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Original Research Article

Epidemiological profile of Parkinson's disease: a hospital based descriptive study

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ABSTRACT

Background: Parkinson's disease (PD), in general, is categorized into five stages based on Hoehn and Yahr staging marking its clinical progression, and is associated with various comorbidities. The diagnosis of PD, however, is relied on clinical manifestations that occur after significant neurological damage in patients. Objective of current study was to study the epidemiological profile of PD patients to identify their stage at diagnosis, associated comorbidities and their treatment-seeking behaviour.
Methods: A descriptive study was conducted at the Movement disorders outpatient department where a total of sixty patients with a clinical diagnosis of PD were enrolled. They were correlated with the Unified Parkinson Disease Rating Scale for staging assessment and questioned regarding other chronic illness they suffer, if any, using a standardized questionnaire for comorbidity assessment and treatment procedure they underwent.
Results: The patients reported for the study were mostly males (63%) with a mean age of 58 years. Among them, 90% of patients were at Stage I and II of illness and 63% had some comorbidity like Hypertension while 37% of patients had no comorbidity. Most of them (58%) were diagnosed and treated immediately on the appearance of the first clinical symptom at Government institutions. Also, we found that 70% of patients had no awareness of PD.
Conclusions: Thus we conclude that the early stage of disease observed in most patients, despite longer duration may suggest that early diagnosis can help in alleviation of symptoms. However, this observation needs a larger study to provide better and conclusive evidence.

Keywords: Parkinson's disease, Staging, Comorbidity, Treatment seeking behaviour, Awareness

INTRODUCTION

Parkinson's disease (PD) is a term referring to a group of neurodegenerative disorders that cause problems with the movement of the patients. It is the second most common neurodegenerative disease affecting 7-10 million people worldwide. The disease is clinically categorised as a movement disorder with prominent motor symptoms which are the result of gradual degeneration of nerve cells in the portion of the midbrain that controls body movements.

Certain changes occur in the brain of patients affected by PD which include; the presence of Lewy bodies and Alpha-synuclein.[1] These are important microscopic markers and holds an important clue to the cause of PD. Risk factors for PD include age above 60 years with the heredity of having a close relative with PD and exposure to various toxins like herbicide and pesticide.[2] Various reports are suggesting that PD is consistently more frequent in males than in females with an approximate ratio of 1:1.6. However, the reason for this increased risk in males remains unclear. A previous study suggested that male patients may more often suffer from head trauma

and toxicant exposure, which lead to PD. Another possible reason could be oestrogen which may act as a neuroprotective in females.[3] The motor features are identified relatively late in the pathological process when approximately 50% of dopaminergic neurons have been lost in the substantia nigra.[1] PD can be categorised into five stages based on its clinical manifestations marking the progression of the disease.

Staging based on Hoehn and Yahr rating scale

Stage I-Mildest form with tremors exclusive to one side of the body. Stage II-Moderate form with stiffness, tremor and trembling. Change in facial expression and speech difficulties can occur. Stage III-Moderately advancing form with loss of balance, decreased reflexes, overall slowness in movements. Stage IV-Severe form with a significant decrease in movement and response time and becomes dependant on others for daily activities. Stage V-Most advanced stage with advancing stiffness which causes freezing upon standing and impossible to walk. Many patients experience hallucinations, confusion, and delusions.[4]

It is believed, though not proven, that pathology may be too far advanced at the point of clinical diagnosis to be affected by potentially neuroprotective treatment. Unfortunately, there is still inadequate awareness of symptoms of PD causing patients to take up various treatments without proper diagnosis. Also, various comorbid conditions are known to be associated with the development of PD. They include depression, anaemia, diabetes mellitus, hypertension, cancer, dietary factors and much more. Of the above, Depression is known to cause inherent emotional distress which negatively impacts the quality of life, motor and cognitive deficits, functional disability, and other psychiatric comorbidities in patients with PD. [5]

Dopamine loss in PD diseased brain is a cause of the motor deficiency and, possibly, a reason for the cognitive deficit observed in some PD patients. PD is mostly not recognized in its early stage because of a long latency between the first damage to dopaminergic cells and the onset of clinical symptoms. Therefore, it is very important to find reliable molecular biomarkers that can distinguish PD from other conditions, monitor its progression, or indicate a positive response to a therapeutic intervention.[6] Also; identifying cases at a much earlier stage will pave way for clinical trials of emerging drugs that would delay the progression of PD. The treatment-seeking behaviour of patients is thus studied to know at what condition the disease is getting diagnosed. This also helps to know the attitude of patients towards the early stage of disease as later the diagnosis of PD delays the treatment of disease.

