

## STEROID ABUSE AND HYPERTENSION: A CASE REPORT

\*Dr. Zeenath Unnissa, \*<sup>1</sup>Mohammed Mudassir, \*<sup>2</sup>Nazneen begum

Assistant Professor, Department of Pharmacy Practice, Deccan School of Pharmacy, Hyderabad – 500001.

**Corresponding Author: Dr. Zeenath Unnissa**

Assistant Professor, Department of Pharmacy Practice, Deccan School of Pharmacy, Hyderabad – 500001.

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### ABSTRACT

Prednisone, a corticosteroid medicine, is taken by millions of individuals to treat a number of medical disorders, including asthma, emphysema, allergies, Crohn's disease, multiple sclerosis, ruptured spinal discs, acute muscle pain syndromes, rheumatoid arthritis, and autoimmune illnesses. By extending their prescription's length and dose, some people misuse prednisone. Prednisone abusers are more likely to have these side effects, which include elevated blood sugar levels, swelling in the feet, a loss of bone mass, and weakened muscles. The current cut-off point for hypertension therapy is 140/90 mm Hg in blood pressure. High blood pressure (HBP), commonly referred to as hypertension (HTN), is a chronic medical disease in which the blood pressure in the arteries remains consistently high. Frequent headaches, vertigo, dizziness, light-headedness, fainting, and impaired eyesight are among the symptoms. The authors reviews the literature and discusses treatment options available for the management. **Case Report:** The authors present a case of 60-year-old male patient admitted in hospital with complaints of blurred vision for the past six months, body pains that have been treated with prednisone for two years, facial puffiness, and foot swelling for the past month. The patient's past medical history includes hypertension for the past six months while taking AMLO-AT and rheumatoid arthritis for two years while taking prednisone. Patient care began after being diagnosed. **Result:** Symptoms were eased, blood pressure is maintained normally, and problems are avoided by the following treatment after 3 days of treatment. **Conclusion:** Individuals should not abuse prednisone or other glucocorticoids because it is likely to have serious complications. Prednisone has both harmful as well as beneficial effects.

**KEYWORDS:** Prednisone abuse, Hypertension, Rheumatoid arthritis.

### INTRODUCTION

Corticosteroids (e.g., prednisone, prednisolone, methylprednisolone, dexamethasone) are essential in the treatment of a wide range of conditions, including autoimmune diseases, allergic reactions, asthma exacerbations, chronic obstructive pulmonary disease, and specific malignancies.<sup>[1]</sup> Nevertheless, despite these drugs potentially positive therapeutic effects, using them has substantial hazards, especially when done over lengthy periods of time and at large doses.<sup>[2]</sup> High-dose prednisone is 40 mg/day or more. Potential side effects include fragile skin, weight gain, an increased risk of infection, and fractures. Significant cardiovascular and metabolic effects are hypertension, hyperglycaemia and dyslipidaemia. Cortisone is involved in regulating the body's balance of water, sodium, and other electrolytes, using these drugs can promote fluid retention and sometimes cause or worsen high blood pressure.<sup>[3]</sup>

With pulse Glucocorticoid therapy, serious Cardiovascular events such as arrhythmias and sudden death have also been reported. These events, however,

are uncommon and have mostly occurred in patients with underlying kidney or heart disease.<sup>[4]</sup> Although it is unclear whether these serious Adverse events are caused by glucocorticoids use or the underlying condition, some experts recommend continuous cardiac monitoring in patients receiving pulse therapy who have significant cardiac or kidney disease.<sup>[5]</sup> For patients receiving corticosteroid medication, there are no evidence-based recommendations for monitoring Cardiovascular(CV) risk. The authors advise performing a lipid profile assessment at baseline, one month after starting systemic glucocorticoid medication, and then every six to twelve months after that. The Framingham Risk Score (FRS), on which cholesterol targets and treatment should be based, should also be used to determine ten-year CV risk.<sup>[6]</sup>

