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Demographic and Non-Motor Clinical Profiles of Parkinson's Disease Patients attended at a Tertiary Care Hospital in Bangladesh

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Abstract

Background: Parkinson's disease can be presented as non-motor clinical features. **Objective:** The purpose of the present study was to observe the demographic and non-motor clinical profiles of Parkinson's disease patients. **Methodology:** This descriptive cross-sectional study was carried out in the Department of Neurology at Mymensingh Medical College, Mymensingh, Bangladesh from January 2009 to December 2010 for a period of two(02) years. PD patient presents with both motor and non-motor symptoms. NMS has variable presentations like sensory, autonomic, psychiatric and sleep disorder. Parkinson's disease patients were diagnosed clinically. Each patient was assessed by a standard questionnaire, including sensory, autonomic, psychiatric and sleep disorder symptoms. **Result:** A total number of51 Parkinson's disease patients were recruited for this study. Mean (±SD) age of male and female were 57.51±7.1 years and 60.00±10.2 years. Out of the 51 patients, 58.8% patients had sensory, 72.5% patients had autonomic, 47.1% patients had neuro-psychiatric and 66.7% patients had sleep disturbance symptoms. The most frequent sensory symptoms were akathisia 47.1%, diffuse pain 37.3%,and tightening sensation 27.5%. The most frequent autonomic symptoms were excessive sweating 54.9%, palpitation 35.3%, oral dryness 33.3%. The most frequentneuro-psychiatric symptoms were fatigue 56.8%, anxiety 45.1%, and depression 23.5%. The most frequent sleep disorders were insomnia 54.9%, day time sleepiness 11.8% and restless leg syndrome 9.8%. **Conclusion:** In conclusion elderly male rural people are commonly presented with PD presented with akathisia, diffuse pain, excessive sweating, palpitation, oral dryness, fatigue, anxiety and depression. *[Journal of National Institute of Neurosciences Bangladesh, 2018;4(2): 123-128]*

Keywords: Demographic; Non-Motor; Clinical Profiles; Parkinson's disease

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Introduction

Parkinson's disease (PD) is the most common cause of chronic progressive Parkinsonism. It is a term which refers to the syndrome of tremor, rigidity, bradykinesia and postural instability[1]. Parkinson's disease (paralysis agitans) is a common disease, known from ancient times, first described by James Parkinson in 1817. In his words, it was characterized byinvoluntary tremulous motion, with lessened muscle power, in parts not in action and even when supported, with a propensity to bend the trunk forward, and to pass from a walking to a running pace, the senses and intellect being uninjured[2].

The non-motor symptoms of Parkinson's refer to disorders which are not related to movement. The manifestations of non-motor symptoms are varied, consisting of sensory, autonomic, sleep and psychiatric disorders[3-4]. Non-motor symptoms are sources of considerable burden in people with PD, especially in elderly patients. The usual non-motor symptoms include cognitive declines, psychiatric disturbances like depression, psychosis, impulse control; autonomic failures like gastrointestinal, cardiovascular, urinary,

sexual ability, thermoregulation; sleep difficulties, and pain syndrome[5].

In fact, many Parkinson's patients experience more than one non-motor symptoms. A study has shown that 59.0% of Parkinson's patients had two or more non-motor symptoms, and 25% had four or more[6]. In Parkinson's patients, the non-motor symptoms can even be more disabling than the motor symptoms. Non-motor symptoms remain under addressed and untreated due to lack of awareness to the non-motor symptoms, preoccupation with the motor symptoms, or both. This leads to unnecessary diagnostic tests, misdiagnosis and hence mismanagement. Despite being very common and disabling, the non-motor symptoms of Parkinson's disease have received little attention. Due to its treatment complexity of motor symptoms, like "wearing off" phenomenon, dyskinesia, "on and off" phenomenon, etc. treating the movement disorder in Parkinson's disease alone, leaving too little time to enquire about the non-motor symptoms. The purpose of the present study was to observe the demographic and non-motor clinical profiles of Parkinson's disease patients.

