



Dexamethasone Induced Cushing's syndrome: A Case Report

Dhruv Zaveri*, Miral Thakkar, Pankti Solanki, Riki Patel, Jay Rane

Department of Pharmacy, Sumandeep Vidyapeeth, Vadodara, Gujarat, India

*Corresponding Author

Dr. Dhruv Zaveri

Department of Pharmacy,
Sumandeep Vidyapeeth, Vadodara,
Gujarat, India

Email: dhruvzaveri1906@gmail.com

Article History

Received: 11.07.2022

Accepted: 18.08.2022

Published: 25.08.2022

Abstract: The term Cushing syndrome refers as the manifestations of excessive corticosteroids, most commonly due to supra physiologic doses of corticosteroids drugs and rarely due to spontaneous production of excessive corticosteroids by the adrenal cortex. In this case a 22 year old male patient came to the tertiary care hospital with the complaint of skin lesions over the body over three months. Patient taking injection of dexamethasone from the last 8 months, taking 2 doses within 15 days. On examination multiple erythematous, dry scaly plaques seen, multiple striae seen over bilateral crural folds, facial puffiness since eight months, abdominal distension. The patient was diagnosed with iatrogenic cushing's syndrome with tinea cruris with tinea corporis with acne eruption and also newly detected hypertension. Early detection of adverse effects can reduce the risk of occurrence of any other disease.

Keywords: Dexamethasone, Cushing syndrome, Adverse drug reaction.

Copyright © 2022 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

The term "Cushing syndrome" refers to the effects of excessive corticosteroids, which are frequently caused by supraphysiologic dosages of corticosteroid medications and infrequently by the adrenal cortex's spontaneous generation of excessive corticosteroids. Approximately 40% of incidents of spontaneous Cushing syndrome are caused by Cushing illness, which is defined as the expression of hypercortisolism owing to ACTH (adrenocorticotrophic hormone) hypersecretion by the pituitary. Spontaneous Cushing syndrome cases are uncommon and have a variety of potential causes. It is at least three times more common in women than in males, and the benign pituitary adenoma that causes Cushing disease is frequently less than 5 mm and usually found in the anterior pituitary (98%) and the posterior pituitary (2%) [1].

Dexamethasone is a potent corticosteroid with very little mineralocorticoid activity.

Dexamethasone's work on the body occurs in different ways. Dexamethasone works by terminating the migration of neutrophils and decrease the lymphocyte colony proliferation permeability of capillary membrane decrease. Lysosomal membranes have improved stability. There are higher concentrations of vitamin A compounds within serum, and prostaglandin and some cytokines become inhibited. Increased levels of surfactant and pulmonary circulation improved have also been shown with use of dexamethasone. Dexamethasone is metabolized by the liver and excreted through urine mainly. Half-life of dexamethasone is 3 hours.

Dexamethasone medication is generally well tolerated corticosteroid; it does have its disadvantage as a medicine. The most frequently reported adverse drug reaction by patients is the presence of insomnia (sleeplessness) after use. Some other frequent adverse effects reported such as acne,

Citation: Dhruv Zaveri, Miral Thakkar, Pankti Solanki, Riki Patel, Jay Rane. (2022). Dexamethasone Induced Cushing's syndrome: A Case Report, Glob Acad J Pharm Drug Res; Vol-4, Iss-3 pp- 73-75.

indigestion, weight gain, increased appetite, anorexia, nausea, vomiting, acne, agitation, and depression. There have been reports of adrenal suppression, arrhythmias, spermatogenic changes,

glaucoma, hypokalaemia, pulmonary edema, pseudotumor cerebri, and increased intracranial pressure [2].

Table 1: Adverse drug reactions of Dexamethasone [3]

❖ Common:
<ul style="list-style-type: none"> • Cardiovascular: Hypertension (Diabetic macular edema, 13%) • Endocrine metabolic: Cushing’s syndrome. • Ophthalmic: Abnormal vision (1%-9%), Cataract, Conjunctival edema (5%), Conjunctivitis (6%), Corneal edema, Discomfort, Eye (10%) • Psychiatric: Depression, Euphoria • Respiratory: Pulmonary tuberculosis
❖ Serious:
<ul style="list-style-type: none"> • Cardiovascular: Cardiomyopathy, • Endocrine metabolic: Hyperglycemia, Hypokalemia • Gastrointestinal: Pancreatitis • Immunologic: Infectious disease • Musculoskeletal: Osteoporosis • Ophthalmic: Conjunctival hemorrhage (Diabetic macular edema, 23%; retinal vein occlusion and uveitis, 22%), Glaucoma.

CASE

A 22 year old male patient was admitted in the Dhiraj general hospital, Vadodara. The patient came with the complaints of facial puffiness (moon face), weight gain, body swelling, weakness and skin lesions (pink stretch marks in lower limb) all over the body since 8 months. His past medical history was a known case of tinea cruris for which he was on the treatment of injectables of steroids. The patient was conscious and well oriented on physical examination; his vitals were as follows BP 140/80 mm of Hg, PR80 bpm, CVSS1, S2+, RS- B/L AE + clear.