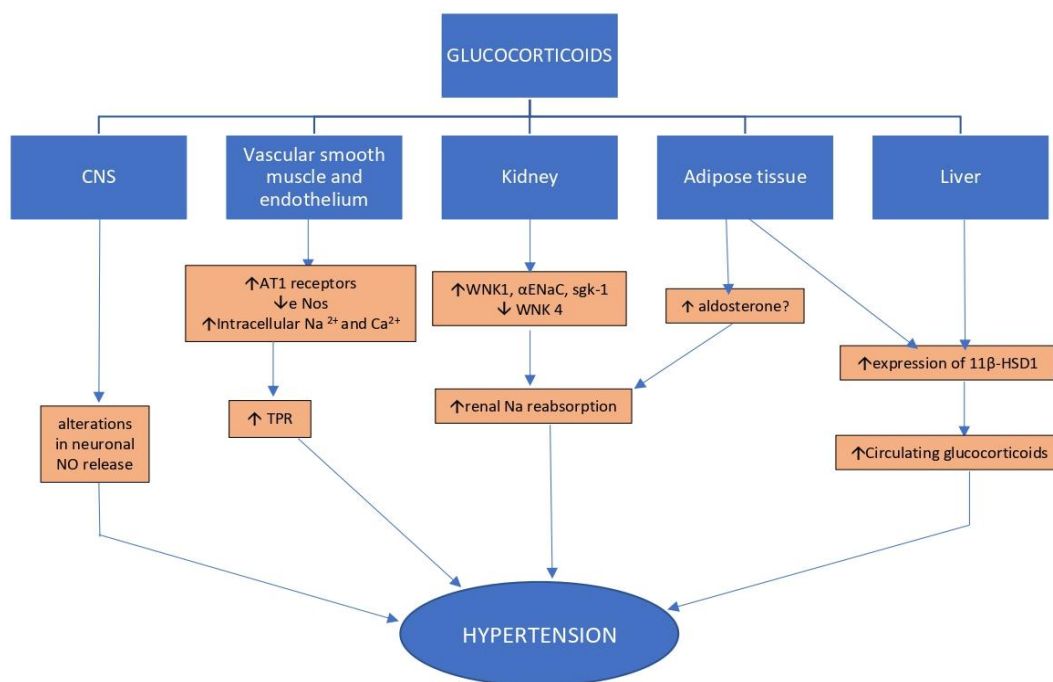


Figure 1: Glucocorticoid induced hypertension.

**CASE REPORT**

**History of Present illness:** A 60 year old male patient was admitted in hospital with a complaint of blurring of vision since 6 months, body pains present using prednisolone since 2 years, developed facial puffiness and pedal swelling since 1 month.

**Past Medical history:** Hypertension since 6 months and on medication AMLO-AT, rheumatoid arthritis since 2 years. on medication prednisone.

**Family and Social History:** NS

**Allergies:** NKA

**Laboratory Test Performed**

When the Patient was admitted in the Hospital the following Laboratory tests (table 1) are performed based on Subjective evidence:

Table 1: Laboratory Tests.

<b>Haematology</b>		
<i>Lab Parameter</i>	<i>Day-1</i>	<i>Normal value</i>
HB	11.8gms%	13-18gms%
WBC	12800 c/cmm	4000-11000 c/cmm
RBC	4.0 m/cmm	4.3-5.7 c/mcl
DLC=N+L+E+M+B	81+15+3+1+0	(30-70)+(20-50)+(1-6)+(2-8)+(0-1)%
<b>Biochemistry</b>		
<i>Lab Parameter</i>	<i>Day-1</i>	<i>Normal value</i>
SR.CR	0.6 mg/dl	0.5-1.5 mg/dl
RBS	237 mg/dl	70-130 mg/dl
Urea	19 mg/dl	7-40 mg/dl
Sodium (Na)	143 mmol/l	135-146 mmol/l
Potassium (k)	3.30 mmol/l	3.5-5.1 mmol/l
Chloride (cl)	104 mmol/l	95-105 mmol/l
Ionised Calcium ions	1.12 mmol/l	1.15-1.35 mmol/l
<b>Lipid Profile</b>		
<i>Lab Parameter</i>	<i>Day-1</i>	<i>Normal value</i>
Cholesterol	140 mg/dl	<200 mg/dl
HDL	29 mg/dl	>50 mg/dl
LDL	92 mg/dl	<100 mg/dl
VLDL	19 mg/dl	<30 mg/dl
Triglycerides	99 mg/dl	<150 mg/dl

