



CASE REPORT ON PREDNISOLONE MEDIATED CUSHING SYNDROME AND CATARACT

Anjana Kulakarni*, Gouthamachari Shrinivas

Pharm.D

Department of Clinical Pharmacy, HSK College of Pharmacy, Bagalkote, Karnataka, India.

Abstract: The risk of Cushing syndrome and Cataract development is increased by using Prednisolone, especially in high doses or for a lengthy period of time. Because corticosteroids have such potent anti-inflammatory and immunosuppressive effects, they are commonly prescribed to patients for the management of a range of disorders. Here, we reviewed a case of a 20 year old male patient with Pemphigus foliaceus who has a moon face, buffalo hump, swollen limbs, weight gain, acne and abdominal striae as a result of long-term Prednisolone treatment. Prednisolone use had been temporarily stopped after informing to the physician, He provided treatment with multivitamins, diuretics, antibiotics and antihistamines. Planned for Cataract surgery.

Keywords: Prednisolone, Cataract, Cushing syndrome, Moon face

INTRODUCTION:

Steroids are potent, effective anti-inflammatory and immunosuppressive agents. These medications are used to treat many conditions like rheumatoid arthritis, asthma, psoriasis and Inflammatory Bowel Disease. Long-term use of steroids causes a variety of side effects like cataract, glaucoma, hypertension, weight gain, acne, osteoporosis and diabetes.

The two main causes of Cushing syndrome are endogenous and exogenous hypercortisolism. Exogenous hypercortisolism, the most common cause of Cushing syndrome, is predominantly iatrogenic and is brought on by using glucocorticoids over a lengthy period of time. Endogenous cortisol overproduction by the adrenal glands causes endogenous Cushing syndrome, which can be both ACTH-dependent and ACTH-independent.

Iatrogenic corticosteroid use is the most frequent cause of cushingoid characteristics. Patients may have a history of weight gain, sluggish wound healing, easy bruising, back discomfort, bone pain, depression, mood swings, biparietal visual loss, and recurrent fungal and bacterial infections because of weakened immunity^[1].

The global burden of vision loss due to steroid-related problems of the eye, particularly steroid-related cataract and glaucoma is rising due to the increased use of corticosteroids in a variety of medical disorders. The fourth most important risk factor for secondary cataract is steroid use^[2].

CASE PRESENTATION:

A 20 year old male patient presented in the skin department of SNMC Medical College, Hospital and Research Centre, Bagalkote with chief complaints of fluid filled lesions since 6 months, raw erosions with itching since 2

months and also patient had experienced weight gain, swelling of both lower/upper limbs, blurred vision, moon face and buffalo hump.

For one year, the patient had been undergoing oral Prednisolone therapy (20 mg/day) for Pemphigus foliaceus. He had never experienced any of these symptoms before, but after starting Tab Prednisolone, he started to exhibit Cushing-like symptoms.

On physical examination, patient was conscious, co-operative and well oriented to time, place and person. The patient had dull appearance, pedal edema present, purple striae positive (> 1cm), the patient BP found to be 120/70mmHg, PR: 86bpm.

On systemic examination CVS: S1, S2 positive, RS: NVBS heard, CNS: NAD and P/A: non-tenderness. His previous medical history included a diagnosis of Pemphigus foliaceus, which had been present for one year, as well as a history of using the following medications: Tab Prednisolone 20 mg once daily and Tab Methotrexate and Folic acid once a week. There was no history of Cataract or Cushing syndrome in the family.

The patient's lab results showed that The patient had an elevated WBC (14,700 cells/uL), a PLT count of 4,68,000 cells/mm³, a serum globulin level of 4gm%, a serum cortisol level of 32mcg/dl, and a positive test for steroid misuse, according to lab results. Consequently, on subjective and objective confirmation the patient was provisionally diagnosed as Cushing syndrome with Cataract as a result of chronic exposure to the steroid Prednisolone based on the evidence.

The patient was then referred to an ophthalmologist after complaining of blurry vision, and during examination it was discovered that both eyesight was abnormal. The ophthalmologist advised stopping Prednisolone and planning Cataract surgery after finishing the Inj Rituximab medication.

In addition, the patient was referred to endocrinology due to steroid abuse and Cushing features. The endocrinologist recommended stopping Prednisolone and symptomatic treatment was given, including diuretics, antibiotics, calcium carbonate, alpha lipoic acid, inositol, folic acid, vitamin D3, and vitamin B12. Based on this evidence, the patient was ultimately diagnosed with Prednisolone-mediated Cushing syndrome and Cataract.

On the second day of admission, the dermatologist discussed the case after getting the opinions of the ophthalmologist and endocrinologist. Ringer lactate was used as a starting point, and because the condition, Pemphigus foliaceus, was still present, Rituximab (1st dose) was planned. The pre-medications included Tab Paracetamol, Inj Hydrocortisone, Inj Pantoprazole, and Inj Pheniramine.

The patient was eventually discharged with diuretics, antibiotics, antihistamines, Multivitamins, Hydrocortisone(with decreasing dose), along with a reassessment of the patient's progress after 15 days for the second dose of Inj Rituximab.

