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Demographic study of Parkinson's disease in Iran: Data on 1656 cases

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Keywords
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Abstract

Background: There is no documented demographical study on Iranian Parkinson's disease (PD) patients, so this study was conducted to identify demographic information about patients with PD in Iran, and to explore demographical differences between PD patients in Iran and other countries.

Methods: We reviewed medical records of 1656 patients diagnosed with PD, who referred from all parts of Iran to a referral Parkinson's disease clinic in Tehran. We collected data about their age, gender, age of onset, side of motor symptoms' onset, and drug history.

Results: This study was performed on 1656 patients with idiopathic Parkinson's disease, and the results showed that, out of 1656 cases, 1132 patients were males (68.4%) and 524 patients were females (31.6%). The mean age of these patients was 65.16 ±11.9 years (16-99 years). The mean age of onset in these patients was 53.16 ±12.5 years (12-90 years). Among 697 patients, 345 patients (49.5%) had right onset PD, and the remaining 352 cases had left onset PD (50.5%). Side of motor symptoms onset was not associated with the age of the patients at disease onset (P>0.05). The incidence of right onset PD in males was 50.1% and 48.2% in females, although this difference was not statistically significant (P>0.05). There was no significant difference between males and females in age of onset (P>0.05).

Conclusion: Our data suggests that the male to female ratio among Iranian Parkinson's disease patients is much higher than other countries. Additional investigation is required in this field.

Introduction

Parkinson's disease (PD) is the second most common neurodegenerative disease after Alzheimer's disease, which characterized by cardinal features of resting tremor, rigidity, bradykinesia, and postural instability [1]. In addition to movement abnormalities, PD has non-motor symptoms such as dementia, depression, autonomic dysfunction and cognitive impairment. These debilitating symptoms, chronic and progressive course of the disease can diminish quality of life in both patients and caregivers [1,2]. PD also has a heavy social and economic burden. Several epidemiological studies have been done about the Parkinson's disease [2]. The disease has different geographical prevalence, but overall it is estimated that the prevalence is 0.3% among general population and 1% in population over 60 years of age [3]. PD is rarely seen before age 50 years and the incidence significantly increases after age 60 [4].

Little has been written regarding the gender differences in PD; however evidence indicates that it may play a role in the risk of developing PD. Some studies demonstrated that PD has a higher incidence rate in men, [4,5,6] although in other studies equal incidence has been mentioned [4]. The exact role of gender in developing PD is still controversial [7].

The demographic study of Parkinson's disease can have important public health and social implications, in addition to providing clues for better understanding of the disease etiology. There are few data on the demography of PD in

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Iran. Therefore, we undertook a study to determine the demographic data of PD among Iranian population.

Materials and Methods

This is a retrospective study on 1656 Parkinson's disease patients who were consecutively visited in movement disorder outpatient clinic of the Rasoul Akraml hospital and a private movement disorder clinic in Tehran between 2000 and 2010. The diagnosis of PD was made according to UK PD Society Brain Bank criteria [8]. We reviewed medical records of these patients. Data were collected about their age, sex, age of onset, side of motor symptoms onset, and drug history.

Statistical Analysis

Data on age and sex of patients, age of onset, side of motor symptoms onset, and drug history were recorded on standardized forms. Data were coded for computer analysis and then analyzed using SPSS 11.0 software for windows. The mean, standard deviation, and other descriptive data were determined for each variable. Chi-2 and student t-test were used to compare data between men and women.

Results

A total of 1656 patients with Parkinson's disease were included in the study. 1132 (68.4%) of the patients were males and 524 (31.6%) females. The mean age of the patients was 65.14 ± 11.98 years (Range 16-99). 1299 patients (78.4%) aged between 51-80 years. Only 35 patients (2.1%) were under 40 years and 145 PD patients (8.7%) had more than 81 years old. Male to female ratio was similar in different age groups (P>0.05). The mean duration of PD ranged between 1 and 58 years with a mean of 10.77 ± 5.83 (Range 1-58).

The mean age at onset of PD was 53.15 ± 12.58 years (Range 12-90). The most frequent age of onset of PD was between 51 and 60 years (28.9%) and totally, in 76.3% of patients the age of onset was between 41-70 years old. There was no significant difference between men and women in the age of disease onset (P>0.05).

