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A CROSS SECTIONAL STUDY ON PREVALANCE OF PSYCHIATRIC COMORBIDITIES AND ITS SEVERITY IN PARKINSON'S DISEASE

Psychiatry

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ABSTRACT

Parkinson's disease (PD) is a neurodegenerative disorder of the elderly. The study aimed to investigate the prevalence of depression, anxiety along psychosis & impairment of sleep and cognition disorders among the Parkinson's disease patients. From May 2013 to November 2013, we did a cross-sectional study among 75 patients having idiopathic Parkinson's disease. The following tools were used to evaluate the patients: M.I.N.I Plus, Hamilton Rating Scale for Anxiety (HAM-A), Hamilton Rating Scale for Depression (HAM-D), Brief Psychiatric Rating Scale (BPRS), Mini Mental Status Examination (MMSE), Unified Parkinson's Disease Rating Scale and Parkinson's Disease Sleep Scale Modified Version. All data was entered in excel and analysed using SPSS v19. This paper discusses the findings from the study. It can be concluded that psychiatric disturbances in PD increase as duration of illness, stage of disease and complications with therapy increases. Therefore, there is a need for regular psychiatric evaluation in Parkinson's disease patients.

KEYWORDS

Parkinson's Disease, Psychiatric comorbidities, Quantitative Research, India

INTRODUCTION

Parkinson's disease (PD) is a neurodegenerative disorder of the elderly and is second most common after Alzheimer's disease [1]. It is characterised by motor and non-motor symptoms. Non-motor symptoms include sleep disturbances, sensory abnormalities, autonomic dysfunction, cognitive and behavioural disturbances. However, these non-motor symptoms are underappreciated [2] and poorly understood [3]. The most common psychiatric symptom in Parkinson's disease is depression with a reported risk of 30-40% [4, 5]. The prevalence rates have been different with different studies [6-8]. Anxiety disorders are also reported in PD. The prevalence is higher among PD patients than the controls and the normal population [9, 10]. Studies show that anxiety may precede the actual motor symptoms [11]. Also, dopamine therapy is known to induce anxiety disorders [12]. When anxiety presents along with depression, it has severe comorbidities with poor outcome and a longer duration of illness [13]. Sleep disturbances may be due to pharmacological treatment [14] or maybe due to the disease itself [15]. The study aimed to investigate the prevalence of depression, anxiety along psychosis & impairment of sleep and cognition disorders among the Parkinson's disease patients. The study also focussed on finding the factors that contribute towards these psychological morbidities.

MATERIAL AND METHODS

From May 2013 to November 2013, we did a cross-sectional study among randomly selected 75 patients having idiopathic Parkinson's disease from a tertiary care center. Ethical approval was obtained from the institutional ethical committee. Informed consent was obtained from the patient/caregiver. A semi-structured questionnaire was used to collect sociodemographic details. The following tools were used to evaluate the patients:

I. M.I.N.I Plus
II. Hamilton Rating Scale for Anxiety (HAM-A)
III. Hamilton Rating Scale for Depression (HAM-D)
IV. Brief Psychiatric Rating Scale (BPRS)
V. Mini Mental Status Examination (MMSE)
VI. Unified Parkinson's Disease Rating Scale
VII. Parkinson's Disease Sleep Scale Modified Version

All data was entered in excel and analysed using SPSS v19. Frequencies, percentages and measures of central tendencies were used. Student t-test and ANOVA were used to compare the data between different patients. Relationship between various variables was found using correlation and regression analysis.

