FREQUENCY AND RISK FACTORS ASSOCIATION OF FALL AMONG THE IDIOPATHIC PARKINSON'S PATIENTS IN BANGLADESH

Dr. Goutam Kumar Acherjya
Junior Consultant (Medicine)
Upazila Health Complex,
Bagherpara, Jashore
Bangladesh.

Background

Parkinson's disease is the second most common neuro degenerative disease worldwide.[1] Fall is common scenario in day to day clinical practice among the older people but it is more common among the Parkinson's people.

Objectives

The study was conducted to assess the frequency of fall and to ascertain the risk factors association among the idiopathic Parkinson’s patients.

Methodology

- Study design : Observational type cross-sectional study.
- Place of study : Department of Medicine of Jashore Medical College and Hospital, Jashore, Bangladesh
- Study population : Newly attended idiopathic Parkinson's disease patients.
- Sample size : 111 participants, (M-77) and (F-34)
- Sampling method : Purposive sampling.
- Study period : 1st July 2017 to 30th December 2017

Selection criteria

- **Inclusion criteria:**

Newly attended idiopathic Parkinson’s patients of both sex.

- **Exclusion Criteria:**

1. Those having Parkinson’s disease due to stroke or secondary causes, orthostatic hypotension, taking anti parkinsonian drugs and the drugs may mimic Parkinson’s disease were excluded from this study.
2. Idiopathic Parkinson’s patients who are completely bed ridden and underwent functional stereotactic surgery for Parkinson’s disease were excluded from the study.

Analysis

- Preformed structured data collection sheets were used in every selected case.
- Informed written consent was taken from every subjects.
- Detailed history and physical examinations were carried out including history of hypertension & diabetes, duration of disease, number of medications taking regularly and number of fall experienced within the past one year.
- Detailed drug history was taken. In our study we have considered only those medication which our patients using regularly eg. Antihypertensive, antidiabetic, sedatives, hypnotics, antidepressant and antipsychotics.

Analysis

- Standing height was measured to the nearest millimeter. Participants were weighed in light clothing without footwear. Body weight was measured to the nearest 0.1 kg by using an Electronic Weighing Scale.
- Analysis carried out using SPSS version 22.
- Categorical data was grouped as numbers and % and mean with standard deviation measured from continuous data.
- Independent sample T-test and chi-square test employed to extract p-value.

Case Definition of Fall

- The diagnosis of Parkinson's Disease was confirmed according to the United Kingdom Parkinson's Disease Brain Bank criteria.[2]
- A fall was denoted as an event that occurred in the patient unintentionally bring him to the ground or other lower level not as a result of a major intrinsic event or overwhelming hazards[3,4]

- The patients were asked about the number of fall in the previous one year. It was crossed checked by the attending relatives, family members or care giver for accuracy of the data.

Results

- **Table 1: Frequency of fall in last one year of Parkinsonism Patients. (n:111)**

The event of fall among the idiopathic Parkinson's patients constituted 36.9% within the last one year.

Study subjects		Number	Percent (%)
No fall		70	63.1
Fall	Single episode of fall	23	20.7
	Two episodes of fall	4	3.6
	Three or more episodes of fall	14	12.6
Total		**111**	**100.0**

Table 2a: Demographic characteristics of study subjects with relation to fall. (n:111)

	All patients (n=111, 100%)	**Non-faller** (n=70, 63.1%)	**Faller** (n=41, 36.9%)	*P-value*
Age in years:				
Mean ± SD	66±10	65±11	68±8	0.091^{ns}
Min- Max	35-91	35-91	50-90	
Sex: (M: F= 2.27)				
Male n (%)	77 (69.4)	53 (47.7)	24 (21.6)	0.058^{ns}
Female n (%)	34 (30.6)	17 (15.3)	17 (15.3)	
Education:				
No education n (%)	26 (23.4)	13 (11.7)	13 (11.7)	
Primary n (%)	16 (14.4)	13 (11.7)	03 (02.7)	0.235^{ns}
Secondary n (%)	54 (48.7)	34 (30.6)	20 (18.0)	
Graduation n (%)	15 (13.5)	10 (09.1)	05 (04.5)	

Table 2b: Demographic characteristics of study subjects with relation to fall. (n:111)

