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A Case Report

**A CASE REPORT ON STEROID INDUCED DIABETIC  
INTOLERANCE****Dr. Sini S G\***

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Mail Id: [Sinijesus18@gmail.com](mailto:Sinijesus18@gmail.com)**Abstract:**

*Since the advent of glucocorticoid therapy for autoimmune diseases in 1940s, their widespread application has led to the concurrent therapy limiting discovery of many adverse metabolic side effects. Steroid is a biologically active organic compound having immunosuppressive action in living organisms. It can cause a deviation in the blood glucose level of patient. Unanticipated hyper glycemia associated with the initiation of glucocorticoids often leads to prolonged hospital stays, increased risks for infection etc. Glucocorticoids are extensively used in every areas of medicine. Although it is widely prescribed for their anti-inflammatory and immunosuppressive properties. Recently Steroid Induced Diabetes Mellitus (SIDM) has been recognized as severe and important side effect. SIDM is defined as an abnormal increase in blood glucose associated with the use of glucocorticoids in a patient with or without a prior history of Diabetes Mellitus. It is a typical case on steroid induced diabetic intolerance.*

**Keywords:** Diabetes Mellitus, Diabetic intolerance, Steroids

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**INTRODUCTION:**

Glucocorticoids are widely utilized to treat a broad range of acute and long term conditions. The liver is stimulated to produce glucose from amino acids and glycerol, which has a significant impact on the metabolism of carbohydrates. Hormone-related side effects include hyperglycemia, which can exacerbate diabetes mellitus already present or lead to the development of new "steroid-induced" diabetes, gastritis, glaucoma, and hypertension. People have long been known to have glucocorticoid-induced hyperglycemia. By boosting the synthesis of glucose in the liver and preventing it from being absorbed by the muscles, steroids raise blood sugar levels. On beta cell function, they also have a complicated influence. A patient's HbA1c must be 6.5%, their 2-hour post-75g oral glucose tolerance test (OGTT) result must be 11.1 mmol/L (200 mg/dL), and their 8-hour fasting blood glucose must be 7.0 mmol/L (126 mg/dL).

**CASE REPORT:**

A 50-year-old male patient was admitted in the neurology department for 6 days. Patient showed a weight of 58kg and height 160 cm respectively.

**CHIEF COMPLAINTS:** - History of right sided periorbital pain and frontal headache since 2 weeks and a history of gradually progressive loss of vision on right eye since past 4 days. He experienced a significant drop of vision and he feels as through seeing through a cloud and had a colour desaturation. Patient consulted ophthalmology outside where he was found to be have right optic disc oedema and he referred for further management. He is on treatment for hypertension with T. Telma 40 mg (Telmisartan). National Early Warning Score System showed that the Blood Pressure was beyond the limits, pulse, respiratory rate and temperature was found to be normal.

**BP CHART**

DAYS	VALUE (mm/hg)
1 <sup>ST</sup> DAY	120/80, 130/80
2 <sup>ND</sup> DAY	160/80, 140/80
3 <sup>RD</sup> DAY	140/80, 160/100
4 <sup>TH</sup> DAY	160/80, 140/80
5 <sup>TH</sup> DAY	160/90, 150/80
6 <sup>TH</sup> DAY	160/80, 150/90

**LABORATORY INVESTIGATIONS**

Date: 20/09/2023

LABORATORY PARAMETERS	OBSERVED VALUE
Haemoglobin	15.0gm/dl
Total Count	7800cells/cmm
Differential Count Poly	56%
Differential Count lymph	39%
Differential count Eosin	01%
Differential count Mono	04%
Differential count Baso	00%
HCT(PCV)	42.3%
Platelet count	1.97 lakhs/cumm
RBC	4.83million/cumm
MCV	87.6fl
MCH	31.1pg
MCHC	35.5g/dl
RDW	12.6%
HbA1C	5.1%