RESULTS

Table 1 shows the sociodemographic features of the participants. Table 2 shows the clinical characteristics of the patients. Most of the patients were treated with Levodopa and Trihexyphenidyl. Table 3 shows the comparison of various clinical parameters with MMSE. Table 4 shows the comparison of various clinical parameters with PDSS. Table 5 shows the comparison of various clinical parameters with HAM-D. Table 6 shows the comparison of various clinical parameters with HAM-A. Table 7 shows the comparison of various clinical parameters with BPRS. Independent sample't' test shows a significant association between duration of illness and treatment, postural instability, bradykinesia and tardive dyskinesia. The association between akinesia, duration of illness, duration of treatment and MMSE was found to be highly significant. Highly significant difference in MMSE scores was obtained between stage 1 and stage 3. Independent sample't' test showed significant association between sleep disturbances and akinesia, dyskinesia, rigidity, dreams ,abnormal limb movements in sleep, duration of illness and treatment. ANOVA and Post-Hoc test demonstrated very highly significant disturbances in sleep between stage 1 and stage 2.5 as well as stage 3 and also between stage 1.5 and stage 3. Highly significant difference in sleep was noted between population on dopamine precursors along with anticholinergics and those taking hypnotics and psychotropics along with drugs for Parkinsonism. The multiple regression analysis of influence of HAM-A, HAM-D on PDSS identified HAM-D as the most important variable among the two. Duration of illness and treatment were very significantly associated with depression. Akinesia, dyskinesia and patients experiencing side effects due to drugs had significant association with depression. Using ANOVA and POST-HOC test it was found that group on hypnotics and psychotropics had more depression than other groups.

HAM-A has very high significant association with postural instability. ANOVA test comparing BPRS scores in different stages showed significant association which was confirmed using post-hoc between stage 3 and stage 1, 1.5, 2. Regression analysis was performed between BPRS and MMSE and it was found that MMSE was significantly associated with BPRS and it influences BPRS by 5.8%. MMSE is significantly negatively correlated with duration of illness and treatment as well as BPRS. HAM-D is positively correlated to duration of illness, treatment and PDSS. BPRS has a significant positive correlation with PDSS.

Table 1: Sociodemographic Characteristics

S.No	Variable	Categories	Frequency	Percentage
1	Age (in years)	<54	18	24
		55-67	39	52
		>67	18	24
2	Sex	Male	49	65.3
		Female	26	34.7
3	Occupation	Employed	49	65.3
		Unemployed	26	34.7
4	Marital Status	Married	46	61.3
		Others	29	38.7
5	Substance Abuse	Yes	41	54.7

		No	34	45.3
6	Family History of Psychiatric illness	Yes	24	32
		No	51	68

Table 2: Clinical Characteristics

S.No	Variable	Categories	Frequency	Percentage
1	Age of onset	≤ 55 years	37	49.3
		>55 years	38	50.7
2	Duration of illness	≤5 years	42	56
		>5 years	33	44
3	Presenting Clinical Features	Dyskinesia	16	21.3
		On/Off	31	41.3
		Tremors	64	85.3
		Rigidity	47	62.7
		Bradykinesia	39	52
		Postural Instability	25	33.3
4	Duration of treatment	≤5 years	42	56
		>5 years	33	44
5	Stage of illness	1	21	28
		1.5	25	33.3
		2	12	16
		2.5	8	10.7
		3	9	12
6	Drugs	Dopamine Precursors+Anticholinergics	48	64
		Dopamine Agonists+Anticholinergics	8	10.7
		Dopamine Precursors+Anticholinergics+Hypnotics	10	13.3
		Dopamine Precursors+Anticholinergics+Hypnotics+Psychotropics	9	12
7	Drug Compliance	Regular	67	89.3
		Irregular	8	10.7
8	Drug related side effects	Yes	28	37.3
		No	47	62.7

Table 3: Comparison of various clinical parameters with MMSE

FACTORS	N	MEAN	SD	STAT VALUE	P VALUE	POST-HOC TEST
DURATION OF ILLNESS						
<5	42	22.60	2.939	2.940	0.004*	
>5	33	20.24	3.992			
POSTURAL INSTABILITY						
NO	50	22.28	3.539	2.527	0.014*	
YES	25	20.12	3.595			
BRADYKINESIA						
NO	36	22.59	22.89	3.251	0.002**	
YES	39		20.83			
TREATMENT DURATION						
<5	42	22.71	2.974	3.326	0.001**	
>5	33	20.91	3.860			
DYSKINESIA						
YES	16	19.94	4.155	2.069	0.042*	
NO	59	22.00	3.358			
STAGE OF DISEASE						
STAGE 1	21	23.52	2.620	4.796	0.002**	1 VS 3
STAGE 1.5	25	22.12	3.244			
STAGE 2	12	20.42	3.355			
STAGE 2.5	8	19.25	2.915			
STAGE 3	9	19.00	4.637			

