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Original Research Article

FREQUENCY OF RESTLESS LEGS SYNDROME IN PATIENTS WITH PARKINSON'S DISEASE PRESENTING AT FOUJI FOUNDATION HOSPITAL, RAWALPINDI

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ABSTRACT

Background: *Restless Legs Syndrome (RLS) is a common non-motor symptom in patients with Parkinson's disease (PD) that significantly affects quality of life. Its prevalence varies and may be influenced by factors such as medication, disease duration, and comorbidities.* ***Objective:*** *To determine the frequency of Restless Legs Syndrome in patients with Parkinson's disease.* ***Study Design:*** *cross-sectional study.* ***Setting:*** *The Department of Neurology at Fouji Foundation Hospital, Rawalpindi, Pakistan.* ***Duration of Study:*** *12 September 2024 to 12 March 2025.* ***Methods:*** *A total of 73 patients with clinically diagnosed Parkinson's disease aged 40–80 years were enrolled. RLS was diagnosed based on the International Restless Legs Syndrome Study Group (IRLSSG) criteria, and symptom severity was evaluated using the International RLS Rating Scale (IRLS). Parkinson's disease severity was assessed using the Hoehn and Yahr scale. Data on demographics, comorbidities, medication use, and disease characteristics were collected using a structured proforma.* ***Results:*** *The mean age of participants was 63.96 ± 11.15 years, with a mean PD duration of 5.18 ± 2.00 years. Males accounted for 56.2% of the cohort. RLS was identified in 20.5% of the patients, and 27.4% were receiving dopaminergic therapy. Common comorbid conditions included hypertension (46.6%) and diabetes mellitus (30.1%).* ***Conclusion:*** *This study found a moderately high frequency (20.5%) of Restless Legs Syndrome in patients with Parkinson's disease. These findings underscore the importance of routine screening for RLS in PD patients to improve overall disease management and quality of life.*

Keywords: Parkinson's Disease, Restless Legs Syndrome, Neurodegeneration

INTRODUCTION

Parkinson's disease (PD) is a neurological ailment that usually appears in later life, with symptoms such as bradykinesia along with at least one additional symptom, such as resting tremor. Additional associated characteristics include anosmia, mood disorders, as well as excessive periodic limb movements during sleep (1-3). In the last century, our comprehension of the pathophysiology of PD has dramatically improved. It was initially acknowledged that depigmentation in the substantia nigra of the midbrain is a characteristic observed in post-mortem brain investigations of people with PD. It was further established that pigmented neurons lost in substantia nigra are dopaminergic, and depletion of dopamine in subcortical motor circuitry plays a role in the pathophysiology of movement problems in PD (4, 5). The evaluation of patients with PD typically begins with a history as well as physical examination aimed at identifying the signs above. Movement disorders clinics may utilize the Unified PD Rating Scale to assess patient cognition and treatment-related complications (6-8).

Restless legs syndrome (RLS) is a multifactorial neurological condition characterized by a constant desire to move the legs. This phenomenon is usually linked to atypical, non-painful sensations that initiate during moments of rest and are alleviated by physical activity. Approximately 5% of the population could be affected by RLS. Familial RLS typically manifests among people under the age of 45. Women experience a greater impact than men. In idiopathic RLS, there is a dysfunction of the dopaminergic mechanism as well as a reduction in iron stores in specific brain regions. Autosomal dominant inheritance is suggested as numerous large kindreds with varying susceptibility loci for RLS have been reported. This indicates a genetic foundation for disease (12, 13). A study reported the occurrence of RLS (21.6%) among PD patients (14).

The association between RLS and PD has garnered increasing attention in recent years due to its clinical significance and potential implications for disease management. Due to the paucity of literature on this subject locally, the goal of this study is to determine the frequency of restless legs syndrome in patients with Parkinson's disease. This study's findings will assist health practitioners in understanding the simultaneous presence of RLS and PD, emphasizing the importance of thorough evaluation and personalized treatment strategies that target both motor and non-motor symptoms. Additional research will be promoted to clarify the fundamental mechanisms behind this connection and to create more efficient therapy approaches for this susceptible patient group. Clinicians can improve outcomes and promote the well-being of patients with RLS and PD by addressing their complex interaction.