Among the 697 patients, 345 patients (49.5%) had right onset motor symptoms, and the remaining 352 cases (50.5%) had left onset motor symptoms. In 50.1% of men, and 48.2% of women symptoms started in right side. Side of disease onset was not associated with age and gender (P>0.05) (Table-1).

Medication review in 1617 of these patients revealed that 97% of the patients were using levodopa, 43% anticholinergics, 40% amantadine, 30%dopa agonists, 26% selegiline and 1.2% COMT inhibitors.

Discussion

In this large cross-sectional study, we included 1656 patients with PD who were referred to our movement disorder clinic. This study showed that most of the patients were male and M: F ratio was 2.1. The higher prevalence and incidence of PD in men have been observed in many other epidemiological studies. However, this ratio among Iranian patients is somewhat more than similar studies. In a recent meta-analysis by Taylor et al. the male to female ratio for incidence of PD has been reported 1.46 [5]. Among western populations male to female ratio was reported 1.58 and in Asian populations it was 0.95 [6]. In addition, different symptoms profile has been observed between men and women with PD [9]. Although the reason is still unclear, there is mounting evidence suggesting gender differences in PD. Some hypothesis has been proposed for gender disparities among PD patients that one of them implies female sex hormones have a neuroprotective effect against neuronal cell death [9]. Other studies suggested various underlying factor such as gender differences in access to care, adjustment to the disease, environmental exposures, disease progression, and therapeutic responses [9,10].

Age is one important risk factor of Parkinson's disease, as it is observed in various epidemiological studies. The incidence of PD increases between ages 50 and 80 years [11,12] and it exponentially increases after the age of 75 [13]. Similarly in our study, 78.4% of patients were between the ages of 51 and 80 years and patients more than 81 years included 8.7% of the patients. Most of other studies mentioned that because of low number of participant in the ages older than 80 years, the relation between PD and advanced age is disguised [11]. Also PD under ages of 40 years is rare, as we observed in our study that only 2.7% of them were in this age group. Among 76.3% of study participant, the age of PD onset was between 41 and 70 years. Furthermore, Male to female ratio was almost similar in all age groups. Like other epidemiological studies which imply the male dominancy in PD patients persist across all ages [14].

Parkinson's disease presents with asymmetric motor symptoms at disease onset, which might be associated with

Table 1. Demographic information of Iranian PD patients

Variables		All patients (n=1656)	Males (n=1132)	Females (n=524)	P-value
Age (yrs)		65.14 ± 11.98	65.02 ± 12.02	54.40 ± 11.89	0.58
Age of onset (yrs)		53.15 ± 12.58	53.18 ± 12.56	53.07 ± 12.66	0.72
Disease duration (yrs)		10.77 ± 5.83	10.64 ± 5.57	11.08 ± 6.42	0.09
symptoms onset	Right side	49.5%	50.1%	48.2%	0.64
	Left side	50.5%	49.9%	51.8%	

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asymmetric cerebral dopaminergic degeneration [15]. 49.5% of our patients had left-dominant PD symptoms at the disease onset. The hand dominance was not registered in this study. However, according to other studies, there is an association between handedness and the side of symptoms dominance in Parkinson's disease patients [15,16]. In the study by Yust-Katz and colleagues, among 47% of right-handed patients, the symptoms onset was on the right side and on the left side in 52% of left-handed patients [17]. In a recent meta-analysis by van der Hoom et al. the relation between handedness and motor symptom dominance was discussed [15].

40.3% of the patients were using anticholinergics at their first visit in our clinic. This high percentage is a warning sign because it has been clear that anticholinergic drugs have many devastating effects on PD patients such as gait impairment, increasing falling risk, cognitive disturbance, dementia and confusion in addition to their known peripheral side effects (i.e. blurred vision, dry mouth, impaired sweating, abdominal discomfort, and constipation) [19-21] .Nowadays such drugs have a limited role in the treatment of young patients with PD. In one study in United States, anticholinergics were used only in 6.5% of PD patients [22]. Accordingly, Iranian neurologists should use anticholinergics with caution and only in special young cases.

