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Natural Levodopa Consumption and Improved Balance Score in a Patient With Parkinson's Disease: A Case Study.

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ABSTRACT

We report the case of a 66-year-old man diagnosed with Parkinson's disease (PD) for 8 years, residing in Ernakulam district of Kerala, India. This is the first reported case of a Parkinson's disease patient with a Berg Balance score (BBS) of 56 despite an eight-year diagnosis. The score indicated that he had a lower fall risk. A higher ABC score further classified him to have a high-level functioning and a higher confidence level. An interesting finding from the study was that there was a reduced intake of Syndopa plus to half a tablet per day and incorporation of *Mucuna pruriens* seed in powdered form, 4g twice to the daily medication schedule. He self-reported to have better balance throughout the day and felt that consumption of natural levodopa to be the reason for his better gait and postural instability. This unique case study is being reported for further studies to be taken up by researchers to understand symptom alleviation and its association with natural levodopa in powdered form, *Mucuna pruriens*. The case highlighted better balance scores and level of functioning with regard to lesser synthetic drug consumption and more *Mucuna pruriens* consumption. Further research needs to be expanded to understand the effect of *Mucuna pruriens* and balance improvement. Symptom alleviation through natural levodopa consumption can be of paramount importance as many synthetic drugs have been reported to cause various side effects which further deteriorate their quality of life. The report on this intrinsic case study focusing on balance, *Mucuna pruriens*, and severity is unique and would help in further research expansion thereby improving the overall disease management strategies among Parkinson's disease patients.

Keywords: ABC score; Berg Balance score; *Mucuna pruriens*; Natural levodopa; Parkinson's disease.

INTRODUCTION

Parkinson's disease (PD) is a progressive neurodegenerative disease termed as "Shaking Palsy" characterized by fundamental symptoms including tremor, rigidity, bradykinesia, and postural instability. Individuals with PD experience gait and postural stability impairments which may lead to falls, mobility loss, and reduced independence.^{1,2} Patients with Parkinson's disease suffer from a reduction in dopamine production from substantia nigra pars compacta, leading to disrupted

basal ganglia function and loss of motor control.³

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Drugs for disease management include dopamine precursor substances such as levodopa that crosses the blood-brain barrier and replenishes the brain's reduced supply.³ Nerve cells utilize Levodopa to produce dopamine which has been found to increase the function and quality of life among the PD patients.³ *Mucuna pruriens* known as cowhage or velvet bean is a climbing legume endemic in India and is widely distributed in the tropical regions of Africa and the America.^{4,5} *Mucuna pruriens* is rich in natural levodopa, reported to be tolerated and has been an effective treatment for Parkinson's disease.⁵ Management of this neurodegenerative disorder using *Mucuna pruriens* is reported to be more effective and less lethal than the artificial preparations.^{4,5}

CASE REPORT

A 66-year-old man diagnosed with Parkinson's disease for 8 years, residing in Ernakulam district of Kerala, India was interviewed using a semi-structured questionnaire to understand the demographic details, risk factors, disease staging, balance level and the level of functioning. The respondent was married, retired, and lived with his family. He reported that he had Type II Diabetes and hypertension apart from Parkinson's disease and also had a history of fall wherein he slipped on a concrete surface. The respondent had no family history of Parkinson's disease. The severity of the disease was assessed using the Modified Hoehn and Yahr scale, a widely used clinical rating scale. The scale defined the broad categories of motor function among Parkinson's patients.^{6,7} The patient was assessed as Stage 2.0 (bilateral involvement without impairment of balance). The balance assessment was done using a five-point scale ranging from 0-4 called the Berg Balance Scale. The scale consisted of 14 tasks related to movements of daily living such as transfers, turns, and balance. It is scored from 0 to 56 points. The scores are categorized as 0-20 for high fall risk, 21-40 for medium fall risk, and 41-56 for low fall risk.^{8,9} The Berg Balance score (BBS) obtained by the patient was 56 categorizing him under low fall risk. A score of 56 is the highest score that could have been obtained by anyone undergoing the balance assessment. The Berg Balance Scale and the Modified Hoehn and Yahr scale have been validated across many studies and their correlation has also been

established.¹⁰ Fear of fall among Parkinson's patients was evaluated using an eleven point self-administered Activities-Specific Balance Confidence (ABC) scale which also measures the level of physical functioning. The rating consists of whole numbers (0-100) for each item. A score of less than 50% categorized them as low level of functioning, 50-80% as a moderate level of functioning, and greater than 80% to be a high level of functioning. The respondent secured a score of 85.62% thereby classifying him under a high level of functioning category. He reported to have attended physiotherapy sessions in the past and is under PD medications namely Concor, Lantex, Syndopa Plus and Pramipex.

