

Prescription Patterns in Patients with Idiopathic Parkinson's Disease: An Ambispective Study from Northern Rajasthan of Indian Subcontinent

Himanshu Kaushal^{1*}, Rajendra Kumar Sureka², Amit Agarwal³ and Jatinkumar Jain¹

¹Senior Resident, Department of Neurology, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan, India

²Professor Emeritus, Department of Neurology, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan, India

³Professor and Head, Department of Neurology, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan, India

***Corresponding Author:** Himanshu Kaushal, Senior Resident, Department of Neurology, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan, India.

Received: February 04, 2024; **Published:** February 24, 2024

Abstract

Background: Idiopathic Parkinson's Disease (IPD) is one of the most common neurodegenerative movement disorders having a constellation of motor as well as non-motor symptoms. The treatment of IPD has few common drugs however the prescription patterns and treatment protocols vary between different hospitals as well as physicians. The purpose of the current study was to assess and analyse the prescription patterns regarding IPD.

Materials and Methods: Type: Ambispective (retrospective and prospective) study. Sample size: 150. Patients duration: 2018 to 2023. Inclusion criteria: 1) Patients fulfilling the criteria for Idiopathic Parkinson Disease, 2) Willingness of patients to participate in the study. Exclusion criteria: 1) Patients not fulfilling the criteria for idiopathic Parkinson disease, 2) Secondary and Atypical PD, 3) Patients not willing to participate in the study. One prescription was analysed per patient. Prescriptions from outside and within the hospital were included. The first prescription was taken into account in all the patients for uniformity. Along with the prescriptions, demographic and clinical profile was taken into account. The data was entered in MS Excel and results were analysed using SPSS 20.

Results: Mean age of patients was 57.3 years. 89 (59.33%) were males and 61 (40.67%) were females. The Mean age of onset of the disease was 52.9 years and the mean duration of the disease was 3.21 years. Mean UPDRS score was 68.88. 59 (39.33%) patients were in stage 1 - 1.5 Modified Hoehn and Yahr scale, 46 (30.67%) patients had stage 2 - 2.5, 29 (19.33%) in stage 3, 13 (8.6%) in stage 4 and 3 (2%) patients in stage 5. Out of 150 patients, 12 (8%) patients were on monotherapy. 68 (45.33%) patients were on dual therapy. 43 (28.67%) patients were triple drug therapy and 27 (18%) were on polytherapy. 82.4% patients were on medication prescribed from neurologist or movement disorder specialist whereas rest of the prescriptions from general physicians.

Conclusion: There is a trend of prescription of dopaminergic agonists and levodopa as monotherapy. Novel agents like Levodopa intestinal gel or apomorphine are not being used. While prescribing factors like age of onset, duration of illness, motor or non-motor symptoms, dyskinesias, cognitive decline, tolerance to medicines and last but not the least affordability and availability should be taken into account while prescribing treatment to patients with Parkinson disease.

Keywords: Idiopathic Parkinson's Disease (IPD); Movement Disorders; Dyskinesias; Cognitive Decline

Introduction

Movement disorders are a group of neurological disorders characterized by abnormal movement, either paucity of movement or excess movement. There is a wider spectrum of movement disorders with newer entities being discovered and added to the list. Idiopathic Parkinson's Disease (IPD) is one of the most common neurodegenerative movement disorders having a constellation of motor as well as non-motor symptoms [1]. The main motor manifestations of the disease are rigidity, bradykinesia, tremor, and postural instability [2]. The treatment of IPD has few common drugs however the prescription patterns and treatment protocols vary between different hospitals as well as physicians. Even a difference in prescription patterns is observed among general physicians, neuro-physicians, and movement disorder specialists. The purpose of the current study was to assess and analyse the prescription patterns regarding IPD.

Materials and Methods

The current study was an ambispective (retrospective and prospective) study. 150 patients were included in the study from year 2018 to 2023 including both in-patients and out-patients. Inclusion criteria: 1) Patients fulfilling the criteria for idiopathic parkinson disease, 2) Willingness of patients to participate in the study. Exclusion criteria: 1) Patients not fulfilling the criteria for idiopathic Parkinson disease, 2) secondary and atypical PD, 3) Patients not willing to participate in the study. One prescription was analysed per patient. Prescriptions from outside and within the hospital were included. The first prescription was taken into account in all the patients for uniformity. Along with the prescriptions, demographic and clinical profile was taken into account. The data was entered in MS Excel and results were analysed using SPSS 20.