Methodology

This study was designed as descriptive type cross-sectional study. This study was conducted in the Department of Neurology at Mymensingh Medical College and Hospital, Mymensingh, Bangladesh. This study was carried out from January 2009 to December 2010 for duration of two (02) years. Parkinson's disease patients who were fulfilled the inclusions and exclusions criteria and who were attended in outpatient Department of Neurology at Mymensingh Medical College and Hospital, Mymensingh, Bangladesh were selected as study population. Clinical diagnosis of PD was made after fulfilling the criteria of Bradykinesia with one of the following features like rigidity, resting tremor and postural instability. Furthermore, PD patients who were on treatment but last four weeks were not getting treatment were also included in this study. Patients with secondary parkinsonism, Parkinson's plus syndrome and patient with clinically overt dementia or severe depression were excluded from this study. This was Purposive type of non-probability sampling. Prior to the commencement of this study, the Local Ethical committee approved the research protocol. The aims and objectives of the study were explained to the patient/guardian in easily understandable local language and informed written consent was taken from each patient/guardian. It was assured that all information and records would be kept confidential and the study would be helpful for both the researcher and the patients in making rational approach of the Parkinson's disease management.All the patients of Parkinson's disease were examined by at least two doctors working in Neurology OPD of MMCH to avoid chance of biasness. Each of the patients was assessed by a standard questionnaire, including sensory, autonomic, psychiatric and sleep disturbance symptoms. The patient answered "Yes" or "No" to each symptom. These were recorded as base line symptoms. The patients of Parkinson's disease were staged using the Hoehn and Yahr scale. Collected data were compiled, checked. Data processing and analysis were done with the help of computer using SPSS (Statistical Package for Social Sciences) version 12. Results were expressed as frequency, percentage, mean with standard deviation. Level of significance was considered as p value less than 0.05.

Results

This study was recruited 51 Parkinson's disease patients fulfilling the Brain Bank diagnostic criteria (Gibb and Lees, 1988) of United Kingdom Parkinson's disease Society.

Table 1: Gender wise Distribution of Study Population (Mean±SD)

Variables	Male (n=37)	Female (n=14)	P value
Age in years	57.51±7.1	60.00±10.2	0.84*
Age at disease onset	54.89±6.9	56.71±8.6	0.93*
Disease duration (years)	4.71±2.7	4.35±2.4	0.66*

*Unpaired student 't'-test

Mean (±SD) age of male and female were 57.51±7.1 years and 60.00±10.2 years, mean age at onset of disease was 54.89±6.9 and 56.71±8.6 years. However, no difference were observed between male and female regarding these variables (Table 1).

Table 2: Distribution of study subjects by residence (n=51)

Residence	Frequency	Percentage
Rural	35	68.6
Urban	16	31.4
Total	**51**	**100.0**

Majority were the inhabitants of rural area which was 35(68.6%) cases (Table 2).

Table 3: Distribution of Different Stages of Parkinson's disease Patients (Hoehn&Yahr scale) (n=51)

Age Group	StageI	StageII	StageIII	StageIV	Total
≤ 50 Years	2(22.2)	2(13.3)	1(5.0)	-	5(9.8)
51 to 60 Years	3(33.3)	6(40.0)	9(45.0)	1(14.2)	19(37.3)
61 to 70 Years	4(44.5)	7(46.7)	6(30.0)	3(42.9)	20(39.2)
>70 Years	-	-	4(20.0)	3(42.9)	7(13.7)
Total	**9(100.0)**	**15(100.0)**	**20(100.0)**	**7(100.0)**	**51(100.0)**

#Figure within parenthesis indicates percentage.

Out of 51, most (39.2%) of the study subjects were between 61 and 70 years of age and equal number of the study subjects were also included under stage III (39.2%) (Table 3).

Table 4: Non-motor Symptoms of PD Patients (n=51)

Non-Motor Symptoms	Frequency	Percentage
Sensory Symptoms		
• Akathisia	24	47.1
• Diffuse Pain	19	37.3
• Tightness Sensation	14	27.5
• Tingling Sensation	9	17.6
• Burning sensation	4	7.8
Autonomic Symptoms		
• Excessive Sweating	28	54.9
• Palpitation	18	35.3
• Oral dryness	17	33.3
• Drooling of saliva	14	27.5
• Constipation	9	17.6
• Impotence	7	13.7
Neuro-Psychiatric Symptoms		
• Fatigue	29	56.8
• Anxiety	23	45.1
• Depression	12	23.5
• Confusion	4	7.8
Sleep Disorders		
• Insomnia	28	54.9
• DTS	6	11.8
• RLS	5	9.8

RLS = Restless leg syndrome, DTS = Day time sleepiness

Out of the 51 patients, 58.8% patients had sensory, 72.5% patients had autonomic, 47.1% patients had neuro-psychiatric and 66.7% patients had sleep disturbance symptoms. The most frequent sensory symptoms were akathisia 47.1%, diffuse pain 37.3%, and tightening sensation 27.5%. The most frequent autonomic symptoms were excessive sweating 54.9%, palpitation 35.3%, oral dryness 33.3%. The most frequent neuro-psychiatric symptoms were fatigue 56.8%, anxiety 45.1%, and depression 23.5%. The most frequent sleep disorders were insomnia 54.9%, day time sleepiness 11.8% and restless leg syndrome 9.8% (Table 4).