An interesting finding regarding this case was he did not consume syndopa plus as prescribed by the physician after initial diagnosis, eight years ago. He has reduced the intake of Syndopa plus to half a tablet per day and has self-incorporated *Mucuna pruriens* seed in powdered form, 4g twice to the daily medication schedule for the past three years. He self-reported to have better balance throughout the day and felt that consumption of natural levodopa; *Mucuna pruriens* seed in powdered form to be the reason for his better gait and postural instability. Apart from the clinical aspects the patient seemed happier, devoid of hallucinations, and had a positive approach towards disease management.

DISCUSSION

To our knowledge, this is the first reported case of a PD patient consuming *Mucuna pruriens* with a Berg Balance score of 56 despite an eight-year diagnosis. The score indicated that he had a lower fall risk and an ABC score further classified him to have a high-level functioning and higher confidence. In India Parkinson's patients existed three thousand years ago and were diagnosed as Kampavata characterized by trembling. During this period they lacked Sinemet and Madopar but were treated using the natural levodopa of *Mucuna pruriens* seeds.^{5,11} Levodopa from *Mucuna pruriens* showed fewer side effects and was powerful than synthetic drugs like Sinemet and Madopar.⁵ *Mucuna pruriens* is said to have other substances that enhance the role of Levodopa or is said to contain other active ingredients with antiparkinsonian effects.^{5,12} Even though the severity assessment showed a stage progression of 2.0 on the

Hoehn and Yahr scale, his berg balance score of 56 was highly exceptional which shows the uniqueness in the case being studied. His statement regarding the consumption of powdered form of *Mucuna pruriens* daily is assumed to be a reason for better balance concerning his severity staging. Though diagnosed with the disease for 8 years his level of functioning and balance score is relatively higher. He also revealed a lesser intake of Syndopa plus and regular intake of *Mucuna pruriens*. The incorporation of this hybridized medication was employed based on the knowledge of ancient Indian Ayurvedic medicinal values. In 1978 R.A Vaidya's publication quoted Parkinson's disease when treated with *Mucuna pruriens* was more tolerable than the synthetic version.⁵ These evidence-based studies support the findings of the described case study. The patient had the highest Berg balance score categorizing him under low fall risk and also a higher level of functioning as per his ABC scores. Lesser intake of synthetic drugs and consumption of natural levodopa have proved to be more tolerable thereby reducing the side effects of using synthetic drugs. A multicenter clinical study statistically confirmed better improvement in patients who consumed *mucuna pruriens* compared to patients who consumed Sinemet, the synthetic levodopa.¹³ A case similar to the one we have reported from the literature also stands out to be a solid evidence supporting this result showcasing better symptom alleviation among the patient consuming *Mucuna pruriens*, a natural levodopa supply. The study identified from the literature was among 8 PD patients with an average age of 62, 12 years of diagnosis, and stage progression of 3.5 on the Hoehn and Yahr staging. The subjects were randomly allocated with synthetic levodopa and mucuna sachets; the results were better in those who took sachets of *Mucuna pruriens*.⁵ To date 50 substances have been identified in the powder of its seeds boosting the levodopa component or adding some kind of dopamine agonism.¹⁴

This unique case study is being reported for further studies to be taken up by researchers to understand symptom alleviation and its association with natural levodopa, *Mucuna pruriens* powdered form. Ever since balance and gait play an important role in the overall well-being and quality of life among PD patients, a focus on symptom alleviation without using synthetic drugs can be beneficial. The case highlighted better balance scores

and level of functioning with regard to lesser synthetic drug consumption and more *Mucuna pruriens* consumption. Further research needs to be expanded to understand the effect of *Mucuna pruriens* and balance improvement. Symptom alleviation through natural levodopa consumption can be of paramount importance as many synthetic drugs have reported causing various side effects which further deteriorate their quality of life.⁵ Natural levodopa is less toxic and has faster lasting effects compared to the synthetic forms and neurologists have patented its advantages over synthetic forms, Sinemet and Madopar.⁵ Symptom alleviation using *Mucuna pruriens* dates back to centuries ago and clear shreds of evidence proving the effect needs to be studied. The report on this intrinsic case study focusing on balance, *Mucuna pruriens*, and severity is unique and would help in further research expansion thereby improving the overall disease management strategies among PD patients.