The laboratory studies revealed that SGPT (42 IU/L) his haemoglobin was found to be 12.9gm/dl was Low (normal level: 14 -16 gms/dl) serum potassium level was decreased 3.4 mmol/L, random blood sugar was found to be 290 mg /dl (normal < 160 -200mg /dl), serum cortisol levels were 33.19.(normal 8-25mcg/dl). By all the complaints and prognosis, laboratory investigations, subjective and objective evaluation, so for the early and final diagnosis approaches we tried to diagnose as Cushing syndrome, symptoms.



Figure 1: 22 year's old male showing moon face



Figure 2: 22 year's old patient of Cushing's syndrome showing pink stretch marks

The patient was treated with inj. Pantoprazole 40 mg, syrup potassium chloride, oral hypoglycaemic drugs (metformin and vildagliptin), diuretics (chlorothiazide), also patient is treated for skin lesions (itraconazole, clotrimazole and sertaconazole nitrate cream).

DISCUSSION

The disease Cushing's syndrome (CS) is regarded as being uncommon. Exogenous use of glucocorticoids (GCs), which are often administered in a regulated medical environment but their fraudulent use is uncommon, is the most frequent cause. Females, young patients, those with psychiatric illnesses, and those with connections in the medical industry are more likely to experience factitious CS [4].

The diagnosis of CS is difficult since several characteristics, including as obesity, depression, diabetes, hypertension (HTN), and poor bone

mineral density, are non-specific and frequently seen in the general population (BMD). We presented the patient with past medical history of tinea cruris and were using injectable of dexamethasone as the treatment. His lab investigations and clinical symptoms confirm the diagnosis of CS.

Generally, Dexamethasone has disadvantages as a drug even though it is often well tolerated. Insomnia following usage is the side effect that patients most commonly describe. Patients also frequently mention acne, indigestion, weight gain, increased hunger, anorexia, nausea, vomiting, acne, agitation, and depression as additional side effects. There have been reports of spermatogenic alterations, glaucoma, hypokalaemia, pulmonary edema, pseudotumor cerebri, and elevated intracranial pressure in addition to the suppression of the adrenal glands.

We state that long-term use of corticosteroids causes the following illnesses or conditions, such as cushing syndrome, diabetes mellitus, and weight gain. Finally, the patient's doctor advised him to stop using steroids, prescribed different medications, and provided patient counselling along with vitamin supplements, calcium supplements, hypoglycaemic drugs, and diuretics.

CONCLUSION

Chronic use of synthetic corticosteroids such as dexamethasone is the most common cause of Cushing syndrome. Patient should be informed about the risk associated with its long term use and also informed about symptoms of steroid induced illness. Early diagnosis of Cushing syndrome caused by steroids improves in lowering morbidity and death. Cushing syndrome may cause further issues and make it difficult to survive if it is not addressed.

ACKNOWLEDGMENT

We take this opportunity to express our gratitude and respectful thanks to the Dr. Hemraj Singh Rajput and all faculty members of Department of Pharmacy, Sumandeep Vidyapeeth University.

CONFLICT OF INTEREST

The author declares there is no conflict of interest.

ABBREVIATIONS

ACTH: Adrenocorticotrophic hormone.

CS: Cushing syndrome.

BMD: Bone mineral density.

BP: Blood pressure.

PR: pulse rate.

IU/L: International unit per liter.

CVS: Cardiovascular system.

RS: Respiratory system.

REFERENCES

1. Salma, S. (2019). Case Report on Steroid Induced Cushing Syndrome. *Journal of Drug Delivery and Therapeutics*, 9(4-s), 598-600. Available from: <http://jddtonline.info/index.php/jddt/article/view/3269>
2. Tripathi, K. D. (2018). *Essentials of medical pharmacology. 8th ed. New Delhi, India: Jaypee Brothers Medical.*
3. Micromedex Products: Please Login [Internet]. Micromedexsolutions.com. [cited 2022 Jul 17]. Available from: https://www.micromedexsolutions.com/micromedex2/librarian/CS/A510BC/ND_PR/evidencexpert/ND_P/evidencexpert/DUPLICATIONSHIELDSYNC/2ED36E/ND_PG/evidencexpert/ND_B/evidencexpert/ND_AppProduct/evidencexpert/ND_T/evidencexpert/PFActionId/evidencexpert.DoIntegratedSearch?SearchTerm=Dexamethasone+Sodium+Phosphate&fromInterSaltBase=true&UserMdxSearchTerm=%24userMdxSearchTerm&false=null&=null
4. Paul, E. M., Jose, S., Achar, Y., & Raghunath, B. D. (2016). Prednisolone induced Cushing syndrome: a case report. *Indian Journal of Pharmacy Practice*, 9(2), 141-142. Available from: <https://ijopp.org/sites/default/files/10.5530/ijopp.9.2.15.pdf>