Total Cholesterol/HDL Ratio	4.0	3.3-4.4
LDL/HDL	3.7	0.5-3
<b>Liver Function Test</b>		
<b>Lab Parameter</b>	<b>Day-1</b>	<b>Normal value</b>
SGOT	30U/L	0-38U/L
SGPT	36U/L	0-34U/L
ALP	98 U/L	30-15U/L
Total Bilirubin	0.8 mg/dl	0-1.2 mg/dl
Direct Bilirubin	0.1 mg/dl	0-0.2 mg/dl
Indirect Bilirubin	0.1 mg/dl	0-1 mg/dl
Total Protein	6.8	6.4-8.3
Albumin	3.4 g/dl	3.5-5.2 g/dl
Globulin	3.4 g/dl	2.9-3.1 g/dl
A/G Ratio	1.0	1-2
<b>Radiology on Day-1</b>		
<b>Chest X-ray P/A view: Normal.</b>		

The Laboratory tests was thoroughly checked and the data was obtained as: elevated blood pressure, increased WBC, increased neutrophils, decreased lymphocytes, decreased HDL.

After complete evaluation of the laboratory data, the Final Diagnosis of steroid abuse and hypertension was initiated.

### Treatment

#### Goals of treatment

- To reduce the body pains
- To reduce the facial puffiness, pedal swelling
- To maintain normal blood pressure.
- To prevent complications

#### Treatment options

- Eating a healthier diet with less salt (the Dietary Approaches to Stop Hypertension, or DASH, diet)
- Exercising regularly
- Maintaining a healthy weight or losing weight if you're overweight or obese
- Don't take extra doses to make up for the missed dose.
- Do not stop taking the drug suddenly. tapering off the dose helps in preventing the side-effects.

#### Treatment given

- The Patient was orally administered with Tab. Cefixime (Dose: 200 mg) twice on the day of admission, as the cefixime is used treat sinus infections in penicillin allergic patients, pneumonia, shigella, salmonella, and typhoid fever.
- To Treat the Facial Puffiness and Pedal swellings the patient was orally administered with Tab. vit. B12 + B6 + B1 + nicotinamide + calcium pantothenate (Dose: 15mcg+3mg+10mg+45mg +50mg) for two days once daily, because this supplements are used to treat skin conditions and deficiencies.
- The Patient was orally administered with Tab. Tramadol + acetaminophen (Dose: 37.5mg+325mg)

twice on the day of admission as this medications are primarily used to reduce the body pains. To relieve moderate to severe pain, tramadol is often prescribed in combination with non-opioid analgesics like paracetamol. Fixed-dose combination of tramadol and paracetamol gives rapid onset and long duration of action and multimodal analgesic effects.

- Tab. Cilnidipine and Tab. Spironolactone was prescribed in a Dose of 10mg and 25mg respectively, it is given through oral route for two days in order to treat elevated blood Pressure.
- To treat symptoms of acid reflux due to hyperacidity, stomach ulcer (Peptic ulcer disease) the patient was administered through oral route with Tab. Domperidone + Rabeprazole (Dose: 30mg+20mg) for two days.
- In order to make up the nutritional deficiency of the patient and to improve his health, Tab. L-Carnitine + folic acid+ methylcobalamine (Dose: 1.5mg+ 500mg+ 1500mcg) was given once daily for 3 days through oral route.

#### After 3 days of treatment the following goals are successfully achieved

- Symptoms were relieved
- Blood pressure is maintained normally
- Complications are prevented.

