

CORTICOSTEROID;

FREQUENCY OF USE AND RELATED DRUG INTERACTIONS IN INDOOR PATIENTS

Dr. Syed Talat Iqbal, Dr. Zainab Batool

ABSTRACT... Introduction: Indoor patients in hospitals frequently use corticosteroids for different indications. As the number of drugs in prescriptions increases, the risk of drug-drug interactions increases. This study deals with the frequent use and drug-drug of corticosteroids. **Objective:** The present study was designed to determine the frequency of use of corticosteroids in indoor patients and the resulting drug-drug interactions. **Study design:** 270 Prescriptions of indoor patients from different wards of Aziz Bhatti Shahid teaching hospital Gujrat were collected randomly over the period of three months. These prescriptions were subjected to a drug-drug interaction software based analysis. The results were collected analysed and presented in the form of tables. **Period:** The patient charts containing prescriptions included in this study were collected over the period of three months. **Material and Method:** The software named THE MEDICAL LETTER ADVERSE DRUG INTERACTION PROGRAM was selected for finding the drug-drug interactions in randomly selected indoor patient charts. Moreover, the frequency of use of corticosteroids was determined by simply counting the prescriptions containing corticosteroids out of total prescriptions and its percentage was found. **Results:** 29.25% patient charts were including corticosteroids in their prescriptions. Percentage of corticosteroid drug interactions found was 25.55%. **Conclusions:** Frequent use of corticosteroids in indoor patients can increase the risk of drug-drug interactions that should be monitored regularly.

Key words: Corticosteroids, drug interactions

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INTRODUCTION

Corticosteroids have wide range of indications including chest diseases, inflammatory bowel disease, rheumatoid arthritis, renal diseases etc¹. Therefore, they are extensively prescribed to patients for the treatment of various diseases. But the corticosteroids should be prescribed carefully keeping in view the chances of possible drug-drug interactions². Metabolic pathways and transport systems in human body are greatly affected by corticosteroid use especially when they are used in combination with other drugs³. No enough data is available that reports drug interactions related to the frequently used drugs like corticosteroids⁴. It is important to educate health professionals regarding the safe use of corticosteroids.⁵ A single prescription may have more than one interacting combinations, some of which may be clinically significant^{6,7,8}. Chances of drug interactions increase with the increase in number of drugs in a prescription. This also leads to ineffective treatment^{9,10}. Patients on corticosteroid therapy should be monitored closely for

adverse drug reactions as well as drug interactions¹¹. 3% of the patients admitted to hospital are due to drug interactions^{12,13,14,15,16}.

METHOD

The study was conducted in Aziz Bhatti Shaheed DHQ hospital Gujrat. The aim of the study was to see how frequently corticosteroids are prescribed to the indoor patients. Moreover, corticosteroid related drug-drug interactions in these prescriptions were separated and studied for their clinical importance. The different types of corticosteroid related drug-drug interactions, their possible toxic effect were studied. The recommendations to avoid the toxic effects due to drug-drug interactions were also given. This was done with the help of drug interaction study software named THE MEDICAL LETTER ADVERSE DRUG INTERACTION PROGRAM. Moreover, the results were analyzed with the help of Microsoft excel.

RESULTS

79 out of 270 prescriptions (29.25%) were containing

corticosteroids as a treatment. Out of these 79 corticosteroid containing prescriptions only 10 prescriptions were without any single drug interactions. 69 total prescriptions out of 270 prescriptions i.e. (25.55%) were containing one or more corticosteroid related drug-drug interaction. It means 25% of the total drug interactions found was corticosteroid related. Out of 80 interacting drug combinations found, 17 interacting drug combinations (21.25%) were containing corticosteroids.

Total prescriptions studied = 270

Prescriptions containing corticosteroids = 79 (29.25%)

Prescriptions with corticosteroid drug interactions = 69 (25.55%)

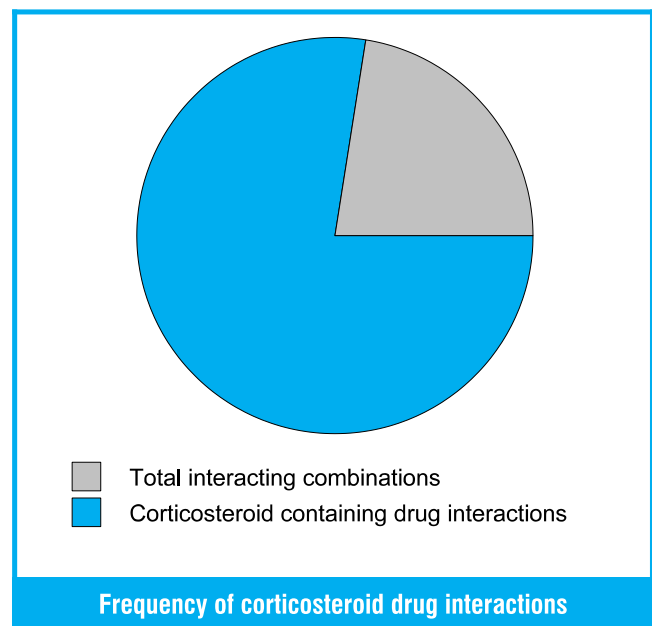
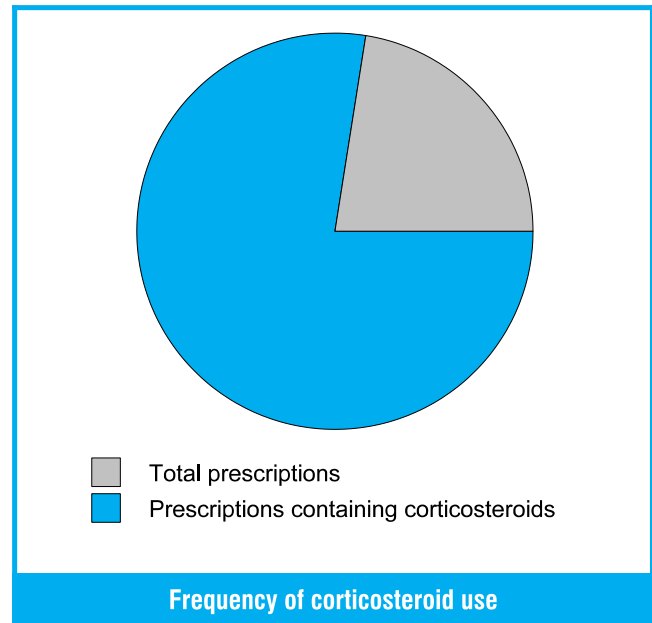
Total interacting combinations in 270 prescriptions = 80