DISCUSSION:

Many anti-inflammatory conditions can be treated with steroids however; steroids also carry possibility of adverse effects, some of which are serious. It is crucial to only use corticosteroids if there are no other effective options.

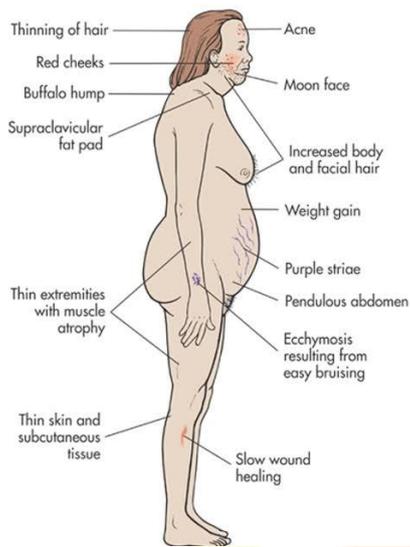


Figure 1: Symptoms of Cushing syndrome [4]

The two main issues with continuous use of steroids are pharmacological side effects and symptoms brought on by adjustments in the normal hormone secretion cycle. Individuals with Cushing syndrome can develop increased appetite, infection, bone weakness, mood changes, acne buffalo hump, purple striae, weight gain, diabetes, hypertension and cataract^[3].

In this particular case, patient came with history of puffy face, experienced weight gain, swelling both lower/upper limbs, blurred vision, moon face and buffalo hump. For the past year, the patient has been on oral Prednisolone-20 mg once daily for Pemphigus Foliaceus. The patient's primary complaints are blurred vision, moon face along with weight gain.

Steroids are known to hasten the development of subcapsular cataracts, a specific form of cataract. These cataracts generate opaque patches that prevent light from reaching the retina as they develop close to the back of the eye lens. Subcapsular cataracts frequently impair reading, limit vision in bright circumstances, and create glare or haloes at night^[5].

According to the widely recognized explanation for how steroid causes vision loss is that glucocorticosteroids covalently bind to lens proteins, destabilizing their structure and allowing subsequent modification (such as oxidation) that eventually results in cataract^[6]. Long-term usage of prednisone or other corticosteroids can result in fat deposits on the side of the skull, giving the person a round face shape known as the moon face.

One study found that the most frequently reported negative impact of steroid use was weight gain. The body's electrolyte and water balances, as well as how it utilises and stores lipids, amino acids, protein, carbohydrates, and glucose, among other things, are all altered by steroids in order to do this^[7].

The basis for the diagnosis of Cushing syndrome is the evaluation of a patient's medical history, a physical examination and lab tests that identify the presence of increased cortisol levels. Tumors are frequently found via X-ray examinations of the pituitary or adrenal glands. The differences in the appearance of the body and face in people who acquire Cushing's disease are frequently highlighted by comparing old and new images. The existence of increased cortisol secretion must be established as the first stage in the diagnosis of Cushing's illness^[3]. The present study report highlighting that the diagnosis of Cushing syndrome and cataract is done by reviewing of past medication history, assessment of physical symptoms and signs, detecting serum cortisol level, performing an eye examination.

Treatment is done by, as per opinion of the ophthalmologist and endocrinologist, Prednisolone is discontinued temporarily, and symptoms are managed with multivitamins, antibiotics, diuretics and planned cataract surgery

following the second Rituximab injectable dose. Finally we are advocating that Cushing syndrome must be effectively managed in order to prevent the emergence of the numerous problems that it can cause.

CONCLUSION:

Be aware of the symptoms and signs of Cushing syndrome if you use corticosteroids. Early treatment of Cushing syndrome can lessen any potential long-term complications. There are no known treatments that can stop the formation of cataracts, thus people taking corticosteroids should have routine eye exams with their ophthalmologist to check for cataract development.

ABBREVIATIONS:

BP: Blood pressure

PR: Pulse rate

CVS: Cardiovascular system

RS: Respiratory system

CNS: Central nervous system

NAD: No abnormality detected

P/A: Per abdominal

ACKNOWLEDGEMENT:

We would like to thank the Head and Staffs of the Dermatology Department for their support.

REFERENCE:

- [1] Chaudhry HS, Singh G. 2022. Cushing syndrome. StatPearls.
- [2] Nath, Tirupati MS et al. 2017. Prevalence of Steroid-Induced Cataract and Glaucoma in Chronic Obstructive Pulmonary Disease Patients Attending a Tertiary Care Center in India. Asia-Pacific Journal of Ophthalmology 6(1):p 28-32.
- [3] Ha Cam Thuy Nguyen. 2022. Iatrogenic Cushing syndrome. Medscape
- [4] <https://www.google.com/imgres>
- [5] <https://www.northfloridavision.com/blog/post/2015/01/13/Steroids-and-Cataracts-What-You-Should-Know.aspx>
- [6] J E Dickerson JR et al. 1997. Steroid-induced cataract: new perspective from in vitro and lens culture studies. National library of medicine. pubmed 65(4):507-16.
- [7] Alan Carter. 2018. Corticosteroids and Weight Gain: What You Need to Know. Healthline