Discussion

Non-motor manifestations of PD can be as disabling as the classic motor symptoms. The results of this study showed mean (±SD) age of the patients were 58.37±8.0 years (range 40-78 years). Rocca et al[7] found the incidence of PD was higher over the age of 70 years. This discrepancy might be due to elderly patients were inadequate in number in this study; possibly the caregivers were reluctant to treat them. In this study, the mean age of disease onset was 55.84 (SD ±7.32) years which was lower than that recorded in the studies of Samiiet al[8], Fall et al[9], Morgante et al[10]. Samiiet al[8] found that mean age of onset was 60 years which was higher than that of present study. Parkinson's disease is mainly a disease of the elderly. As there is no epidemiological data regarding age of onset of Parkinson's disease in Bangladesh. This discrepancy was possibly due to lower life expectancy in our country. In this study, most (>39%) of the study patients were between 61 and 70 years. Roccaet al[7] found that the incidence of PD was higher over the age of 70 years. This finding was not similar to this study possibly due to small sample size.

Parkinson's disease is male predominant disease. Out of 51 cases, 37 (72.5%) were male and 14 (27.4%) were female and M:F was 2.6:1. So, incidence was more than two times higher in males then female which was similar to the findings of Haaxma et al[12], Van-den-Eeden[13]. In this study, mean age at disease onset was 54.8 years in case of male and 56.7 years in female. Haaxmaet al[12]. found that average age of female patients was slightly higher at disease onset. In women, the development of symptomatic PD may be delayed by higher physiological striatal dopamine levels, possibly due to the activity of estrogens. This

statement was in agreement with this study.

Majority (>68%) of study subjects were the inhabitants of rural area. Haaxma et al[12] statedthatpeople living in rural environments were in increased risk of PD, possibly due to expose to pesticides. Samii et al[8] mentioned that there was a association between rural residence and well water consumption to Parkinson's disease.

The frequency of Parkinson's disease patients according to their stages (Hoehn & Yahr scale) were stage III (39.2%), stage II (29.4%), stage I (17.6%), stage IV (13.7%) and patients were not available to include stage V. In this study, patients of PD were more frequent in advanced stage and majority (>39%) of the study subjects were included under stage III. This result was quite different from the study done by Rocca et al[7]. He found most frequent Parkinson's disease patient in stage I (35.4%). This discrepancy might be due to lack of awareness and health care facilities, delayed diagnosis and treatment of our patients. In this study, the frequencies of NMS were more common in relatively advanced stage of Parkinson's disease. These were 100% in stage IV, 90% in stage III, 73.3% in stage II and 55.6% in stage I had non-motor symptoms. These results were in agreement with the study done by Morgante et al[10].

The overall rate of non-motor off symptoms was 71.6% in a study done by Haaxma et al[12] which was slightly lower than that of current study (80.3%). The estimated prevalence of NMS in their study might not reflect all because they excluded NMS that might occur during periods other than "off" state. In this study, 41 patients had experienced NMS of various types, including sensory, autonomic, neuro-psychiatric and sleep disturbance. This classification of NMS was adopted by Riley and Lang[3] as well as Hillen and Sage[4]. In this study, frequencies of sensory were 58.8%, autonomic were 72.5%, neuro-psychiatric were 47.1% and sleep disturbance were 66.7% at base line visit. Lisa et al[13] reported 61.0% sensory symptoms in their study which was almost similar to this study. The overall prevalence of autonomic symptoms varies from 76.0% to 93.0%[10] which was slightly higher than that of this study. Rocca et al[7] reported that prevalence of neuro-psychiatric syndrome were present in 20 to 40% of PD patients. It was 43.1% in this study.

A community-based study done by Tandberg et al[14] reported 60% of patients with PD had sleep problems, compared with 33% of healthy controls with the same age and sex distribution. The result of current study was similar to the study done by them. To optimize the rehabilitation programme, recognition of these NMS is important because they are also responsible for much disability. Witjaset al[15] reported that autonomic symptoms produced a greater degree of disability than motor symptoms.

