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AN ASSESSMENT OF THE EFFECTIVENESS OF THREE MONTHS MANAGEMENT OF IDIOPATHIC PARKINSON'S DISEASE (I-PD) WITH LEVODOPA (L-DOPA) TO TREAT FATIGUE SEVERITY, HRQOL AND CORTICAL DYSFUNCTIONS

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Abstract:

Objectives: *The objective of this particular research was to determine the response of levodopa (L-Dopa) against cortical functions, fatigue severity and health-related quality of life; moreover, we also aimed to determine the association between fatigue severity, cortical functions, health-related quality in the post L-Dopa management with I-PD (Idiopathic Parkinson's Disease).*

Methods: *We conducted this research on a total of fifty patients at DHQ Teaching Hospital Gujranwala from September 2017 to November 2018. These patients were diagnosed with I-PD. Moreover, fifty healthy controls were also part of this particular research. Every participant went through Fatigue Severity Scale, Parkinson's Disease Questionnaire and Cortical Function Assessment. We tested every patient for these tests before and after the treatment of L-Dopa.*

Results: *I-PD affected patients also had signs of cortical functioning deficits, severe fatigue experiences and deteriorated health-related quality than healthy individuals. The medication of L-Dopa significantly improved the life quality and reduced the fatigue severity in the timeframe of three months. Severe fatigue and deteriorated health also had an association with higher cortical functioning deficits. Cortical functioning also predicted about the fatigue severity and health-related quality.*

Conclusion: *The outcomes clearly conclude that treatment of L-Dopa is very much effective for cortical dysfunctions, severe fatigue and health-related quality of life among the patients of I-PD. Cortical functioning significantly indicates life quality and fatigue factor in the patients of I-PD.*

Keywords: *Health-Related Quality of Life (HRQoL), Idiopathic Parkinson's Disease (I-PD), Parkinson's Disease (PD), Cognition, Cortical, Levodopa (L-Dopa) and Chronic Fatigue.*

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INTRODUCTION:

Parkinson's Disease (PD) is a common neurodegenerative disorder which is likely to affect about nine million individuals until 2030 all over the world [1]. I-PD includes rigidity, kinesis and tremor as its characteristics as a result of various pathological mechanisms: increased [11C] (R)-PK11195 levels, cortical areas vulnerability and formation of subcortical greys from the dorsal motor nucleus in brain, motor systems and autonomic, continuous local neurotoxin presence till the time of death, corticocortical loss and deficiency of striatal dopamine that adds to cognitive deficiencies [2 – 5]. PD patients can be better treated with L-Dopa management. Vietnami patients receive L-Dopa as monotherapy or combined with other agents such as anticholinergics, benserazide, etc. [6]. Recently research reported cognitive deficits in the Vietnami population affected with PD [7]. Other studies also reported better outcomes of L-Dopa on alertness, motor function, neuropsychological and cognitive performance on PD affected patients [8, 9].

In order to find out the missing links between the present and past literature we conducted this research with an objective to determine the response of levodopa (L-Dopa) against cortical functions, fatigue severity and health-related quality of life; moreover, we also aimed to determine the association between fatigue severity, cortical functions, health-related quality in the post L-Dopa management with I-PD (Idiopathic Parkinson's Disease).

METHODS:

We conducted this research on a total of fifty patients at DHQ Teaching Hospital Gujranwala from September 2017 to November 2018. These patients were diagnosed with I-PD. Moreover, fifty healthy controls were also part of this particular research. Every participant went through Fatigue Severity Scale, Parkinson's Disease Questionnaire and Cortical Function Assessment. We tested every patient for these tests before and after the treatment of L-Dopa. The patients were screened for dementia, depression, I-PD, stability on L-Dopa treatment, no intake of anti-depressants, dopamine agonist & anticholinergic drugs, psychiatric disorder history, neurological disorder history, CFA (Cortical Function Assessment), sensory extinction, naming, dictation, repetition, writing, stereognosis and drawing. The questionnaire of Parkinson's Disease assessed the HRQoL in eight different dimensions such as emotional well-being, daily living routine, social support, mobility, communication, stigma, bodily discomfort and cognition. We also measured the severity of fatigue with fatigue score indexing on seven scale formula.

A trained psychologist tested the patients after ethical committee and individual approval. A healthy individual experienced single session; whereas, patients underwent two sessions before and after the treatment. Statistical data analysis included ANOVA, PDQ, FSS and CFA analysis. Regression analysis was also carried out for independent and dependent variables.