Thus, a study on the most common stage of PD patients at the time of diagnosis would help us to know whether PD has been diagnosed at an ideal time and does it help to control or slow down its progression. The study would also provide a list of comorbidities associated with PD which would help us to assess its influence on the disease progression. The analysis of treatment-seeking behaviour of patients would help us to further understand whether they are having enough awareness to reach out to the physician as early as the development of symptoms.

METHODS

The study was conducted for a period of two months from June 2019 to August 2019 at the Movement disorders OPD of the Rajiv Gandhi government general hospital, Chennai. The patients diagnosed with PD reporting at the hospital OPD were enrolled and their symptoms were recorded. They were correlated with Unified Parkinson's disease rating scale (part B) for assessment of their stage of the disease.

The patients were then questioned by direct interview, if they were suffering from other chronic illness and if any, their period of onset of symptoms and treatment. They were correlated with the onset of PD to record the associated comorbid conditions and the patients were also interviewed regarding the treatment procedures they underwent before arriving at the institution using Standardised questionnaires (part C) (part D). All patients were given an informed consent form and patient information sheet regarding the purpose and mode of study before the commencement of the study and only those who gave their consent were taken up for the study. The results of the study were then analysed in terms of frequency and percentage.

RESULTS

Sixty patients were enrolled for this study, of which more than 40 patients (75%) were above the age of 50 years with a mean age of 58 (median 57.5; SD 11.21) and the age range between 29-79 years (Figure 1).

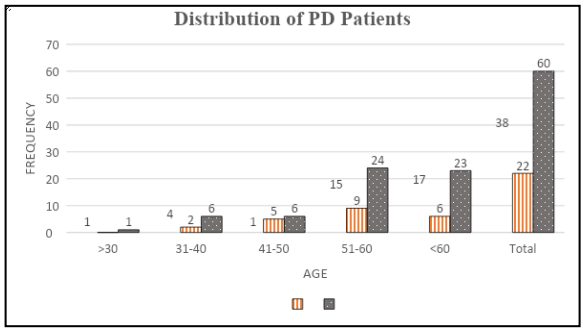

Figure 1: Age and gender passed distribution of PD patients.

However, 38 (63%) of participants were males, while those between the age group of 41-50 were mostly females (83%) and the total male-female ratio was 1.7:1. Previous studies have stated that higher number of

educational degrees has proven to be a major risk factor for the disease while in our study, more than 80% patients had secondary school level or less (Figure 2).

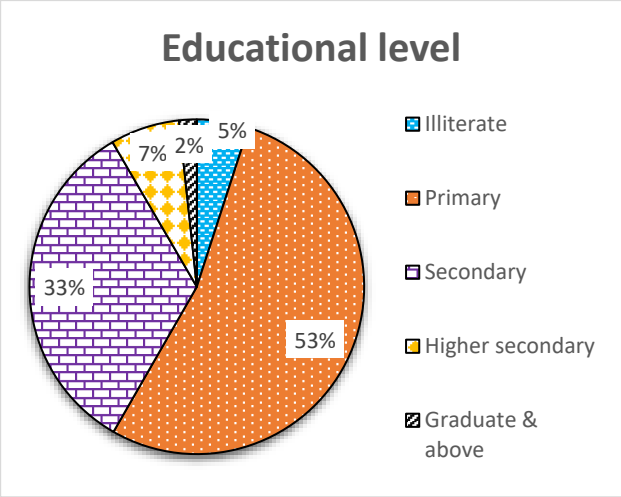

Figure 2: Educational level of patients in the study.

Staging of PD

About the staging, the disease is reported to have five stages and three levels of clinical manifestations; mild, moderate and severe. The patients reported for the study were mostly in the early stages of PD and the clinical manifestations were ranked to be moderate. More than 90% of patients reported were in their first and second stage of illness, of which 50% were in their Unilateral or Stage 1 and 40% in their Bilateral or Stage 2 of PD (Figure 3). The staging is based on the Hoehn and Yahr staging scale.