Results

Prescriptions of patients presenting to the neurology department were assessed. The demographic and clinical profile is shown in table 1. The mean age of patients was 57.3 years with a male preponderance. Amongst 150 of total patients, there were 89 (59.33%) males and 61 (40.67%) females. The Mean age of onset of the disease was 52.9 years and the mean duration of the disease was 3.21 years. Mean UPDRS score was 68.88. 59 (39.33%) patients were in stage 1 - 1.5 modified Hoehn and Yahr scale, 46 (30.67%) patients had stage 2 - 2.5, 29 (19.33%) in stage 3, 13 (8.6%) in stage 4 and 3 (2%) patients in stage 5. Out of 150 patients, 12 (8%) patients were on monotherapy in the form of levodopa-carbidopa or dopaminergic agonists. 68 (45.33%) patients were on dual therapy including levodopa-carbidopa therapy or dopaminergic agonists and amantadine or anticholinergics. 43 (28.67%) patients were triple drug therapy including levodopa-carbidopa and/or dopaminergic agonists and/or amantadine and/or anticholinergics. Rest of 27 (18%) were on polytherapy including, levodopa-carbidopa, amantadine, anticholinergics, dopaminergic agonists and monoamine oxidase inhibitors. None of the patients were on COMT inhibitors, Apomorphine or intestinal gel preparations. None of the patients were on ergot derivatives. 6 prescriptions showed that elderly patients were prescribed with trihexyphenidyl leading to urinary retention and dyscognitive symptoms. The drugs and range of doses (minimum to maximum dose found in prescriptions) are shown in table 2. The major non-motor symptoms encountered in patients were constipation, decreased sleep, pain, depressive symptoms and drooling of saliva. The drugs prescription for these symptoms are shown in table 3. 109 (72.67%) prescriptions had concomitant medications for comorbidities in the form of hypertension, diabetes mellitus, dyslipidemia, dementia, ischemic heart disease, hyperactive airway disease, cerebrovascular disease. The most common drugs used for these comorbidities are shown in table 4.

82.4% patients were on medication prescribed from neurologist or movement disorder specialist whereas rest of the prescriptions from general physicians.

Total patients	150 (100.00%)
Males	89 (59.33%)
Females	61 (40.67%)
Mean age of onset	52.9 years
Mean duration of disease	3.21 years
Mean UPDRS Score	68.88
Modified Hoehn & Yahr Stage	
Stage 1-1.5	59 (39.33%)
Stage 2-2.5	46 (30.67%)
Stage 3	29 (19.33%)
Stage 4	13 (8.6%)
Stage 5	3 (2%)
Tremor Predominant	87 (58%)
Rigidity Predominant	59 (39.33%)
Postural instability	4 (2.67%)

Table 1: *Clinicodemographic profile of patients.*

Monotherapy	12 (8.00%)
Levodopa first approach	8 (66.67%)
Dopaminergic agonist first approach	4 (33.33%)
Dual Therapy	68 (45.33%)
Triple Therapy	43 (28.67%)
Polytherapy	27 (18%)
Drug Dose Range/day	
Levodopa-carbidopa	375 - 1100 mg/day
Pramipexole	0.25 - 0.50 mg/day
Ropinirole	0.50 - 0.75 mg/day
Trihexyphenidyl	2 - 6 mg/day
Amantadine	100 - 200 mg/day
Safinamide	50 - 100 mg/day

Table 2: *Prescription drugs and mean doses.*

Constipation: Prucalopride, Lactulose, Liquid paraffin
Insomnia: Clonazepam, Zolpidem
Drooling of saliva: Trihexyphenidyl, Glycopyrrolate
Depressive symptoms: Escitalopram, Imipramine
Pain: Etoricoxib, Paracetamol, Diclofenac

Table 3: *Drugs for non-motor symptoms.*

Drugs	n
Aspirin and or Clopidogrel	28
Levothyroxine	8
Amlodipine	23
Telmisartan	21
Propranolol or Metoprolol	13
Metformin	20
Dapagliflozin	5
Glimepiride	8
Sitagliptin or Vildagliptin	5
Piracetam	2
Vitamin D supplements	42
Vitamin B12 supplements	58
Statins	28
Acebrophyllin	1
Donepezil or Memantine	2

Table 4: Drugs for comorbidities.

Discussion

The study showed a male preponderance in the study with 59.33% male patients. The relative predominance of males in the study could be due to the social factors prevalent in the region with males presenting and consulting earlier as compared to the females. The results are in coherence with findings of study done by Amar BR and colleagues (2014) where they found 87.5% male patients in the study population [3]. The mean age of onset of disease in the patients was 52.9 years. The mean duration of disease was found to be 3.21 years. Around 39.33% patients were in stage 1 - 1.5, 30.67% in stage 2 - 2.5, 19.33% in stage 3, 8.6 in stage 4 and 2% in stage 5 modified H & Y. The mean UPDRS Score in the present study was 68.88. Another study done by Manorenj S in 2020 showed that average age of onset in study population of Parkinson disease was 51.55 years with mean duration of disease being 3.8 years. 40% of patients were in modified H and Y stage 1 - 1.5, 35% in stage 2 - 2.5, 15% in stage 3, 10% in stage 4 and none in stage 5 in this study [4]. Hence, the results of the present study and study done by Manorenj S were comparable. 58% patients had tremor predominant disease. 39.33% patients had rigidity predominant disease whereas 2.67% patients had predominant postural instability. The findings were similar to study done by Bomen A., *et al.* where they found 68.88% patients being tremor predominant and 20% being rigidity predominant [5].