RESULTS:

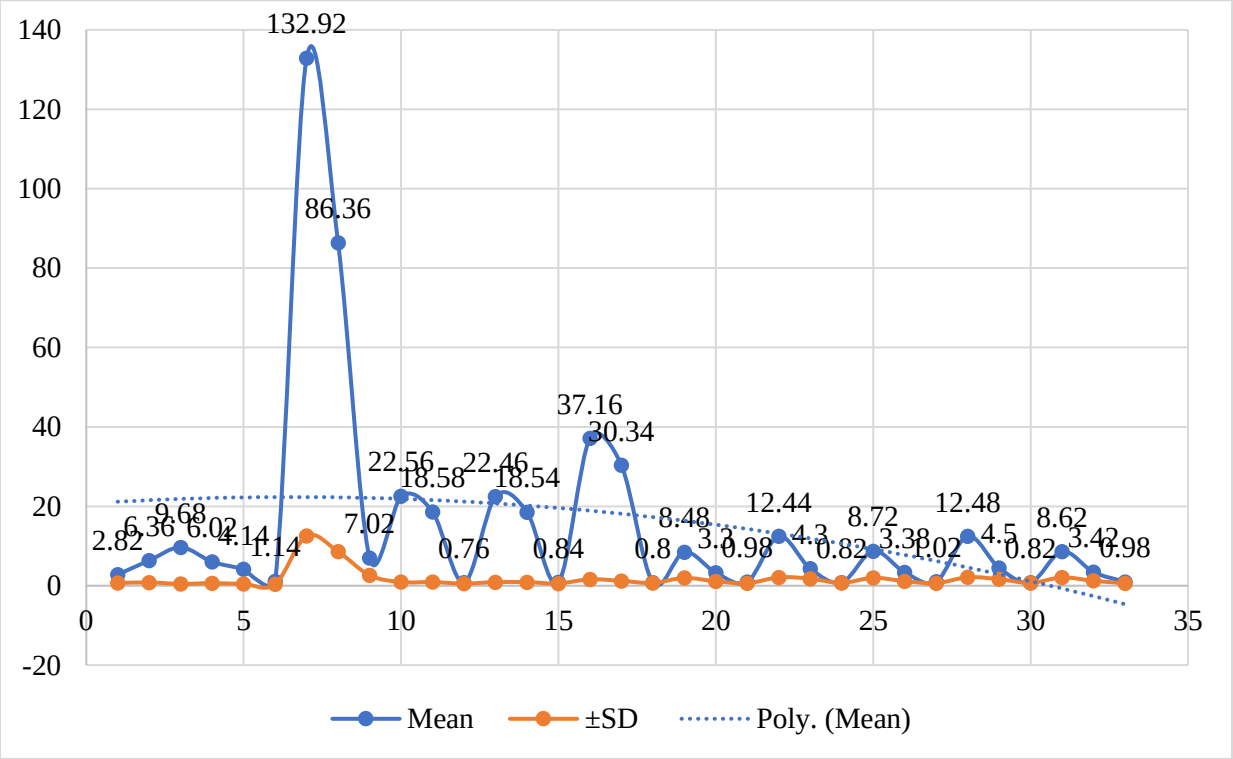
I-PD affected patients also had signs of cortical functioning deficits, severe fatigue experiences and deteriorated health-related quality than healthy individuals. The medication of L-Dopa significantly improved the life quality and reduced the fatigue severity in the timeframe of three months. Severe fatigue and deteriorated health also had an association with higher cortical functioning deficits. Cortical functioning also predicted about the fatigue severity and health-related quality. The age of the patients was in the age bracket of 45 – 66 years. Both groups included the same number of males and females. Detailed clinical outcomes about Cortical Function Assessment, Fatigue Severity, Parkinson's Disease Questionnaire, Emotional Well-being, Activities of daily living, Mobility, Social support, Stigma, Communication, Cognition and Body discomfort are given in the tabular and graphical presentation.