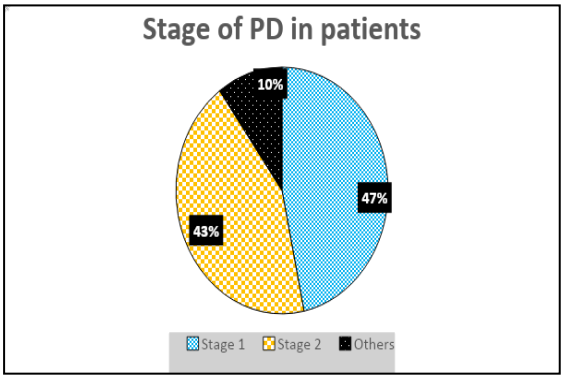

Figure 3: Staging of disease in patients.

Also, most patients reported were, with mild or moderate clinical symptoms like tremor and the average disease duration was found to be 2-6 years. In comparison, of their duration of disease to their stage of illness, patients reported were found to be ranged from 1 year to 25 years of disease affection, while 63% of cases in both unilateral and bilateral stages were under 8 years of disease onset (Figure 4). This clearly shows that the duration of illness is correlated with their stage of disease and may have control in its progression.

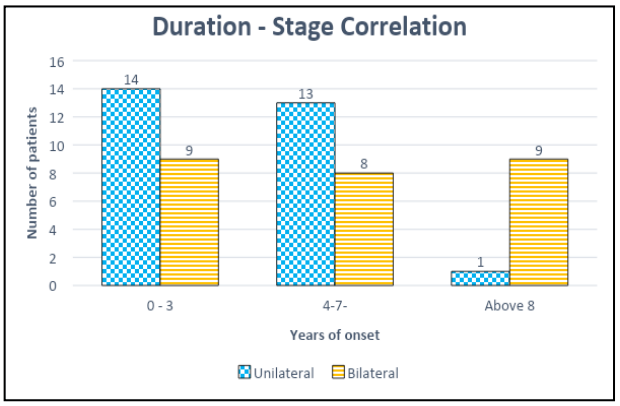

Figure 4: Correlation between duration and stage of disease.

Comorbidity and PD

Previous studies had reported that the disease progressed rapidly and worsened in the presence of other comorbid conditions like diabetes, hypertension and various other lifestyle disorders. Intake of medications for such diseases for a long period was also reported to be a risk factor for the disease. Thus in our study, we aimed to assess this report and our comorbidity assessment also revealed 63% of patients were present with some comorbidities and 37% had none. However, their influence on disease progression was not notably high. The most common comorbidities reported were hypertension (18%), diabetes (15%), and other illnesses (Figure 5). The duration of most common comorbidities among patients – hypertension and diabetes were found to be 10 years, preceding and succeeding PD and could not be deduced clear on its course. Also, more than 50% of cases were found to be under no medications for those complaints.

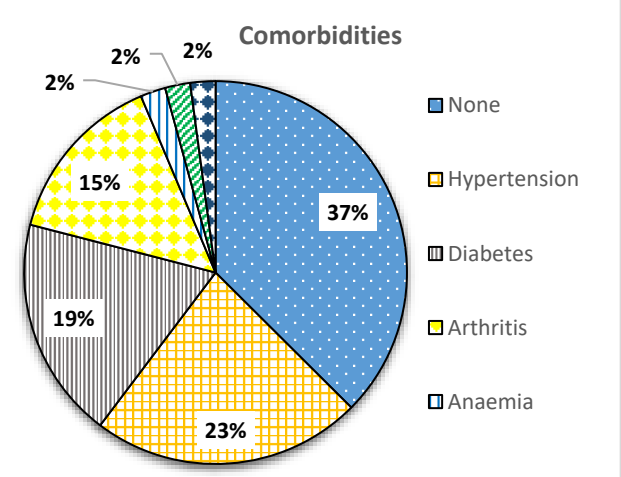

Figure 5: Comorbidities in PD patients.

