manifests as T cell-mediated lipogenic plaques characterized by flat-topped, polygonal, and irritating papules that may aggregate to form plaques.[3] Given its prominent visibility on the skin, lichen planus can create a social stigma, emphasizing the critical need for effective medication to alleviate symptoms and address the emotional impact on individuals dealing with this dermatological condition.[1]

Oral and topical corticosteroids serve as primary therapeutic agents in managing lichen planus symptoms.[3] However, prolonged use of these corticosteroids has been associated with various ocular side effects, with cataract formation and changes in intraocular pressure being the most common.[4] Cataracts involve intricate molecular and cellular processes within the eye's lens, ultimately leading to a loss of transparency and visual impairment.[5]

In this case series, two patients developing Topical steroids-induced secondary cataract is presented. Limited information exists on the relationship between topical corticosteroids and

cataracts, making this case particularly noteworthy. This underscores the importance of continuous vigilance regarding potential side effects associated with prolonged topical corticosteroid use and emphasizes the need for further research to enhance our understanding of such complications, contributing to more informed therapeutic decisions.

CASE 01:

A 36-year-old female presented to the ophthalmology OPD with a complaint of gradual diminution of vision in her left eye over the past year. Initially insidious and painless, the progression led to a hazy view, significantly disrupting her daily routine. Notably, there were no associated symptoms of redness or watery discharge. Birth and family histories were found to be insignificant. The patient had been diagnosed with lichen planus a year ago, prompting the initiation of topical corticosteroid treatment. Specifically, she had been using a skin cream containing clobetasol propionate, miconazole nitrate, and neomycin sulfate (0.1%, 20g) for the past eight years, applying it 2-3 times daily during episodes of increased itching. No other medications were reported to be administered by the patient.

Upon ophthalmological examination, her right eye exhibited a visual acuity of 6/6, while her left eye had a visual acuity limited to counting fingers at 3 meters. Intraocular lens measurements revealed +22.00 for the right eye and +21.50 for the left eye. Upon inquiring the medication history and through evaluation of the patient condition, the diagnosis pointed towards topical corticosteroid-induced secondary cataract in the left eye. In line with this, the patient was recommended for manual small incision cataract surgery. For preoperative care, she was prescribed tropicamide and phenylephrine eye drops every 10 minutes along with Tab. Ciprofloxacin 500mg BID, Moxifloxacin eye drops and Flurbiprofen eye drops QID for the left eye. This comprehensive approach aimed to address the ocular manifestations resulting from prolonged use of topical corticosteroids and to facilitate a successful cataract surgery outcome.

CASE 02:

A 43-year-old female presented with a complaint of gradual and painless diminution of vision in her left eye over the past 3 months. Notably, there was no history of redness, watery discharge, or trauma. The patient has a medical history of hypertension for the last 3 years, managed with medication. Additionally, she reported a history of both oral and topical steroid use for skin allergy over the last 3 years. Ophthalmological examination revealed normal visual acuity in the right eye (6/6) but a diminished visual acuity in the left eye (6/18). Similar to the previous case, the diagnosis pointed towards the steroid-induced secondary cataract. Consequently, the patient was scheduled for cataract surgery, and the postoperative period transpired uneventfully.

DISCUSSION

Steroids-induced cataract involves multiple complex processes at the cellular and molecular levels. The process begins with the binding of steroids, both endogenous and exogenous, to intracellular glucocorticoid receptors. This binding triggers alterations in gene expression, affecting genes crucial for maintaining lens structural integrity. Subsequently, changes in protein synthesis contribute to cataract formation. Steroids induce oxidative stress within lens cells, leading to increased reactive oxygen species (ROS) levels, damaging cellular structures such as proteins and lipids. Chronic exposure compromises antioxidant defense mechanisms, crucial for neutralizing ROS and preventing oxidative damage. Steroids also influence protein aggregation and glycation, contributing to the formation of clusters that compromise lens transparency. Alterations in the extracellular matrix, lens epithelial cell changes, and disruptions in fluid and ion balance may further contribute to opacification. It's also very important to note that the exact mechanisms may vary based on factors like steroid type, dose, and duration, as well as individual patient characteristics.[6]

In this particular case, the onset of an inflammatory condition emerged as an unintended consequence of the drug administered for the primary illness, notably without any pre-existing ocular issues in the patient's medical history. The utilization of low-dose corticosteroids is a common practice in managing inflammatory, autoimmune, and allergy disorders.[7] While the use of steroids becomes imperative in chronic allergic dermatological conditions, it is crucial to adopt a vigilant approach by closely monitoring the patient's response. The judicious reduction of dosage or application frequency is advised to strike a balance between therapeutic efficacy and minimizing potential adverse effects.

It's noteworthy that in India, there is a lack of stringent norms pertaining to the reporting and follow-up of adverse drug reactions. The prevailing approach often centers on managing patient complaints rather than investigating the root cause and educating healthcare professionals. This paradigm may inadvertently contribute to an economic burden on the patient, exacerbating the already compromised quality of life. The cumulative impact, encompassing both medical and non-medical costs, underscores the need for a comprehensive monitoring system to not only ensure optimal medication management but also to preemptively address any adverse reactions. Such an approach not only safeguards the patient's quality of life but also mitigates the economic burden associated with prolonged medication use, promoting a more holistic and patient-centric healthcare model.

CONCLUSION

This case study delves into the intricate realm of topical steroid-induced cataracts, shedding light on a patient's journey where the pursuit of well-being unexpectedly manifested in a visual complication. Prolonged use of topical corticosteroids emerges as a significant factor contributing to the development of secondary cataracts, posing a challenge in the treatment of individuals undergoing steroid therapy for diverse medical conditions.

Abrupt cessation of corticosteroid therapy carries the risk of a rebound effect, exacerbating inflammation and potentially elevating intraocular pressure. Contrarily, a tapered approach allows for a gradual reduction in medication, minimizing the likelihood of adverse effects while effectively managing the underlying ocular condition in a controlled manner. To mitigate the risk of complications, utmost caution is warranted in prescribing topical corticosteroids, necessitating comprehensive patient education on proper tapering techniques. Ensuring that medical professionals provide detailed guidance on tapering regimens establishes a careful equilibrium, optimizing therapeutic benefits while safeguarding long-term visual well-being. This emphasizes the critical role of patient education and adherence to tapering protocols in maintaining a delicate balance between the advantages of therapy and sustained ocular health.

References:

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