METHODOLOGY

This cross-sectional study was carried out in the Department of Neurology at Fouji Foundation Hospital, Rawalpindi, from 12 September 2024 to 12 March 2025, following ethical approval from the hospital.

Seventy-three patients were enrolled using consecutive non-probability sampling. The sample size was evaluated using the anticipated RLS frequency of 21.6% (4) among PD patients, a 9.5% margin of error, and a 95% confidence level. Patients of either gender aged 40–80 years with a confirmed diagnosis of PD, which was defined as a chronic, progressive neurodegenerative disorder characterized by the degeneration of dopamine-producing neurons in the substantia nigra. Diagnosis was confirmed through clinical

evaluation based on the presence of at least two of the following cardinal motor symptoms, which were resting tremor, rigidity (increased muscle tone), bradykinesia (slowness of movement), and postural instability. Disease severity was classified using the Hoehn and Yahr scale, which stages PD progression from Stage 1 (unilateral involvement, minimal functional impairment) to Stage 5 (wheelchair-bound or bedridden). Patients with a family history of neurodegenerative disorders, exposure to neurologic drugs, iron deficiency anemia, pregnancy, chronic kidney disease, peripheral neuropathy, myelopathy, or medication-induced RLS were excluded. Data collection commenced after taking consent from all participants. Each participant underwent a detailed clinical assessment for RLS, which was defined as a neurological sensorimotor disorder characterized by an irresistible urge to move the legs, typically accompanied by uncomfortable sensations such as tingling, crawling, or aching. Symptoms worsened during periods of rest or inactivity. The diagnosis followed the International Restless Legs Syndrome Study Group (IRLSSG) criteria. Additionally, RLS severity was assessed using the International Restless Legs Syndrome Rating Scale (IRLS), which evaluated frequency, intensity, sleep disruption, and overall distress on a 0–40 scale with higher scores indicating more severe symptoms (15). The assessments were performed under the supervision of a consultant with more than 5 years of experience.

Statistical analysis was performed with SPSS 26. Age, height, weight, duration of disease, and BMI were assessed using mean and SD. Gender, occupation status, residence, dopaminergic drugs received, and resting leg syndrome were presented as frequencies and percentages. The Chi-Square test was used to stratify RLS based on various parameters, with a notable P value of ≤ 0.05.

RESULTS

We had 73 patients in our study, and their mean age was 63.96±11.15 years. The duration of the disease was 5.18±2.00 years. The mean body mass index (BMI) was 25.51±1.40 kg/m².

In terms of demographics, we observed that males constituted 41 (56.2%) of the participants while females accounted for 32 (43.8%) (Table 1). Clinically, 20 (27.4%) of the participants were receiving dopaminergic drugs, whereas 53 (72.6%) were not. Comorbid conditions were also assessed, with 22 (30.1%) having diabetes and 34 (46.6%) diagnosed with hypertension (Table 2).

The prevalence of restless legs syndrome (RLS) among the participants was 15 (20.5%), while the remaining 58 (79.5%) did not exhibit RLS symptoms (Table 3). Table 4 presents the stratification of RLS with various parameters; female gender and longer duration of disease were statistically associated with RLS.

Table 1: Demographics

Demographics		n	%
Gender	Male	41	56.2%
	Female	32	43.8%
Occupation status	Employed	19	26.0%
	Unemployed	54	74.0%
Residence area	Urban	43	58.9%
	Rural	30	41.1%

Table 2: Clinical profile

Clinical profile		n	%
Dopaminergic drugs received	Yes	20	27.4%
	No	53	72.6%
Diabetes	Yes	22	30.1%
	No	51	69.9%
Hypertension	Yes	34	46.6%
	No	39	53.4%