Treatment seeking behaviour

Treatment seeking behaviour refers to the approach of patients affected with the disease towards its diagnosis and treatment. PD is a chronic disease which had been reported to be diagnosed in their later stages as patients delay to approach the appropriate physician or institution. However, in our study, we found that most patients reported in the study had shorter years of disease onset with an average duration of 2-6 years (63%). This shows that the patients are found to have been diagnosed way early in their disease staging and had reached out to the physician without any delay.

More than 80% of patients were found to have tremor as their first clinical symptom that made patients seek medical help. We also aimed to study the type of institution they approached and were diagnosed with the disease, of which 58% of patients were found to have reached out to government institution for diagnosis and treatment after their first clinical manifestation. Also, concerning their awareness about the disease, 70% of patients had poor or no awareness about PD or its clinical manifestations. This shows that they approached for medical help without knowledge about the disease which when improved, would help to better the scope of treatment and cure of disease.

DISCUSSION

Our study has found that the PD patients reported were mostly above the age of 50 years and were males with male-female ratio was 1.7:1. They were in their initial stages of illness; stage 1 and 2 with 47% (28) of patients belonging to unilateral or Stage 1 of illness and 43% (26) of patients belonging to bilateral or stage 2 of illness. This concludes that 90% of patients in the study belonged to the early stage of disease while previous studies especially one study by Kruger et al reported that most patients were in the advanced stage of illness.[7] This late stage of illness reported at the time of diagnosis was quoted to be the cause of increased complications of the disease. However, our study contradicts this statement and also adds that most patients are in the early stage of illness at the time of diagnosis.

This shows that patients seek medical help and seem to approach physician as soon as their first clinical manifestation (in less than a month). Thus the general physicians need to upgrade their medical knowledge to diagnose and refer to the neurological physician for focussed and better treatment at the earliest. Patients with PD in the previous studies by Wang et al were reported to be presenting with a set of comorbidities and they included; cerebrovascular diseases, hypertension, diabetes and chronic pulmonary diseases.[5] Our study also supports this fact, as 63% of patients presented with various comorbidities with hypertension and diabetes found to be the commonest. However, an equally large group (37%) of patients were present with no known comorbidities.

The duration of the patient with PD on average was between 2-6 years (66%). This indicates that patients have been reporting to the physician at an early stage of illness. Most number of patients in the study were reported with tremors (87%) as their first clinical symptom. They later developed rigidity of arms and legs and others-Akinesia. Concerning the treatment-seeking behaviour, some previous studies especially Breen et al reported that the median time from motor symptom onset to primary care physician (PCP) presentation was considerably longer than the time from PCP presentation to PD diagnosis.[8] While in our study, all patients reported having approached the physician immediately after the appearance of symptoms and received appropriate treatment. This indicates that there was no delay in diagnosis or seeking appropriate treatment for the patient. Also, the early stage of illness in most patients even with longer duration may suggest that early diagnosis could have been a factor in symptom alleviation and in turn may slow down the disease progression.

Approximately 60% of the patients reported at the government institution after the appearance of their first clinical symptom. This indicates that patients have increased access to government institution and physicians at the institution have been prompt in diagnosing the case without any delay.

Lastly, patients with PD included in the study when assessed for their awareness about the disease showed that 70% of the patients had poor awareness about the condition but reached out to the physician for medical aid. This thus states that though patients reported to the physician with their illness, their awareness needs to be improved.

CONCLUSION

Thus in the present study, patients with PD are being diagnosed in the early stages of Hoehn and Yahr staging of disease, as they approach the physician immediately after the appearance of the first clinical symptom. Most patients are found to be present with certain comorbidities like Diabetes and Hypertension but are not under treatment. Lastly, about treatment-seeking behaviour of PD patients, they are found to reach out to physician at once, especially at government institutions, where they are being diagnosed and treated appropriately. On comparing the duration of their disease to their current stage, most patients even with 25 years of history, seemed to be in their early stage of illness. This may suggest that early diagnosis and appropriate treatment can help in slowing the disease damage and progression of PD. However, this observation needs a larger study with more number of patients to provide better evidence. Also, on awareness of the disease among patients seems to be less which needs to be improved through proper guidance and education. We also have to work on the other obstacles in the way of cure and aim to improve the quality of life of

patients with enhanced treatment techniques for better effects.

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