Table: Clinical Features of the Sample

Clinical Features		Mean	±SD	95% CI Lower bound	95% CI Upper bound
Cortical Function Assessment	Before Treatment (I-PDP)	2.8	0.7	2.6	3.0
	After Treatment (I-PDP) post-treatment	6.4	0.8	6.1	6.6
	Healthy Individuals	9.7	0.5	9.5	9.8

Fatigue severity scale	Before Treatment (I-PDP)	6.0	0.7	5.8	6.2
	After Treatment (I-PDP) post-treatment	4.1	0.5	4.0	4.3
	Healthy Individuals	1.1	0.4	1.0	1.2
Parkinson's disease questionnaire	Before Treatment (I-PDP)	132.9	12.6	129.3	136.5
	After Treatment (I-PDP) post-treatment	86.4	8.6	83.9	88.8
	Healthy Individuals	7.0	2.6	6.3	7.8
Emotional well-being	Before Treatment (I-PDP)	22.6	0.9	22.3	22.8
	After Treatment (I-PDP) post-treatment	18.6	0.9	18.4	18.8
	Healthy Individuals	0.8	0.6	0.5	1.0
Activities of daily living	Before Treatment (I-PDP)	22.5	0.9	22.3	22.7
	After Treatment (I-PDP) post-treatment	18.5	0.9	18.3	18.8
	Healthy Individuals	0.8	0.6	0.6	1.1
Mobility	Before Treatment (I-PDP)	37.2	1.6	36.8	37.5
	After Treatment (I-PDP) post-treatment	30.3	1.2	30.0	30.7
	Healthy Individuals	0.8	0.7	0.5	1.1
Social support	Before Treatment (I-PDP)	8.5	2.0	8.1	8.9
	After Treatment (I-PDP) post-treatment	3.3	1.1	2.9	3.7
	Healthy Individuals	1.0	0.6	0.6	1.4
Stigma	Before Treatment (I-PDP)	12.4	2.1	12.0	12.9
	After Treatment (I-PDP) post-treatment	4.3	1.8	3.8	4.8
	Healthy Individuals	0.8	0.7	0.4	1.3
Communication	Before Treatment (I-PDP)	8.7	2.0	8.3	9.1
	After Treatment (I-PDP) post-treatment	3.4	1.1	3.0	3.8
	Healthy Individuals	1.0	0.7	0.6	1.4

Cognition	Before Treatment (I-PDP)	12.5	2.1	12.0	12.9
	After Treatment (I-PDP) post-treatment	4.5	1.7	4.0	5.0
	Healthy Individuals	0.8	0.7	0.4	1.3
Body discomfort	Before Treatment (I-PDP)	8.6	2.1	8.2	9.0
	After Treatment (I-PDP) post-treatment	3.4	1.2	3.0	3.8
	Healthy Individuals	1.0	0.6	0.6	1.4



DISCUSSION:

The outcomes show that I-PD patients had deficits of cortical functioning, fatigue severity and deteriorated health-related quality of life than healthy individuals. As a result of three months, L-Dopa management cortical functions improved and HRQoL also improved among I-PD affected patients. Fatigue factor also reduced as a result of L-Dopa treatment. There was a negative correlation of cortical functioning with fatigue severity and HRQoL. Past local studies also reported cognitive deficits in the patients of PD among the Vietnam population [6 – 8]. I-PD includes rigidity, kinesis and tremor as its characteristics as a result of various pathological mechanisms: increased [11C] (R)-PK11195 levels, cortical areas vulnerability and formation of subcortical greys from the dorsal motor nucleus in brain, motor systems and autonomic, continuous local neurotoxin presence till the time of death, corticocortical loss and deficiency of striatal dopamine that adds to cognitive deficiencies [2 – 5]. Such pathological features also add to the cognitive deficits among PD affected patients.

Past studies also assessed the decline of the cognitive activity, HRQoL impact and reduced life quality due to declined cognitive health [15, 16]. Our correlation analysis highlighted higher deficits of cortical functioning with deteriorated HRQoL and severe fatigue among I-PD affected patients. Fatigue was

significantly presented by cortical functioning and HRQoL among I-PD patients. These outcomes are correlating with the previous outcomes about the deteriorated HRQoL with declined cognitive health of the patients. Whereas, in the present research literature no such relational effort exists about the assessment of HRQoL and severity of fatigue among I-PD patients.
Three months L-Dopa treatment is very much effective to reduce PD impairment; whereas, research studies do not assess the L-Dopa effectiveness on cortical functions. Positive changes are possible through L-Dopa in HRQoL and cortical functioning, fatigue and quality of life among I-PD patients. These outcomes are the same as previously reported outcomes about memory issues [8, 9]. These outcomes also pose a few implications in the field of rehabilitation and patient's care. We need to assess the cortical functioning at an initial stage of the I-PD management in order to prevent the chances of increased deterioration.

CONCLUSION:

The outcomes clearly conclude that treatment of L-Dopa is very much effective for cortical dysfunctions, severe fatigue and health-related quality of life among the patients of I-PD. Cortical functioning significantly indicates life quality and fatigue factor in the patients of I-PD.

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