With discovery of levodopa-carbidopa, subsequent drugs developed for the management of Parkinson’s disease has expanded the spectrum of drugs available. Olanow CW., *et al.* (2001) discussed decision making for treatment in patients with parkinsonism. They recommended to use levodopa therapy as initial treatment of choice for patients [6]. But according to study done by Miyasaki JM., *et al.* (2002), there was no specific recommendation for levodopa therapy or dopaminergic agonists for initial starting drugs for these patients [7]. In the current study, we also found both of these drugs to be chosen as initial therapy for treatment initiation. 66.67% patients were found to be initiated on levodopa therapy and 33.33% were started on dopaminergic agonists amongst the monotherapy group. One of the largest study of the country conducted at NIMHANS in 2017 by Surathi P., *et al.* found that levodopa was prescribed in 94.8%, trihexyphenidyl in 40.4%, dopamine agonists in 23.2%, and amantadine in 17.2% either as monotherapy or in combination. In the same study, 37.8% were on monotherapy, with levodopa being the most commonly used agent (33.1%), followed by trihexyphenidyl (2.2%), dopamine agonists (1.6%), and amantadine (0.6%). Among those on polytherapy, levodopa plus trihexyphenidyl was the preferred combination (23.9%) [8]. While prescribing patients with Parkinson’s disease (PD) choice of drugs is based on many variables. Maintaining the patient’s functional

independence for as long as feasible is the overarching goal of therapy. Treatments are determined by the patient's age, the disease's stage, the patient's financial situation, the existence of motor fluctuations, and the presence of other neurological, mental, and systemic illnesses [9]. Patient profile, cost of medication, affordability, side-effect profile and tolerance, availability, and coverage of medications by medical insurance and governmental schemes also affect the prescription patterns and adherence to the therapy. In countries like India all these factors need to be accounted while prescribing medicines to patients with Parkinson disease.

Strengths of the Study

The study is one of its kind from the Rajasthan state of India. This study adds in the existing literature regarding patterns of prescription in patients with Parkinson disease. All the prescriptions studied by single investigator. Non motor symptoms, Comorbidities and medications for comorbidities were also included in the present study.

Limitations of the Study

Small sample size is the main limitation of the study. The results could not be Atypical Parkinson disease was excluded from the study.

Conclusion

The purpose of the study was assessment of patterns of prescription in patients with Parkinson disease. Various factors like age of onset, duration of illness, motor or non motor symptoms, dyskinesias, cognitive decline, tolerance to medicines and last but not the least affordability and availability should be taken into account while prescribing treatment to patients with Parkinson disease.

Bibliography

1. Baumann CR., *et al.* "Body side and predominant motor features at the onset of Parkinson's disease are linked to motor and nonmotor progression". *Movement Disorders* 29.2 (2014): 207-213.
2. Sveinbjornsdottir. "The clinical symptoms of Parkinson's disease". *Journal of Neurochemistry* 139.1 (2016): 318-324.
3. Amar BR., *et al.* "A clinical profile of patients with Parkinson's disease and psychosis". *Annals of Indian Academy of Neurology* 17.2 (2014): 187-192.
4. Manorej S. "Clinical profile of patients with Parkinson disease in Hyderabad". *International Journal of Scientific Research* 7.8 (2019): 11-14.
5. Bamon A., *et al.* "A clinico-epidemiological profile of Parkinson's disease patients attending the tertiary care hospital of hilly state of North India: A hospital based cross-sectional study". *International Journal of Research in Medical Sciences* 9.8 (2021): 2397-2400.
6. Olanow CW., *et al.* "An algorithm (decision tree) for the management of Parkinson's disease (2001): treatment guidelines". *Neurology* 56.6 (2001): S1-S88.
7. Miyasaki JM., *et al.* "Practice parameter: initiation of treatment for Parkinson's disease: an evidence-based review: report of the Quality Standards Subcommittee of the American Academy of Neurology". *Neurology* 58.1 (2002): 11-17.
8. Surathi P, *et al.* "Prescribing pattern for Parkinson's disease in Indian community before referral to tertiary center". *Canadian Journal of Neurological Sciences* 44.6 (2017): 705-710.
9. Olanow CW, *et al.* "The scientific and clinical basis for the treatment of Parkinson disease". *Neurology* 72.21 (2009): S1-136.

Volume 16 Issue 2 February 2024

©All rights reserved by Himanshu Kaushal., et al.

Citation: Himanshu Kaushal., *et al.* "Prescription Patterns in Patients with Idiopathic Parkinson's Disease: An Ambispective Study from Northern Rajasthan of Indian Subcontinent". *EC Neurology* 16.2 (2024): 01-05.