Based on the current study, male to female ratio among Iranian PD patients is 2.1:1, which is much higher than reports from other countries. Investigation about the cause of this observation warrant further study. Our study had a large number of participants, but it had some limitations such as retrospective design, short number of variables and lack of patient's follow up. So we should consider and correct these limitations in futures studies.

References

1. Schrag A, Jahanshahi M, Quinn N. What contributes to quality of life in patients with Parkinson's disease? J NeurolNeurosurg Psychiatry 2000; 69:308–312.
2. Muangpaisan W, Hori H, Brayne C. Systematic Review of the Prevalence and Incidence of Parkinson's Disease in Asia. J Epidemiol 2009; 19:281-293.
3. Nussbaum RL, Ellis CE. Alzheimer's disease and Parkinson's disease. N Engl J Med 2003; 348:1356–64.
4. De Lau LML, Breteler MMB. Epidemiology of Parkinson's disease. Lancet Neurol 2006; 5:525–35.
5. Taylor KS, Cook JA, Counsell CE. Heterogeneity in male to female risk for Parkinson's disease. J NeurolNeurosurg Psychiatry 2007; 78:905-906.
6. Alves G, Forsaa EB, Pedersen KF, et al. Epidemiology of Parkinson's disease. J Neurol 2008; 255:18–32.
7. Saunders-Pullman R. Estrogens and Parkinson disease: neuroprotective, symptomatic, neither, or both? Endocrine 2003; 21:81–87.
8. Hughes AJ, Daniel SE, Kilford L, et al. Accuracy of clinical diagnosis of idiopathic Parkinson's disease: a clinico-pathological study of 100 cases. J NeurolNeurosurg Psychiatry 1992; 55:181-4.
9. Shulman LM, Bhat V. Gender disparities in Parkinson's disease. Expert Rev. Neurotherapeutics 2006; 6:407–416.
10. Shulman LM. Gender differences in Parkinson's disease.Gend Med 2007; 4:8-18.
11. Driver JA, Logroscino G, Gaziano JM, et al. Incidence and remaining lifetime risk of Parkinson disease in advanced age. Neurology 2009; 72:432–438.
12. Khandhar SM, Marks WJ. Epidemiology of Parkinson's disease. Dis Mon 2007; 53:200-5.
13. De Lau LM, Giesbergen PC, de Rijk MC, et al. Incidence of parkinsonism and Parkinson's disease in a general population: The Rotterdam Study. Neurology 2004; 63:1240-4.
14. Bower JH, Maraganore DM, McDonnell SK, et al. Incidence and distribution of Parkinsonism in Olmsted County, Minnesota, 1976–1990. Neurology 1999; 52:1214-1220.
15. Van der Hoom A, Bartels AL, Leenders KL, et al. Handedness correlates with the dominant Parkinson side: a systematic review and meta-analysis. Mov Disord 2012; 27:206-10.
16. Van der Hoom A, Bartels AL, Leenders KL, et al. Handedness and dominant side of symptoms in Parkinson's disease. Parkinsonism Relat Disord 2011; 17:58-60.
17. Yust-Katz S, Tesler D, Treves TA, et al. Handedness as a predictor of side of onset of Parkinson's disease. Parkinsonism Relat Disord 2008; 14:633-5.
18. Brocks DR. Anticholinergic drugd used in Parkinson's disease: An overlooked class of drug from a pharmacokinetic perspective. J Pharm PharmaceutSci 1999; 2:39-46.
19. Perry EK, Kilford L, Lees AJ, et al. IncreasedAlzheimerpathology in Parkinson's disease related to antimuscarinic drugs. Ann Neurol 2003; 54:235-8.
20. Bohnen NI, Müller ML, Koeppe RA, et al. History of falls in Parkinsondisease is associated with reduced cholinergic activity. Neurology 2009; 73:1670-6.
21. Yarnall A, Rochester L, Burn DJ. Theinterplay of cholinergicfunction, attention, and falls in Parkinson's disease. Mov Disord 2011; 26:2496-503.
22. Wei YJ, Stuart B, Zuckerman IH. Use of anti parkinson medications among elderly Medicare beneficiaries with Parkinson's disease. Am J Geriatr Pharmacother 2010; 8:384-94.

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