



PHARMACOVIGILANCE: STUDY OF PARKINSON'S DISEASE AND ADVERSE DRUG REACTION REPORTING ON ANTI PARKINSON'S MEDICATION LEVODOPA+CARBIDOPA

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ABSTRACT

Parkinson's complaint is a progressive, neurodegenerative complaint of growing that affects both motor and cognitive function. The etiology of Parkinson's disease is substantially unknown, but it probably involves both inheritable and terrain factor. In contrast ,the network –level pathology motor symptoms of Parkinson's The most prescribed medication to treat is (Levodopa+Carbidopa) are given in combined form giving effective pharmacological action and also includes majority of adverse drug reaction like dyskinesia, sedation, constipation etc.

Keywords: Pharmacovigilance, Adverse Drug Reaction, Parkinson's, Levodopa+Carbidopa

INTRODUCTION

Pharmacovigilance

According WHO (2002) pharmacovigilance has been characterized as the science and exercise relating to the location, evaluation, underlying and prevention of antagonistic impacts or any other drug related problems. The data produced by pharmacovigilance is valuable in teaching doctors about ADR's and within the official control of drug use.

There two types of PV

1. Active PV: It involves measures to detect the adverse event occurrence after or during the treatment. Patients are directly asked or patients screening records are checked to find out any experienced adverse events. The most comprehensive method is cohort event monitoring
2. Passive PV: It won't involve any active measure to detect the adverse events. This is also called spontaneous or voluntary reporting. This reporting is mainly dependent on initiative and motivation of reporters like Healthcare Providers.

Adverse Drug Reaction ¹

According to WHO, adverse drug reaction is defined as any noxious and unwanted effect of the drug that occurs at

doses given to human beings for prophylaxis diagnosis treatment. Adverse drug reactions are a damaged state which can result from medical involvement related to a drug.

Classification

- Type A (Augmented): The reaction which can be predicted from the known pharmacology of the drug. It can be elevated by dose Reduction. It is dose-dependent
- Type B (Bizarre): This reaction cannot be predicted from the pharmacology of the drug.
- Type C (Chronic): Reaction due to long exposure of medication.
- Type D (Delayed): Occur due to prolonged exposure of medication
- Type E (Exit): Occurs especially when drugs are stopped abruptly.

Parkinson's^{2,3}

Parkinson's disease was first medically described as Neurological Syndrome by James Parkinson in 1817. Parkinson's disease is the foremost common serious development clutter within the world influencing around 1% of grown-ups more seasoned than 60 a long time. The disease is credited to the particular misfortune of neurons within the substantia nigra, and its cause is puzzling in most people. (Substantia Nigra: It is basic part of brain which function's chemical signalling and movement of body parts)

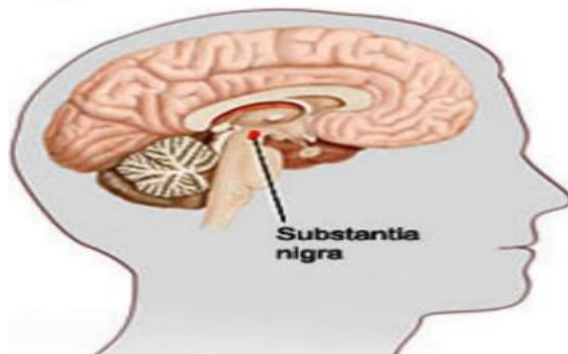


Figure No 1: Substantia Nigra

Symptoms generally begin gradationally and worsen over time. As the symptoms progresses, people may have struggling walking and talking. They may also have internal and behavioural changes, sleep problems; depression, memory difficulties, and fatigue People with Parkinson's complaint also lose the whim-whams consummations that produce norepinephrine, the main chemical runner of the sympathetic nervous system that controls numerous functions of the body, similar as heart rate and blood pressure.

What causes Parkinson's complaint?

The most prominent signs and symptoms of Parkinson's complaint do when whim- whams cells In the rudimentary ganglia (substantia nigra), an area of the brain that controls movement, come disabled and/ or die. Typically, these neurons produce an important pleasure producing hormone known as dopamine, which is essential for movement control. The loss of norepinephrine might help explain some of the on-movement features of Parkinson's, similar as fatigue, irregular blood pressure, dropped movement of food through the digestive tract.

Symptoms of Parkinson's complaint Parkinson's has four main symptoms

1. Earthquake in hands, arms, jaw and hand Muscle stiffness, where muscle remains contracted for a long time.
2. Slowness of movement disabled balance and collaboration, occasionally leading to falls
3. Other symptoms may include Depression and other emotional change Difficulty swallowing, biting and speaking
4. Urinary problems and constipation opinion of Parkinson's complaint

Diagnosis for Parkinson's disease

Physicians generally diagnose the complaint by taking a person's medical history and performing an index that the person has Parkinson's. It is a no treatable disorder presently there no any surgery or curative agent .Physicians mainly prescribe some medicines to treat symptoms.