In this study, the most frequent sensory symptoms at base line visit were akathisia 47.1%, diffuse pain 37.3%, andtingling sensation 17.6%. This study was in agreement with Witjas et al[15] and Raudino[16]. They reported, akathisia was the most frequent among the sensory symptoms. The sensory fluctuations of this study were possibly due to fluctuations of motor symptoms as the illness progresses. Witjas et al[15] found that most of the sensory symptoms were associated with "off" period but also occurred during "on" period, period of diskinesia and independent of motor fluctuations.

In the present study, autonomic symptoms were frequent among Parkinson's disease patients. Common autonomic symptoms at base line visit were excessive sweating 54.9%, palpitation 35.3%, oral dryness 33.3%, constipation 17.6%. Witjas et al[15] found most frequent autonomic symptom was drenching sweats (64%) which was almost similar to this study.

Magerkurth et al[17] found that dysautonomia, including hyperhidrosis, constipation, orthostatic hypotension, urinary and sexual dysfunctions, were present in more than 50% of the PD patients, according to a questionnaire-based study. The result of current study was quite similar to that of them. Kaye et al[18] found that at least 59.0% of PD patients suffer from constipation as compared with 21% in age-matched non-PD patients. Byrne et al[19] reported that constipation in PD is commonly a consequence of anorectal sphincter and pelvic floor dysfunctions. In this study, 17.6% cases had constipation which was much lower than that of above study. This inconsistency might be due to small sample size of present study.

A high level of sexual dysfunction like erectile difficulties, premature ejaculation, loss of libido has been found with a questionnaire based survey in young PD patients reported. In this study, 15.7% patients were impotent. These findings supported the findings of Gunal et al[20] who stated that autonomic fluctuations seen during "off" periods were increased salivation, sweating, abdominal bloating, facial flushing, postural lightheadedness.

Psychiatric symptoms in this study were also common but less frequent than sensory and autonomic

symptoms. The frequencies of different neuro-psychiatric symptoms described by the patients were fatigue 56.8%, anxiety 45.1%, and depression 23.5%. In this study, fatigue was more prevalent among neuro-psychic symptoms and it was 52.9% in present study. Shulman et al[6] found 72.0% cases having fatigue which was much higher than that of this study.

Anxiety disorders are more prevalent in PD patients than age-matched controls described by Walsh and Bennett[21]. It was 40.0% in their study. This result was in agreement with this study. However, Witjas et al[15] had anxiety (66%) in their study which was quite higher than that of this study. Depression was in 23.5% of PD patients in this study which was similar to the study done by Shulman et al[6] and have been found 16.0% to 70.0% cases of Parkinson's disease having depression.

Sleep disturbances are common problems in PD patients. Patients may wake up because of stiffness of their bodies, urinary urgency and restless leg syndrome at night[13,19]. In this study, frequencies of sleep disorder symptoms at base line visit were insomnia 54.9% and day time sleepiness 11.8% restless leg syndrome (9.8%). Gunal et al[20] described in their study that insomnia of PD was 62.0% which was higher than that of this present study.

Estimated prevalence of RLS in PD patients was in between 3% to 20%, according to the study done by Gunal et al[20]. It was 9.8% in this study. Walsh and Bennett[21] found in their study that pain threshold was lower in PD patients but returns to normal ranges after levodopa administration. The PD process causes a sympathetic sudomotor dysfunction presenting itself as excessive sweating and suppressed SSR (Sympathetic Skin Response). Witjas et al[15] and Lisa et al[13] could not find any change in the SSR amplitudes or latencies as well as sweating.

There are some limitations of this study. Due to small sample size, this study does not represent the epidemiological data. Patient described only subjective symptoms that are difficult to measure. Non-motor symptoms are most frequently associated with motor fluctuations. Study patients were failed to do association between non-motor and motor fluctuations. The study was done in a single hospital. Therefore, this study may vary from community-based study.

Conclusion

In conclusion elderly male rural people are commonly presented with PD. Furthermore, the most frequent sensory symptoms are akathisia, diffuse pain and tightening sensation. The most frequent autonomic symptoms are excessive sweating, palpitation and oral dryness. The most frequent neuro-psychiatric symptoms are fatigue, anxiety and depression. The most frequent sleep disorders are insomnia, day time sleepiness and restless leg syndrome.Large scale multi-centre study should be carried out to get the real scenario.

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