



Case Report on Carbidopa-Levodopa Induced Hypokalemia

¹Saerah Simon, Pharm D Intern, Nazareth College of Pharmacy, Othara, Thiruvalla, Kerala, India.

²Krupa Saji, Pharm D Intern, Nazareth College of Pharmacy, Othara, Thiruvalla, Kerala, India.

³Dr. Joseph John, ³Associate Professor of Internal Medicine, Believers Church Medical College Hospital, Kerala, India.

⁴Dr. Anna Mani, Professor, Department of Internal Medicine, Believers Church Medical College Hospital, Kerala, India.

Citation of this Article Saerah Simon, Krupa Saji, Dr. Joseph John, Dr. Anna Mani, “Case Report on Carbidopa-Levodopa Induced Hypokalemia,” IJMSAR – July – 2021, Vol. – 4, Issue - 4, P. No. 118-120.

Copyright: © 2021, Saerah Simon, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. This allows others to remix, tweak, and build upon the work non commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Corresponding Author: Saerah Simon, Pharm D Intern, Nazareth College of Pharmacy, Othara, Thiruvalla, Kerala, India.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Hypokalemia is defined as a serum potassium concentration of less than 3.5 mEq/L. This is one of the most commonly encountered & a potentially life-threatening electrolyte abnormality in clinical practice that may be iatrogenically induced. Hereby we report a case of Levodopa induced hypokalemia in a 73 year old female patient with Parkinson’s disease. She symptomatically improved after intravenous Potassium and Magnesium correction. Clinicians who prescribe L-dopa/Carbidopa should be aware of the possibility of the drug causing electrolyte imbalances due to its kaliuretic effects especially in elderly patients.

Keywords

Hypokalemia, Carbidopa-Levodopa, Parkinsonism

Introduction

Adverse drug reactions (ADRs) are hurdles in the management of illnesses. They increase the unwanted effects of drugs, increase the cost of therapy, challenge the safety of the therapy, and increase the length of hospitalization.[1-3] ADRs can be prevented to a large extent by timely diagnosis.[4,5] The magnitude of the adverse effect may range from a minor effect to even a life-threatening condition.[5,6] Parkinson’s disease (PD) is a common neurodegenerative disorder with distal resting tremor, rigidity, bradykinesia and asymmetric onset as the cardinal physical signs.[7] Levodopa (Ldopa) is the most effective antiparkinsonian agent and is well tolerated at all stages of the disease.[8] The common adverse events of the drug include motor fluctuations,

dyskinesia, chorea, dystonia, myoclonus, ocular dyskinesia, respiratory dyskinesia, neuropsychiatric symptoms including psychosis, sweating, facial flushing, hyperthermia, urinary disturbances, bloating, abdominal discomfort, dysphagia, drooling of saliva, dry mouth, dyspnea, pain, numbness, paresthesia, restlessness, and akathisia. However, Levodopa/Carbidopa induced hypokalemia is rare and unusual.

Case Report

A 73 year old female patient visited the internal medicine department with complaints of loose stools and vomiting for 1 day followed by an episode of transient loss of consciousness accompanied with sweating for which she was admitted to the general ward for further evaluation. She had no history of fever, breathlessness or dysuria. She had Epilepsy, Parkinsonism for 9 years on Syndopa Plus, Vascular dementia, Type II Diabetes Mellitus, Systemic Hypertension and Hypothyroidism. In addition she had a history of Urinary tract infection – Klebsiella species, Right lower lobe- pneumonia in the past. No drug allergy noted for the patient.

In hospital persisting hypokalemia was noted. On admission diselectrolytemia was noted on the lower side indicated the possibility of drug induced effect. The mechanism of this Syndopa induced hypokalemia is unknown. Possible causes of hypokalemia were excluded by appropriate clinical and laboratory examinations. Routine blood investigations showed hypokalemia and hypoalbuminemia with potassium values as 2.24 on 15/04/2021 & 2.77 on 16/04/2021. She was managed with intravenous potassium and magnesium correction. Daily monitoring of potassium levels were done which showed an improving trend. On improvement, symptomatically she was discharged with

her past medications. Tab.Syndopa cannot be stopped in this specific case as the patient has a history of parkinsonism in about 9 years and stopping the drug increases parkinsonism induced rigidity.

Conclusion

Carbidopa –Levodopa (Syndopa plus) is the most effective antiparkinsonian agent and is well tolerated at all stages of the disease. However, both motor and nonmotor adverse events are reported with the utilization of L-dopa. Electrolyte imbalances such as hypokalemia and hyponatremia are very rare. Potassium excretion in a 24-h urine collection is the best way to assess the urinary potassium excretion which is an important measure to assess hypokalemic effects earlier in patients. Physicians who prescribe Levodopa/carbidopa should be aware of the potential for precipitating hypokalemia in patients. The majority of hypokalemia cases so far reported are drug-induced. Our patient exhibited profound hypokalemia with significant symptoms. Fortunately, the etiology was identified relatively early in her hospitalization. As clinical pharmacists monitoring patient therapy, we must be vigilant in identifying potentially drug-induced disease as early as possible for better patient care. In doing so, we will assist in early treatment interventions to enhance patient outcomes and reduce lengths of stay which improve the quality of life.

References

1. Anusha R, Chand S, Lal V, Sushmitha DM, Reddy DS, Tejaswini S, et al. Isoniazid-induced liver injury: A case series and review. *J Pharm Pract Community Med.* 2018; 4:128-30.
2. Chand S, Bhandari R, Girish HN, Sukeerthi D. Isoniazid induced psychosis. *J Glob Pharma Technol.* 2019; 11:11-4.

3. Voora L, Shastry CS, Bhandari R, Sukeerthi D, Rawal KB, Chand A, et al. Phenytoin-induced erythroderma. *J Young Pharm.* 2019; 11:320.
4. Voora L, Sah SK, Bhandari R, Shastry CS. Doctor of pharmacy: Boon for healthcare system. *Drug Invent Today.* 2020; 14:153-8.
5. Rachana J, Shastry CS, Mateti UV, Sharma R. Incidence and associated factors of adverse drug reactions in the general medicine department of a tertiary care teaching hospital. *Int J Pharm Res.* 2019; 11:177-84.
6. Chand S, Bhandari R, Lal V. Prednisolone induced Cushing's syndrome in seropositive inflammatory arthritis. *Indo Am J Pharm Res.* 2018; 8:595-7.
7. McGregor MM, Nelson AB. Circuit mechanisms of Parkinson's disease. *Neuron* 2019; 101:1042-56.
8. Lane EL. L-DOPA for Parkinson's disease-A bittersweet pill. *Eur J Neurosci* 2019; 49:384-98.