Medicines for Parkinson's disease

Medications can help treat the symptoms of Parkinson's by:

1. Drugs Influencing Brain Dopaminergic System:
 - a. Dopamine Precursor: Levodopa
 - b. Dopamine Agonist: Bromocriptine, Pramipexole, Ropinirole
 - c. N-methyl DAspartate (NMDA) Receptor Antagonist: Amantadine
 - d. MAO-B Inhibitor: Selegiline, Rasagiline
 - e. COMT Inhibitor: Tolcapone, Entacapone
2. Drugs Influencing Brain Cholinergic System:
 - a. Centrally Acting Anticholinergic System: Benztropine, Benzhexol, Procyclidine
 - b. Antihistamine (H1 Blocker) With Anticholinergic activity: Promethazine

Exhaustive Literature Survey:

1. Friez Thaha, Renega Gongadhr, Thomas Iype, Reeja Rojan (25 March 2017):

In this Article the study was conducted of Adverse Drug Reaction to antiparkinson agents in Idiopathic Parkinson Disease a prospective observation study in movement disorder outpatient clinic.

2. Parks J.D (1998) : In this article study of adverse drug reaction of antiparkinson agents was done and majority of ADR causing Drug Class were noted.

3. Marono M, Noranian (4 Nov 2019) : In this article study of Levodopa+Carbidopa inducing Dyskinesia Adverse Drug Reaction was done. The main objective was to calculate the percentage of patients causing Dyskinesia after consuming Levodopa + Carbidopa was done.

4. Nicola Tambasw, Michele Ramali, Palolo Calobrosic (2018): In this article authors briefly described about Levodopa Parkinson drug current and future aspects.

5. Antonini, A., Pahawa, R., and Odin: In this article authors briefly described and studied about long term use of Levodopa+ Carbidopa in patients with advanced Parkinson Patients. Adverse Drug Reaction on Patients was studied after long term usage of Levodopa+Carbidopa Medication.

6. Vipin K. (2018) : In this article author discuss about introduction to Pharmacovigilance, history of Pharmacovigilance, aim of Pharmacovigilance, methods utilized in Pharmacovigilance, adverse drug reaction and clinical trials 15.

Objective^{8,9,10} :

- Parkinson's is most common movement disorder and represents the second most common degenerative disease of CNS. Parkinson's represents a frequent cause of morbidity that affects 1-2 per 1000 of population at any time clearly move after in older age group.
- The major goal of Pharmacovigilance is to demonstrate the efficacy of medication by tracking their adverse effects profiles from the lab to the pharmacy of many years.
- The discovery and quantification of previously undetected adverse drug reaction.
- Identification of patients subgroups at higher risk ADR (risk based on dose, age, gender and underlying condition)

Materials and Method

Accoutrements and system the check was conducted at NeuroSpecialist Hospital; first of all we've named the hospitals where the Parkinson cases are generally available. We visited Medulla Care Hospitals, Gadhinglaj, KLE Hospital, Belgaum, GM Wali Neurospecialist, Belgaum, Chougule Neurology Centre and Nursing Home Kolhapur. In present check, we've interacted with Case and Expert Corkers to collect the information about adverse medicine responses set up in cases who are consuming Levodopa Carbidopa (Antiparkinson drug) After successful completion of the check, we came to know the exact script about medicines adverse medicine responses, we also set up out which ADRs are constantly endured.

1. Selection of Disease: Category Parkinson's complaint is the fastest growing neurological condition in the world. Between 1990 and 2015, the number of people with this complaint doubled to over 6 million. This number is prognosticated to double again to 12 million by 2040, primarily because of a growing population. So, by looking at unborn aspects of Parkinson's complaint we decided to study adverse medicine response of AntiParkinson's drug.

2. Selection of medicine: To study adverse medicine response we've named substantially specified AntiParkinson's medicine. Syndopa(Levodopa Carbidopa) medicine is substantially specified medicine to treat Parkinson's. 3. Selection of sanitarium we've named the NeuroSpecialist Hospital where Parkinson's cases are generally available and treated.

4. Questionnaire Prepared question bank to collect the data for the croakers . The question is related with cases, ADRs set up Antiparkinson's specifics, which ADRs are constantly endured with.

5. Preparation of ADRs report form Prepare the adverse medicine response form to collect information about the ADRs set up in cases.