Interacting combinations containing corticosteroids = 17 (21.25%)

DISCUSSION

This study indicates that corticosteroids are extensively being prescribed to indoor patients in DHQ hospital Gujrat. They have wide range of indications as well as side effect. Corticosteroids should be prescribed with great responsibility because they can result in sever drug interactions when used in combination with other drugs. Moreover, the patients on corticosteroids therapy should be monitored for drug response and drug interactions regularly.

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DRUG COMBINATION	TYPE/MECHANISM OF INTERACTION	POTENTIAL ADVERSE EFFECTS	RECOMMENDATION
Hydrocortisone (Corticosteroids) Metronidazole	Pharmacokinetic (increased metabolism)	Decreased metronidazole effect	Monitor Metronidazol concentration
Dexamethasone (Corticosteroids) Valium (Benzodiazepines)	Pharmacokinetic (probably increased metabolism; CYP3A4)	Possible decreased midazolam effect	Theoretically oral medazolam would interact to greater degree
Dexamethasone (Corticosteroids) Omeprazole	(mechanism not established)	Decreased prednisone effect	Monitor clinical status
Dexamethasone (Corticosteroids) Salbutamol (Sympathomimetic bronchodilators)	Pharmacodynamic	Hypokalemia with prednisone and fenoterol or albuterol (probably additive)	monitor potassium concentration
Rifampicin (Rifampin) Solu-Cortef (Corticosteroids)	Pharmacokinetic (increased metabolism)	Marked decrease in corticosteroid effect	Avoid concurrent use, if possible; if combination is used, substantial increase in corticosteroid dosage may be needed
Aminophyllin (Theophyllines) Dexamethasone (Corticosteroids)	(mechanism not established)	Theophylline toxicity	monitor theophylline concentration
Dexamethasone (Corticosteroids) Furosemide	Pharmacodynamic	Increased potassium loss (additive)	Monitor potassium concentration
Dexamethasone (Corticosteroids) Theophyllines	(mechanism not established)	Theophylline toxicity	monitor theophylline concentration
Solu-Cortef (Corticosteroids) Zanryl (Sympathomimetic amines)	(mechanism not established)	Decreased dexamethasone effect with ephedrine Possible cardiopulmonary toxicity with ritodrine	Use another bronchodilator Avoid concurrent use, if possible
Dexamethasone (Corticosteroids) Montelukast	(mechanism not established)	Possible increased risk of edema	monitor clinical status
Alprazolam (Benzodiazepines) Dexamethasone (Corticosteroids)	Pharmacokinetic (probably increased metabolism; CYP3A4)	Possible decreased midazolam effect	Theoretically oral medazolam would interact to greater degree
Dexamethasone (Corticosteroids) Hydrochlorothiazide (Thiazide diuretics)	Pharmacodynamic	Increased potassium loss (additive)	Monitor potassium concentration
Dexamethasone (Corticosteroids) Solu-Cortef (Corticosteroids)	Pharmacodynamic	Beware of additive effects	Close patient monitoring
Decadron (Corticosteroids) Solu-Cortef (Corticosteroids)	Pharmacodynamic	Beware of additive effects	Close patient monitoring
Solu-Cortef (Corticosteroids) Ventolin (Sympathomimetic bronchodilators)	Pharmacodynamic	Hypokalemia with prednisone and fenoterol or albuterol (probably additive)	monitor potassium concentration
Adrenalin (Sympathomimetic amines) Solu-Cortef (Corticosteroids)	(mechanism not established)	Decreased dexamethasone effect with ephedrine Possible cardiopulmonary toxicity with ritodrine	Use another bronchodilator Avoid concurrent use, if possible
Dopamine (Sympathomimetic amines) Solu-Cortef (Corticosteroids)	(mechanism not established)	Decreased dexamethasone effect with ephedrine Possible cardiopulmonary toxicity with ritodrine	Use another bronchodilator Avoid concurrent use, if possible

SUMMARY OF DRUG-DRUG INTERACTIONS OF CORTICOSTEROIDS

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AUTHOR(S):

1. **DR. SYED TALAT IQBAL**
Department of Forensic Medicine,
Nawaz Sharif Medical College,
University of Gujrat
2. **DR. ZAINAB BATOOL**
Department of Pharmacology,
Nawaz Sharif Medical College,
University of Gujrat

Correspondence Address:

Dr. Syed Talat Iqbal
Department of Forensic Medicine,
Nawaz Sharif Medical College,
University of Gujrat
drtalatiqbal@uog.edu.pk

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