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

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Keywords
Parkinson's disease; Demographic study; Iranian patients

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
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
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 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 fact or 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 dominance
in PD patients persist across all ages [14].

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

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<th>Table 1. Demographic information of Iranian PD patients</th>
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<td><strong>Variables</strong></td>
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<td>Age (yrs)</td>
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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