#### Day-wise assessment

**Day 1:** On the day of Patient admission the temperature was Normal, blood Pressure was 160/100 mmHg and Pulse rate is 80 bpm; Current Vital Signs of the patient are Facial puffiness, pedal oedema, blurred vision, body pains and the patient was on wysolone since 2 years. Some lab test was performed in order to find the actual reason and the tests includes: Complete blood picture, CT chest, Biochemistry (serum creatinine, Urea, electrolytes), Liver function test, Lipid profile and Chest X-ray. Based on this tests the case of steroid abuse was found and the treatment was initiated.

**Day 2:** After one day of treatment the health and symptoms of the patient was gradually improving and the blood pressure was found to be 140/100mmHg with the pulse rate of 82bpm.

**Day 3:** On third day of hospitalization, the temperature of the patient was Normal and the Pulse rate(82 bpm) or blood pressure(140/100mmHg) was also stable. There is no fresh complaints from the patient and was discharge from the hospital.

## DISCUSSION

Prednisone toxicity includes Nausea, heartburn, headache, dizziness, menstrual period changes, trouble sleeping, increased sweating, or acne may occur. This drug works by weakening the immune system, it lowers the ability to fight infections. This may cause serious (rarely fatal) infection or make any infection worse. Use of this medication for prolonged or repeated periods may result in oral thrush or a yeast infection. This medication may rarely make blood sugar rise, which can cause or worsen diabetes. Serious side effects, including: unusual tiredness, swelling ankles/feet, unusual weight gain, vision problems, easy bruising/bleeding, puffy face, unusual hair growth, mental/mood changes (such as depression, mood swings, agitation), muscle weakness/pain, thinning skin, slow wound healing, bone pain, symptoms of stomach/intestinal bleeding (such as stomach/ abdominal pain, black/tarry stools, vomit that looks like coffee grounds).<sup>[7]</sup>

Hypertension was identified as a complication of cortisol treatment soon after the advent of pharmacologic glucocorticoid therapy.<sup>[8]</sup> Corticosteroid medication most likely contributes to the hypertension found in renal homograft recipients,<sup>[9]</sup> and switching from daily to alternate-day steroids lowers blood pressure in certain patients.<sup>[10]</sup> Exogenous glucocorticoids reduce the incidence of high blood pressure by using cortisol derivatives, which have better anti-inflammatory and less salt-retaining characteristics than the natural hormone.<sup>[11]</sup> Hypertension is more common during cortisol treatment when renal function is impaired.<sup>[12]</sup>

By keeping an eye on the patient and taking precautions, the negative effects of prednisone can be reduced. Utilizing lower potency dosages and beginning patients on the lowest effective dosage allowed by guidelines are a couple of these protective approaches. The patient must be made aware of the negative consequences in order for them to comprehend them and be knowledgeable about how to change their lifestyle to help lower the likelihood of negative effects. If a patient has any of these recognised side effects, they should be advised to seek medical assistance. All medical staff involved in their care and management can be advised to see a steroid treatment card. Concerning development curve problems, adrenal suppression, and osteoporosis in particular, adult versus child monitoring and care should be taken into consideration.<sup>[13]</sup>

## CONCLUSION

Prednisone is a non-addictive drug with a low prevalence of abuse. It is distinctive because, even when used exactly as directed, it can nevertheless lead to dependency and withdrawal symptoms. The most common way for treating prednisone withdrawal is known as steroid withdrawal syndrome (SWS). In this process, either an increased dosage is given, or the dosage is tapered down. The Prednisone abuse leads to Level 5 i.e. severe type of adverse drug reactions (based on Hartwig's Severity Assessment Scale). In our case we managed to reduce the risk of hypertension by giving medications before a serious complications arise due to prednisone abuse. From this study we conclude that Patient should take medium or low dosage of prednisone to reduces the risk of glucocorticoid-induced hypertension and finally we say that the prednisone was found to be as beneficial and sometimes harmful when it is used in an inappropriate way or in larger doses.

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