HBsAg	Non – reactive
HCV	Non-reactive
HIV I & II	Non -reactive
Sodium	138 mmol/L
Potassium	3.5mmol/L
Urea	22mg/dl
Creatinine	0.9mg/dl
Uric Acid	6.3 mg/dl
Blood group	O positive
APTT	29 sec
PT INR	Test -13 sec, Control-12 sec
INR	1.1

On 21/09/2023 , consent for Lumbar puncture and anaesthesia was obtained. Along with that ANA was also checked and it was found to be normal. On 22/09/2023 , Cerebrospinal fluid was aspirated and checked for any growth. Acid Fast Bacilli was not seen, Gram stain and fungal stain was found to be negative in cerebrospinal fluid analysis. Anti Neutrophil Cytoplasmic Antibodies (ANCA) and Serum Angiotensin Converting Enzyme (ACE) were found to be negative. On 23/09/2023, potassium levels are checked again as the result was at borderline earlier. Now it was found to be 3.9 mmol/L. Contrast -

Enhanced Magnetic Resonance Imaging (CEMRI) shows right eye optic neuritis. No other lesions are found. VEP showed absent waveform on right side and delayed P100 latency 116 on left side. This clearly leads to the diagnosis as Optic Neuritis. Inj.Solumedrol 1gm in 250 ml in Normal Saline was given for a duration of 2-3 hrs as Stat/PRN medication. Treatment plan includes Inj.PAN 40 mg IV twice daily , Inj.Solumedrol 1gm in 250 ml Normal Saline 1V once daily for 2-3 hrs and T.Telmikind H 40 mg twice daily(one at morning and half at night time).

#### DIABETIC CHART:

Since the steroids are administering, the patient had undergone close monitoring of blood glucose levels.

DATE	GRBS
21/9/2023	154
22/9/2023	162 (6am)
	179 (12pm)
	187 (6pm)
23/9/2023	170 (6am)
	242 (1pm)
	284 (6pm)
24/9/2023	158 (6am)
	313 (12pm)
	186 (6pm)
25/9/2023	170 (6am)
	193 (12pm)
	228 (6pm)
26/9/2023	162(6am)

Here, GRBS values were found to be abnormal. So the doctor prescribed Insulin HA 20 units. The value was found to be abnormal after the administration of insulin. So the dose of insulin was increased to 40 units. Then also the lab values had shown diabetic intolerance. Finally, the consulting unit of doctor had concluded that the diabetic intolerance is due to the steroids. In the discharge advice, injection form of steroids was converted to tablet form and stopped the medicine by tapering the dose.

The final diagnosis of this case is Right eye optic neuritis, Hypertension, and steroid Induced Diabetic intolerance. The patient was discharged on 26/09/2023 and the discharge advice is as follows:

- T. Predmet 32mg 1-0-0 x 5 days
- T. Predmet 16mg 1-0-0 x5 days
- T. Predmet 8 mg 1-0-0 x 5 days
- T. Predmet 4 mg 1-0-0 x5 days
- T. Predmet 4 mg alternate day x 5 days and stop
- T. Sompraz D 1-0-1
- T. Telma H (40/12.5mg) 1-0-1

The patient was advised with regular BP and sugar monitoring and review on Neuro OPD after 10 days with FBS/PPBS.

#### DISCUSSION AND CONCLUSION:

When using steroids either alone or in conjunction with other medications, diabetes is a recognized side effect. The kind of steroid, dosage, and length of administration are thought to affect how diabetogenic glucocorticoids are. So, the doctor must modify the dosage in accordance with the pharmacokinetic characteristics of the patient. A wide range of medical disorders have been treated with GCs. While using any type of dosage of GC, it is important to keep in mind that steroid-induced hyperglycemia is a common and potentially harmful issue, even with their medical efficacy. Not much is known, despite its prevalence,

about how clinical co morbidity and mortality are affected by hyperglycemia linked to steroid use. In order to properly treat steroid hyperglycaemia, it is necessary to comprehend the mechanisms involved.

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