6. Data collection Data is collected with the help of check form and questionnaire

7. Data study the data of adverse medicine response, record the information in the map and plot the graph.

8. Compendium of data Study both the order of medicines and their ADRs and make the conclusion.

Why Levodopa-Carbidopa Medication Selected to Study:

Syndopa is substantially specified medicine to treat Parkinson. Nearly 60% of Parkinson cases consume Levodopa-Carbidopa drug and outgrowth with frequent adverse medicine response

Why Levodopa- Carbidopa are given in Combination:

Levodopa is in a class of specifics called central nervous system agents. It works by being converted to dopamine in the brain. Carbidopa is in a class of specifics called decarboxylase impediments. It works by precluding levodopa from being broken down before it reaches the brain.

Data Collection:

1. This prospective, observational data was collected by visiting Neurospecialist Hospital. Where, we interacted with Patients and Neurologist Doctors.

2. We visited Medulla Care NeuroSpecialist Hospital, Gadhinglaj, KLE Hospital Belgaum, JM Wali Neurospecialist Hospital, Belgaum, Chougule Neuro clinic, Kolhapur.

3. We interacted with patients who were consuming (levodopa+ carbidopa) medication

4. We interacted with 72 patients out of which 58 patients (80.55%) of patients where causing ADR

Among 58 patients

1. 16 (27.5%) patients induced Dyskinesia

2. 14 (24%) patients induced Sedation

3. 10 (17.24%) patients induced Dry mouth

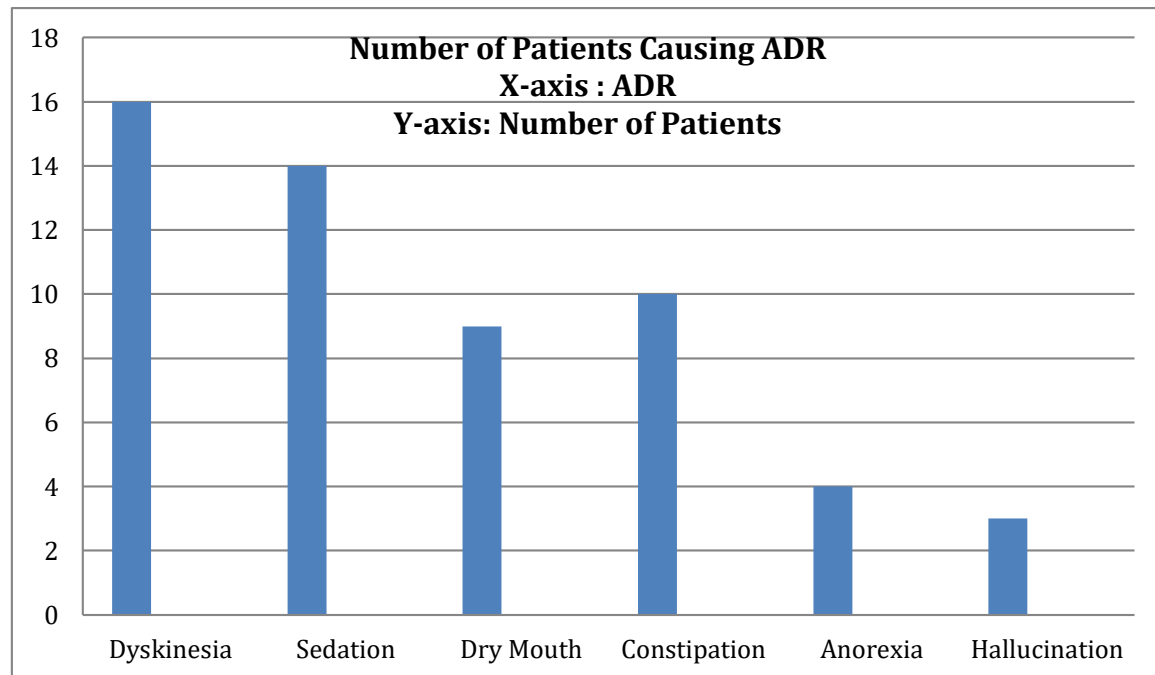
4. 11(18.96%) patients induced Constipation

5. 4 (6.96%) patients induced Anorexia

6. 3 (5.17%) patients induced Hallucinations

7. 2(3.4%) patients induced Nausea, vomiting

6. Graphical Representation of Adverse Drug Reaction induced by (levodopa+carbidopa)



Conclusion:

We came to the conclusion that Parkinson's Patients require extensive care and therapy, as good counseling. In case of Antiparkinsonian medication, (levodopa+carbidopa) this combined drug is primary and mostly prescribed to treat Parkinson's, and indicates the majority of ADR as compared to other pharmacological class medications. Majority of ADR were Dyskinesia, Sedation, hallucination, vomiting etc. Treatment to ADR was to decrease the dose of (levodopa+carbidopa) medication.

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