Though the study results cannot be generalized to the wider population due to the nature of the study design, this reported case study can be used to shed light for further exploration of the natural levodopa and its role in symptom alleviation, due to the in-depth and multi-sided approach of case studies. Several therapies are available to delay the onset of motor symptoms and to ameliorate motor symptoms. All of these therapies are designed to increase the amount of dopamine in the brain either by replacing dopamine, mimicking dopamine, or prolonging the effect of dopamine by inhibiting its breakdown. With the ongoing research on various treatment strategies, this study throws light on the paramount importance of symptom alleviation through natural levodopa consumption compared to synthetic drugs and the need to devise large studies to establish the association.

CONCLUSIONS

This case study is being reported to understand symptom alleviation and its association with natural levodopa, *Mucuna pruriens* powdered form. This is the first reported case of better balance scores and level of functioning and its perceived association to lesser synthetic drug consumption and more *Mucuna pruriens* consumption. Intrinsic case study focusing on balanced dose of *Mucuna pruriens*, would help in further research development thereby improving the overall disease management strategies among PD patients.

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REFERENCES

1. McNeely ME, Duncan RP, Earhart GM. Medication improves balance and complex gait performance in Parkinson disease. *Gait Posture*. 2012;36(1):144–8.
2. Anilkumar Aiswarya, Mappilai Raja Bagvandas VG. Prediction of fall among patients with Parkinson's disease: A cross sectional study, India. 2019;4(9):18–25.
3. Ayano G. Parkinson's Disease: A Concise Overview of Etiology, Epidemiology, Diagnosis, Comorbidity and Management. *J Neurol Disord* [Internet]. 2016;4(6). Available from: <http://www.esciencecentral.org/journals/parkinsons-disease-a-concise-overview-of-etiology-epidemiology-diagnosis-comorbidity-and-management-2329-6895-1000298.php?aid=79490>
4. Katzenschlager R, Evans A, Manson A, Patsalos PN, Ratnaraj N, Watt H, et al. Mucuna pruriens in Parkinson's disease: A double blind clinical and pharmacological study. *J Neurol Neurosurg Psychiatry*. 2004;75(12):1672–7.
5. Maldonado RG. Mucuna and Parkinson's Disease: Treatment with Natural Levodopa. *Park Dis - Underst Pathophysiol Dev Ther Strateg* [Internet]. 2018; Available from: <http://www.intechopen.com/books/parkinson-s-disease-understanding-pathophysiology-and-developing-therapeutic-strategies/mucuna-and-parkinson-s-disease-treatment-with-natural-levodopa>
6. Allen NE, Schwarzel AK, Canning CG. *Electron_Density_Mapinterp.Pdf*. 2013;2013.
7. Bhidayasiri R, Tarsy D. *Movement Disorders: A Video Atlas*. 2012;4–6. Available from: <http://link.springer.com/10.1007/978-1-60327-426-5>
8. Downs S. The Berg Balance Scale. *J Physiother* [Internet]. 2015;61(1):46. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S1836955314001465>
9. Anilkumar A, Veliah G, Kosalram K. Pesticide

Exposure and Its Association to Parkinson ' s Disease Development : An Intrinsic Case Study in India. 2020;10(September):232–5.

10. Qutubuddin AA, Pegg PO, Cifu DX, Brown R, McNamee S, Carne W. Validating the Berg Balance Scale for patients with Parkinson's disease: A key to rehabilitation evaluation. *Arch Phys Med Rehabil*. 2005;86(4):789–92.
11. Traditional and complementary therapies in Parkinson ' s disease . 2019;10410773.
12. Waalen JK. Single subject research designs. *J - Can Chiropr Assoc*. 1991;35(2):95.
13. Liebert MA. An Alternative Medicine Treatment for Parkinson ' s HP-200 in Parkinson ' s Disease Study Group. *J Altern Complement Med*. 1995;1(3):249–55.
14. Cox ; * Zachary * E, Flake A. (12) United States Patent. *Eff Chlorpromazine Exp Diarrhea Just Weaned Piglets* [Internet]. 2003;515(60):1169–74. Available from: <https://patentimages.storage.googleapis.com/14/cf/6b/7307db95fcd768/US7544712.pdf>

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Consent: The consent was signed by the patient and is attached with it.

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