High Occurrence and Low Recognition of Parkinsonism (and Possible PD) in Old Age Homes in Bangalore, South India

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Abstract

Background: The elderly population in developing countries is likely to increase by 200-280%. Age related diseases like Parkinsonism are also likely to increase in ageing population. The prevalence and awareness of Parkinsonism (and possible PD) amongst them are unknown.

Methods and Material: The objective was to know the awareness and occurrence of Parkinsonism (and possible PD) in Old Age Homes in Bangalore, South India. The study design was prospective, direct clinical evaluation, and it was old age homes in Bangalore, South India setting. There were six hundred and twelve residents of the old age homes in Bangalore. A movement disorder neurologist examined 612 elderly residents living in Old Age Homes in Bangalore city, India.

Results: Parkinsonism was diagnosed in 109 (17.8%) of 612 residents. Possible PD was diagnosed in 9 (1.5% of 612) while in 100 (16.3% of 612) definite PD was diagnosed. 94 (86.2%) had bilateral Parkinsonian signs (Stage ≥ 2 of Hoehn & Yahr), only 4 (3.7%) of them or the caregivers knew they had PD.

Conclusions: Knowledge about the disease was very low in the elderly residents although the occurrence of Parkinsonism was very high. Improving awareness of PD amongst the elderly and their caregivers might reduce their disability and improve their quality of life.

INTRODUCTION

The world’s elderly (>60 yrs) population is estimated to be 580 million, of this 355 million (61%) live in developing countries and 77 million (22% of total) live in India. In the next 20 years, the elderly population in developing countries is likely to increase by 200-280% compared to a mere 30-40% in the developed nations. This increase in the ageing population in India and other developing countries is likely to be accompanied by an increase in age-associated diseases like Parkinson’s disease (PD).

Old age Homes are a new concept in our country. There are two types of homes, the ‘free’ homes for the aged poor who have no family to care for them and ‘for-pay’ homes for people who can pay for their stay. Most homes house small numbers of residents in which they have common spaces for dining, TV and prayer, some provide food, medical care, transportation, and assistance for people with handicaps. Free homes are larger and have been there since a long time, they have little privacy, emphasize income-generating activities and resemble the western board-and-care homes. The for-pay homes have greater privacy and western-style amenities. The World Health Organization (WHO) notified PD as disease of public health importance in 2002. The prevalence of Parkinsonism in clinical settings is known but this information is not available for the Homes for the Elderly.

In a study of the elderly over the age of 65 years in the UK, the prevalence of incidental undiagnosed parkinsonism was found to be 257/100,000 (0.26%). The prevalence of undiagnosed Parkinsonism in residents of Indian homes for the elderly is not known. The elderly PD patients living in developing countries have difficulties because of poor public awareness and difficulty in accessing health care due to lack of universal primary health care and health insurance. Herein we
estimate the prevalence of Parkinsonism (and possible PD) in residents of Homes for the Elderly in India.

**MATERIAL AND METHODS**

**Study population**

The study was conducted in Old age Homes in and around Bangalore City. Addresses for these homes were obtained from the directory of “Old Age homes in India” (1998) provided by Help Age India, a non-governmental organization, caring for the elderly. We obtained additional addresses and telephone numbers of old-age homes from the telephone directory. There were 31 homes within a 20-kilometer radius of the city. We made an initial telephonic contact with managers of these homes to inform that the purpose of our study was to estimate the prevalence of PD in the Old age Homes. For this, we would ask the residents about presence of parkinsonian symptoms and examine them for Parkinsonism. We were requested to avoid questioning residents on their reasons for being in the home, as this was a sensitive issue. Ten homes were excluded as they were either day care centers or cared for younger people (<50 years of age), hence 21 homes were included in this study. Nineteen of the 21 homes agreed to participate in the study. The two homes that refused permission did so as they preferred to avoid unfamiliar physicians. On the first visit, a member of our team spoke about PD and the purpose of our visit. Most (612 or 92.2% of 664) residents agreed for being examined.

Our team consisted of five doctors: three medical graduates (MR, and SJ and NS [see acknowledgements]) and two neurologists (UAM and UBM) of whom one was a movement disorder specialist (UBM) and the other (UAM) had worked for one year in movement disorders. Among the three medical graduates, two (MR, SJ) had worked for one year in neurology and were working in the Movement Disorders Clinic for one year; the third doctor (NS) was working for one year in the Movement Disorder Clinic but had not worked in neurology earlier.

**Evaluation**

The five doctors individually interviewed residents and recorded data on socio-economic status, source of drinking water, exposure to toxins, personal and family history, medical and treatment history, and history of motor symptoms (slowness, stiffness, tremors and gait disturbances). The doctors also examined medical records for details on health conditions and medications. These records were maintained by caregivers/nurses in the homes. Approximately one in five (107 of 612) residents were randomly selected for administering a regionally validated questionnaire to screen for dementia.