	All patients (n=111, 100%)	**Non-faller** (n=70, 63.1%)	**Faller** (n=41, 36.9%)	*P-value*
Occupation:				
Housewife n (%)	34 (30.6)	19 (17.1)	15 (13.5)	
Farmer n (%)	18 (16.2)	15 (13.5)	03 (02.7)	0.220^{ns}
Service n (%)	33 (29.8)	19 (17.1)	14 (12.6)	
Business n (%)	26 (23.4)	17 (15.3)	09 (08.1)	
Residency:				
Urban n (%)	42 (37.8)	25 (22.5)	17 (15.3)	0.547^{ns}
Rural n (%)	69 (62.2)	45 (40.6)	24 (21.6)	

*No significant difference observed between faller and non-fallers among different demographic characteristics including age, sex , educational level, occupational status and residency.

Table 3a: Risk factor association of faller in Parkinsonism (n: 111)

	All patients (n=111, 100%)	**Non-faller** (n=70, 63.1%)	**Faller** (n=41, 36.9%)	*P-value*
Duration of Parkinsonism in years:				
Mean ± SD	4.25±4.96	4.33±5.09	4.12±4.79	0.835^{ns}
Min- Max	1-25	1-25	50-90	
BMI in kg/m²:				
Mean ± SD	23.50±3.80	22.93±3.75	24.48±4.79	0.037^{s}
Min- Max	16.2-32.5	16.2-32.5	18.6-31.8	
Hypertension:				
Hypertensive; n (%)	77 (69.4)	43 (38.7)	34 (30.6)	0.018^{s}
Non- hypertensive; n (%)	34 (30.6)	27 (24.4)	07 (06.3)	

- The mean duration of disease in year among the all participants, non-faller and faller group were insignificant.
- A significant relationship observed between obesity (higher BMI) and fall in our study .
- Hypertensive patients were significantly more in the faller group.

Table 3b: Risk factor association of faller in Parkinsonism (n: 111)

	All patients (n=111, 100%)	**Non-faller** (n=70, 63.1%)	**Faller** (n=41, 36.9%)	*P-value*
Diabetes Mellitus:				
Diabetic; n (%)	30 (27.0)	13 (11.7)	17 (15.3)	0.009[s]
Non-diabetic; n (%)	81 (73.0)	57 (51.4)	24 (21.6)	
***Number of medication*:**				
No medication; n (%)	23 (20.7)	18 (16.2)	05 (04.5)	
Single; n (%)	23 (20.7)	18 (16.2)	05 (04.5)	
Two; n (%)	25 (22.6)	13 (11.7)	12 (10.8)	0.011[s]
Three; n (%)	20 (18.0)	14 (12.6)	06 (05.4)	
Four or more; n (%)	20 (18.0)	07 (06.3)	13 (11.7)	

- Diabetes played significantly as a risk factor for potentiating fall in the present study.
- Fall is more common in patients taking more number of medication and less common in patients treated with single or no medication.

Limitation of this study

- This was a hospital based study, not a community-based epidemiological survey.
- Study conducted in limited area with limited number of cases.
- The present study is limited to the patients only.
- Randomization in sampling was not done.
- Extensive evaluation of the patients was not done in the study. We failed to do staging and severity of the patients.

Recommendations

- Randomized trial with prevalence and incidence including larger number of cases involving whole county recommended.
- Extensive evaluation of the patients e.g. Dyskinesia associated with the use of dopaminergic agents, freezing, postural instability, depression, impaired fine motor control and motor planning in the feet, decreased proximal muscle strength and muscular endurance in the legs, joint deformity, visual impairment should be assessed.

Conclusion

- Number of faller found more in **Obese (high BMI)**, **hypertensive, diabetic patients** and **in patients receiving multiple medications,** but duration of Parkinsonism does not increase fall in this study.

- Preventing falls has become one of the most important unmet needs in PD, and potential strategies to prevent falls should be focused on patients at higher risk for falling. Therefore, identifying risk factors is of paramount importance.

References

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Dr. Mohammad Ali
Assistant Professor
Department of Haematology
National Institute of Cancer Reseach & Hospital
Mohakhali, Dhaka.


Thank
you