***-significant, **-highly significant.**

Table 4: Comparison of various clinical parameters with PDSS

FACTORS	N	MEAN	SD	STAT VALUE	P VALUE	POST HOCH TEST
DURATION OF ILLNESS						
<5	42	20.00	5.012	3.672	0.000**	
>5	33	24.27	4.989			
POSTURAL INSTABILITY						
NO	50	21.02	5.204	1.986	0.051	
YES	25	23.60	5.500			
BRADYKINESIA						
NO	36	19.06	4.616	5.002	0.000**	
YES	39	24.49	4.773			
TREATMENT DURATION						
<5	42	20.07	5.048	3.508	0.001**	
>5	33	24.18	5.022			
DYSKINESIA						
YES	16	24.81	6.123	2.534	0.013*	
NO	59	21.08	4.959			
STAGE OF DISEASE						
STAGE 1	21	17.90	5.078	10.128	0.000**	1 VS 2.5,3 1.5 VS 3
STAGE 1.5	25	21.56	4.184			
STAGE 2	12	22.25	3.596			
STAGE 2.5	8	26.13	4.357			
STAGE 3	9	27.78	4.466			
DREAMS IN SLEEP						
YES	24	25.79	4.273	4.927	0.000**	
NO	51	20.09	4.907			
ABNORMAL MOVEMENTS IN SLEEP						
YES	20	24.90	3.972	3.079	0.003**	
NO	55	20.78	5.469			
DRUGS						1 VS 4
1 (DP+AC)	48	20.56	5.115	5.682	0.002**	
2 (DA+AC)	8	21.75	2.712			
3 (DP+AC+H)	10	22.90	3.900			
4 (DA+AC+H+P)	9	27.89	6.392			
RIGIDITY						
YES	47	19.36	5.456	2.705	0.008*	
NO	28	22.92	5.080			

***-significant, **-highly significant.**

Table 5: Comparison of various clinical parameters with HAM-D

FACTORS	N	MEAN	SD	STAT VALUE	P VALUE	POST HOCH TEST
AGE						
BELOW 54	18	11.67	7.146	1.077	0.346	
55 TO 67	39	10.00	4.861			
68 & ABOVE	18	12.28	6.772			
SEX						
MALE	49	10.76	6.054	0.380	0.785	
FEMALE	26	11.32	5.857			
AGE OF ONSET						
BELOW 55	37	11.14	6.412	0.269	0.789	
ABOVE 56	38	10.76	5.548			
DURATION OF ILLNESS						
BELOW 5	42	8.60	4.554	4.289	0.001**	
ABOVE 5	33	13.94	6.235			
STAGE OF ILLNESS						
STAGE 1	21	8.33	4.630	2.451	0.054	
STAGE 1.5	25	11.56	5.394			
STAGE 2	12	10.50	5.385			
STAGE 2.5	8	15.38	8.383			
STAGE 3	9	12.00	6.727			
AKINESIA						

NO	36	9.36	5.066	2.278	0.026*	
YES	39	12.41	6.386			
TREATMENT DURATION						
<5 YRS	42	8.69	4.540	4.075	0.001**	
>5 YRS	33	13.82	6.351			
DRUGS						
1 (DP+AC)	48	9.56	5.057	6.788	0.001**	1 VS 4
2 (DA+AC)	8	11.25	5.365			3 VS 4
3 (DP+AC+H)	10	10.70	4.620			
4 (DA+AC+H+P)	9	18.33	7.433			
SIDE EFFECTS OF DRUGS						
YES	28	13.21	7.410	2.648	0.010*	
NO	47	9.60	4.446			
DYSKINESIA						
YES	16	13.88	7.518	2.281	0.025*	
NO	59	10.15	5.252			