Movement Disorders neurologists (UAM and UBM) examined all residents and motor signs of Parkinsonism were assessed using the 11-item motor portion of the Unified Parkinson’s Disease Rating Scale (UPDRS). Parkinsonism was diagnosed when two or more cardinal signs were present. Only parkinsonian signs of ≥ 1 severity were considered. PD was diagnosed when patients satisfied Step 1 and 2 of the UK Parkinson’s Disease Society Brain Bank clinical diagnostic criteria. A neurologist specializing in movement disorders (UBM) classified the type of Parkinsonism based on accepted clinical criteria. A diagnosis of ‘Possible PD’ was made when they had two cardinal signs scoring at least ≥ 1 on the UPDRS motor scale (18-31). Definite PD was diagnosed when two or more cardinal signs of ≥ 2 severity on the UPDRS motor scores (18-31) were present. The diagnosis of a Parkinsonian plus syndrome was made when patients had pyramidal signs, autonomic dysfunction, predominant gait disturbances with cognitive deficits, or supranuclear gaze paresis. Diagnosis of progressive supranuclear palsy was made when patients had parkinsonian features with supranuclear gaze palsy. Multiple system atrophy parkinsonian form was diagnosed when autonomic dysfunction and Parkinsonism or cerebellar signs were present. Lower body Parkinsonism was diagnosed when patients had Parkinsonism with predominant gait freezing. Normal pressure hydrocephalus was diagnosed when patients had lower body Parkinsonism with memory deficits and urinary incontinence. Drug induced Parkinsonism was diagnosed when a Parkinsonian patient had history of exposure to neuroleptics in the past one year. When the cause for Parkinsonism was unclear from the history and clinical examination a classification of “Unclassified Parkinsonism” was made.

PD was staged using the Hoehn and Yahr clinical scale. Medical records were reviewed to know if they were diagnosed as PD or Parkinsonism. We reviewed their medical records to know if they were taking anti-parkinsonian drugs even though they have knowing their diagnosis. We asked individuals diagnosed as PD if they were aware that they this illness or if they were being treated for it.

**Statistical analyses**

SPSS version 11.0 was used to perform statistical analysis. To assess group differences in continuous variables, Student’s ‘t’ test was used.

**RESULTS**

**General**

Six hundred and twelve (92.2%) of the 664 residents agreed to participate in this study. There were 232 (37.9%) men and 380 (62.1%) women with similar ages (Mean ± SD) (Men: 74.8 ± 9.0 years, Women: 74.5 ± 9.2 years, p = 0.6). The homes were grouped into completely free (n= 4), those where residents paid for their stay (n=14), and those where residents either did not pay if they were poor or paid if they could afford (n=1).
Most (n=501; 82%) residents lived in the 14 paid homes. Thirteen (12.1%) of the 107 randomly selected residents screened positive for dementia; only one of these had PD. Among these 107 randomly screened residents, there were seven with PD (including one with PD and dementia and six with PD but without dementia).

Parkinsonism

Parkinsonism was diagnosed in 151 (24.7%) of 612 residents. This included PD in 109 (17.8% of 612), multiple system atrophy in 5 (0.8%), drug-induced Parkinsonism in 5 (0.8%), Progressive Supranuclear Palsy in 5 (0.8%), lower body Parkinsonism in 3 (0.4%), normal pressure hydrocephalus in 1 (0.1%) and unclassified Parkinsonism in 23 (2.4%). The parkinsonian signs present in the 42 residents with unclassified Parkinsonism were: resting tremors (n = 33, 78.6%), bradykinesia (n = 42, 100%) and rigidity (n = 42, 100%).

PD

PD was the commonest type of Parkinsonism and was diagnosed in 109 (17.8%) of 612 residents, 9 had possible PD (9.1%) while 100 (16.3% of 612) had definite PD. They had varying severity of Parkinsonism: Hoehn and Yahr Stage 1 = 13 (11.9%) of 109, Stage 1.5 = 2 (1.8%), Stage 2 = 60 (55.0%), Stage 2.5 = 25 (22.9%), Stage 3 = 7 (6.4%) and Stage 4 = 2 (1.8%). All PD patients had slowness and rigidity and 61.5% of them had rest tremors (Table 2). Parkinsonian signs were present on both sides in 94 (86.2%) of 109 residents having PD. In the 107 patients screened for dementia, one of them had PD (Hoehn and Yahr stage 4) with dementia and six had PD without dementia.

Treatment

Only 4 (3.7%) of 109 residents with PD knew of their illness and were receiving anti-parkinsonian drugs. The patients who were on treatment knew of their diagnosis. Two of the four residents receiving treatment therapy had seen a movement disorder specialist and were paying for their treatment. Among the four patients being treated, one of them took the treatment intermittently. The 42 residents with other types of Parkinsonism were not receiving any other therapy like physical therapy.

Health Care Access and Medical Insurance

A general physician visited 3 (15.8%) of the 19 homes regularly. In the setting of emergencies, 4 (21.1%) of the 19 homes used the services of the closest hospital with neurological services. None of the homes had any access to a neurologist or a movement disorder specialist. State sponsored health insurance or any form of social security was not available for the residents living in these 19 homes. The homes or the residents had to bear expenses of their medications.