Table 3: Frequency of Restless Leg Syndrome

Restless legs syndrome	n	%
Yes	15	20.5%
No	58	79.5%

Table 4: Association of Restless Leg Syndrome with various parameters

Parameters		Restless legs syndrome				P value
		Yes		No		
		n	%	n	%	
Age distribution (Years)	40 to 55	4	26.7%	16	27.6%	0.87
	56 to 65	4	26.7%	12	20.7%	
	> 65	7	46.7%	30	51.7%	
BMI (Kg/m2)	18 to 24.99	4	26.7%	23	39.7%	0.35
	25 to 29.99	11	73.3%	35	60.3%	
Duration of disease (Years)	2 to 5	3	20.0%	35	64.8%	0.002
	> 5	12	80.0%	19	35.2%	
Gender	Male	3	20.0%	38	65.5%	0.002
	Female	12	80.0%	20	34.5%	
Occupation status	Employed	1	6.7%	18	31.0%	0.05
	Unemployed	14	93.3%	40	69.0%	
Residence area	Urban	9	60.0%	34	58.6%	0.92
	Rural	6	40.0%	24	41.4%	
Dopaminergic drugs received	Yes	5	33.3%	15	25.9%	0.56
	No	10	66.7%	43	74.1%	
Diabetes	Yes	3	20.0%	19	32.8%	0.33
	No	12	80.0%	39	67.2%	
Hypertension	Yes	4	26.7%	30	51.7%	0.08
	No	11	73.3%	28	48.3%	

DISCUSSION

We conducted this study to assess the frequency of restless legs syndrome (RLS) in Parkinson's disease (PD), and we found that RLS was present in about 20.5% of the patients. Maggi et al conducted a

comprehensive meta-analysis involving 6990 PD patients and reported a pooled RLS prevalence of 20% notably higher than the general population (16). Their study highlighted that female PD patients were more likely to develop RLS. This finding is similar to our observation, as we have observed that female patients had a higher frequency of RLS when compared to male patients.

Similarly, Yang et al observed a 14% prevalence and noted a higher frequency in women (13%) compared to men (11%) (17). Both the studies above emphasized the association between RLS and non-motor symptoms, including poor sleep quality, cognitive impairment, and autonomic dysfunction, suggesting shared pathophysiological mechanisms involving dopaminergic dysfunction (16, 17). However, Maggi et al did not find a notable link between RLS and comorbidities such as hypertension or diabetes, reinforcing the notion that RLS in PD may be more closely tied to neurodegeneration rather than metabolic factors (16).

Sobreira-Neto et al. further explored clinical correlates of RLS in PD, reporting a prevalence of 28.4% in their cohort, which is slightly higher than our findings. Their findings supported the association between RLS and sleep disturbances as well as reduced quality of life, but similarly found no significant relationship with hypertension (18). Interestingly, the study also noted that anosmia and constipation were more frequent in PD patients with RLS, suggesting a potential overlap with prodromal non-motor symptoms of PD. This aligns with the hypothesis that RLS may reflect broader neurodegenerative processes rather than isolated dopaminergic deficits (16).

The variability in RLS prevalence across studies may stem from differences in diagnostic criteria, sample sizes, and regional demographics. For instance, Maggi et al. (2024) reported a higher prevalence in Western populations compared to Asian cohorts, possibly due to genetic or environmental factors (16). Additionally, methodological differences such as the inclusion of drug-naïve versus treated PD patients could influence results, as dopaminergic therapy may either mask or exacerbate RLS symptoms (17). As seen in our findings, approximately 66.7% of patients with RLS were not taking dopaminergic drugs, but the difference did not reach statistical significance. Despite these disparities, the collective evidence underscores RLS as a clinically relevant comorbidity in PD, warranting routine screening and tailored management strategies.

The demographic profile of the cohort showed a slight male predominance (56.2%) with a mean age of 63.96±11.15 years and an average disease duration of 5.18±2.00 years. These characteristics are comparable to those reported by Yang et al. and Sobreira-Neto et al., where the mean age was 61±9 years and the disease duration was 108±64 months (18).

CONCLUSION

From our study, we conclude that the frequency of restless legs syndrome in patients with Parkinson's disease was moderately higher (20.5%). Given the established links between RLS and sleep disturbances, cognitive decline, and reduced quality of life, early identification and intervention may improve patient outcomes.

DECLARATIONS

Data Availability Statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned. (IRB-832/RC/FFH/RWP)

Consent for publication

Approved

Funding

Not applicable

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

NASEEM ULLAH (Resident Neurology)
Data Collection, Data Analysis, Study Design, Review of manuscript, and Manuscript Revisions, and Manuscript drafting.
HUSNAIN HASHIM (Assistant Professor)
Critical Input, Study Design, Final approval of draft.
RASHID USMAN (Senior Registrar Neurology)
Critical Input, and Literature Review
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