***-significant, **-highly significant.**

Table 6: Comparison of various clinical parameters with HAM-A

FACTORS	N	MEAN	SD	STAT VALUE	P VALUE
AGE					
BELOW 54	18	17.94	7.100	0.911	0.407
55 TO 67	39	16.49	6.472		
68 & ABOVE	18	15.06	5.525		
SEX					
MALE	49	10.76	6.054	0.900	0.317
FEMALE	26	11.31	5.857		
AGE OF ONSET					
BELOW 55	37	17.76	6.998	1.705	0.092
ABOVE 56	38	15.26	5.607		
DURATION OF ILLNESS					
BELOW 5	42	16.19	6.463	0.459	0.648
ABOVE 6	33	16.88	6.426		
STAGE OF ILLNESS					
1 (STAGE 1)	21	16.00	5.840	1.749	0.147
2 (STAGE 1.5)	25	14.48	5.860		
3 (STAGE 2)	12	17.33	7.548		
4 (STAGE 2.5)	8	20.38	5.069		
5 (STAGE 3)	9	18.67	7.517		
POSTURAL INSTABILITY					
NO	50	14.92	5.771	3.185	0.002**
YES	25	19.64	6.582		
ON/OFF PERIOD					
YES	31	16.48	6.703	0.011	0.992
NO	44	16.50	6.278		

***-significant,**-highly significant**

Table 7: Comparison of various clinical parameters with BPRS

FACTORS	N	MEAN	SD	STAT VALUE	P VALUE	POST HOC TEST
STAGE OF ILLNESS						
STAGE 1	21	16.10	4.516	5.266	0.001**	1 VS 3
STAGE 1.5	25	15.48	2.312			1.5 VS 3
STAGE 2	12	15.83	2.949			2 VS 3
STAGE 2.5	8	19.63	5.553			
STAGE 3	9	21.78	6.320			
DREAMS IN SLEEP						
YES	24	19.08	6.338	3.006	0.004*	
NO	51	15.88	2.923			
HALLUCINATIONS IN SLEEP						
YES	17	21.06	6.600	4.928	0.004*	
NO	58	15.69	2.786			
DURATION OF ILLNESS						
BELOW 5	42	16.71	4.215	0.431	0.681	
ABOVE 6	33	17.15	4.957			

***-significant,**-highly significant.**

DISCUSSION

The present study shows that the prevalence of depression, anxiety, sleep and cognitive impairment among PD patients is well above the prevalence rates of the general population. The presence of these psychiatric morbidities is found to impair the quality of life to a greater extent. The prevalence of depression among the PD patients on treatment in this study is 50.66% (n=38). This is similar to the studies that reported 40 %[16], 36.1 %[17], 40 %[18] and 42.4 %[19]. Depression is more common than anxiety [20]. The prevalence of anxiety disorder in the present study was about 40% which is similar to the literature (35-46%)[21,22] . Around 84% of PD patients were found to have sleep disturbances (distressing dream and nightmares=38%; hallucinations in sleep=26% & abnormal limb movements=26%). Patients who were treated with psychotropics like antidepressants, antipsychotics, antianxiety and hypnotics along with dopaminergic agents and anticholinergic drugs for motor symptoms had higher depression, sleep impairment and lower activity of daily living than the patients treated with dopaminergic and anticholinergic drugs alone.

It can be concluded that psychiatric disturbances in PD increase as duration of illness, stage of disease and complications with therapy increases. Therefore, there is a need for regular psychiatric evaluation in Parkinson's disease patients. The management of patients with Parkinson's disease, therefore, needs a multidisciplinary approach involving both the neurologist and psychiatrist so that a holistic care is delivered to the patient and thus improve their quality of life.

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