Discussion

The Indian Old age Homes had strikingly more women than men; these were either widows or single women with poor social support. In the US nursing homes there are an equal number of men and women. Since Indian Old age Homes have limited medical or nursing facilities they prefer healthy individuals for a long-term stay. Due to this, most (82%) residents were paying for their stay and medical expenses due to which it might have been difficult for some of these elderly residents to seek medical help.

Nearly 1/4th of the elderly home residents had Parkinsonism, majority had PD suggesting this was common in these homes. The high prevalence of PD in this cohort could be because a Movement Disorders Specialist/neurologist directly assessed these patients, however, it is disturbing that less than 5% knew they had PD. There are several possible explanations for this low recognition of PD in our cohort. First, the disease was missed because it was mild. However, 86.3% had moderate or more severe disease (Hoehn and Yahr Stage 2 or higher). Second, symptoms like slowness or gait disturbances in the elderly can often be ascribed to old age or orthopedic problems by non-neurologists or minimally trained caretakers of these homes. Third, diagnosis of mild to moderate PD can be difficult for doctors who occasionally visited these Old age Homes. Fourth, elderly home residents and their caretakers

Table 1: Age distribution of residents with PD

<table>
<thead>
<tr>
<th>Age (Yrs)</th>
<th>Number of residents with PD</th>
<th>Proportion (%) of 109 PD patients in each age stratum</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-50</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>51-60</td>
<td>11</td>
<td>10.1</td>
</tr>
<tr>
<td>61-70</td>
<td>21</td>
<td>19.3</td>
</tr>
<tr>
<td>71-80</td>
<td>43</td>
<td>39.4</td>
</tr>
<tr>
<td>81-90</td>
<td>29</td>
<td>26.6</td>
</tr>
<tr>
<td>91-100</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>All Ages</td>
<td>109</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2: Prevalence of motor signs of Parkinsonism in 109 residents with PD

<table>
<thead>
<tr>
<th>Motor signs (%)</th>
<th>N*</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in speech</td>
<td>70</td>
<td>64.2%</td>
</tr>
<tr>
<td>Reduction in facial expression</td>
<td>81</td>
<td>74.3%</td>
</tr>
<tr>
<td>Tremor at rest</td>
<td>67</td>
<td>61.5%</td>
</tr>
<tr>
<td>Rigidity</td>
<td>79</td>
<td>72.4%</td>
</tr>
<tr>
<td>Bradykinetic finger taps</td>
<td>108</td>
<td>99.1%</td>
</tr>
<tr>
<td>Bradykinetic hand grips</td>
<td>107</td>
<td>98.1%</td>
</tr>
<tr>
<td>Bradykinetic hand pronation/supination</td>
<td>106</td>
<td>97.2%</td>
</tr>
<tr>
<td>Bradykinetic leg agility</td>
<td>100</td>
<td>91.7%</td>
</tr>
<tr>
<td>Difficulty arising from a chair</td>
<td>99</td>
<td>90.8%</td>
</tr>
<tr>
<td>Changes in posture</td>
<td>97</td>
<td>88.9%</td>
</tr>
<tr>
<td>Gait abnormality</td>
<td>104</td>
<td>95.1%</td>
</tr>
</tbody>
</table>

*Present when greater than or equal to 1

1
11
12
had little knowledge of Parkinsonism. Fifth, visiting physicians were not trained to diagnose PD, this led to missing the diagnosis in nine individuals with advanced PD (Hoehn and Yahr Stages 3 and 4).

PD in residents of Indian Old age Homes (17.8%) was three times more common than elderly residents of such homes in countries like Canada (6%)\(^{13}\) and Norway (5.1%). Large number of PD was undiagnosed in the Indian Old age Homes (95%) compared to Norway (45%)\(^{14}\) and France (42%).\(^{15}\) The lower prevalence of undiagnosed PD in the French Old age Homes might be because a questionnaire rather than neurological evaluation was used to detect new cases.\(^{15}\) The higher case ascertainment of PD in our study is possibly because a physician and a Movement Disorders personally interviewed each elderly home resident to establish a diagnosis.

Our study had some limitations. We assessed dementia in a random sub-sample of residents rather than in all residents. Extra pyramidal signs are associated with dementia\(^{16}\) and it is possible that we mis-assigned diagnoses of PD/Parkinsonism to patients with dementia and extrapyramidal signs. In the sample that we screened for dementia, however, the ratio of non-demented to demented PD patients was 6:1, suggesting that for most patients with an assigned diagnosis of PD, dementia was not an issue.

The low recognition of PD in Old age Homes across the world suggests low awareness of this disease in the community and sadly, even amongst the people who care for these elderly. Educating the institutionalized elderly, their physicians and caretakers about PD could substantially improve detection of PD. Detection is the first step in treatment which will improve the quality of life and reduce disease-related complications.

**Acknowledgements**

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**REFERENCES**


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**Announcement**

26th Annual Karnataka API Conference is scheduled to be held at Bellary between 11th to 13th July 2008.

For further details please contact: Dr. BK Sundar, Organising Secretary, Murthy Nursing Home, First Cross Gandhinagar, Bellary - 583103, Karnataka.
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