Short Communication

Distribution of Types of Dementia in the First 100 Patients Seen at a Dementia Clinic in India

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Abstract. The aim of our study was to determine if the distribution of types of dementia could explain the reported lower prevalence of dementia in India. The study is an observational study of the first 100 cases of dementia. All patients were evaluated clinically and with blood tests and MRI of the brain. The causes of dementia were: Lewy body dementia (22%), depression (20%), Alzheimer's disease (13%), and mild cognitive impairment (18%). Other dementias were less common. The distribution of dementia types in this series is different from that reported globally. The observation of Lewy body dementia being the most common cause of dementia needs to be verified.

Keywords: Alzheimer's disease, dementia, depression, frontotemporal lobar degeneration, India, Lewy body dementia, mild cognitive impairment

INTRODUCTION

Findings of a cross-national Indo-US study [1], in 1998 and 2001, reported that the prevalence [2] and the incidence [3] of Alzheimer's disease (AD) were substantially lower in the study population in Ballabgarh, India, compared to that in Monongahela Valley, Pennsylvania. This held true after correcting for all potential artifacts. More recently, a report from California, USA, has reported that the incidence of dementia was the lowest among Asian Americans (including people of Indian origin) compared to other ethnic groups (blacks, Latinos, and whites) within California [4].

The reason, or reasons, why the population of South Asian Indians is "protected" from dementias or, specifically, AD remain unknown. Various hypotheses have been proposed. These include gene-environment interaction [5] as well as the ingestion of curcumin (turmeric) in food [6].

In this study, we analyze the types of dementia in the first 100 consecutive patients seen at a Dementia clinic in Gurgaon. Our attempt is to examine if the distribution of the various types of dementia might suggest why the Indian population is protected against this disease.

This is the first, largest, and only case series of dementia to be reported from India.

METHODS

The Hospital Ethics Committee of Paras Hospital has approved the design, data compilation, and

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Table 1
Distribution of types of dementias in a clinic population of Gurgaon, Haryana, India

Age range (y)	AD		LBD		FTLD		VaD		MCI		Depression		Misc. conditions	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
<50											4		1	
51–60	1					1		1		1	2	2	1	1
61–70	1	3	3	3	2	1	2		2	2	5	4		1
71–80	2	3	4	3	1		1	1	3	4	3		3	1
>81	3		4	5			3		4	2			3	3
Total	7	6	11	11	3	2	6	2	9	9	14	6	8	6

AD, Alzheimer's disease; LBD, Lewy body dementia; FTLD, frontotemporal lobar degeneration; VaD, vascular dementia; MCI, mild cognitive impairment; M, male; F, female.

publication of the results. No experiments involving human subjects or animals were done. There was no funding for this study. The authors have no conflict of interest to report.

Patients were identified from Paras Hospital, Gurgaon, Primus Hospital, Chanakyapuri, New Delhi and also from the private practice of one of the authors (VC). The patients were mostly residents of the National Capital Region of Delhi, which includes the city of New Delhi and the surrounding suburbs. Some patients came to the clinics after they did an internet search of Dementia clinics as well as of the qualifications and experience of doctors.

The first 100 outpatients seen at the Dementia clinic were included in the study. The study design is an observational study. The patients were seen between January and November 2016.

All patients reported with the complaint of "forgetting" either self-reported or expressed by their family members. All patients and their accompanying family members were interviewed for clinical evaluation by one of the authors (VC). However, no formal neuropsychological tests were conducted, as they are time consuming and expensive. Moreover, most families were not prepared to subject their relatives to these tests. All cases were discussed in a consensus meeting between the authors.

Dementia was diagnosed on the basis of a significant impairment in both cognitive function as well as in routine everyday activities [7]. Most patients underwent blood tests including complete blood count, lipid profile, thyroid function tests, vitamin B and D, and folate level. Additionally, all patients were subjected to brain MRI which were interpreted in consultation with neuroradiologists, at either Paras Hospital or Primus Hospital.

The various types of dementia were diagnosed on the basis of established, and accepted, medical criteria: AD [7], Lewy body dementia (LBD) [8], frontotemporal lobar degeneration (FTLD) [9],

vascular dementia (VaD) [10], mild cognitive impairment (MCI) [11], and depression [12].

RESULTS

The distribution of the types of dementia in the first 100 patients seen at the Dementia clinic is shown in Table 1.

Only 13% of the patients were diagnosed as having AD. All these cases were in the age category 60 years and over, and the gender distribution among them was approximately equal. This distribution may change when MCI cases and the miscellaneous category of cases evolve and progress to another diagnosis.

LBD (22%) constituted the largest number of cases in this sample. These patients were over 60 years of age and their gender representation was approximately equal.

There were only 5% of cases with FTLD, with approximately equal gender distribution, but the numbers were too small for a meaningful interpretation.

There were eight cases of VaD, and the majority of them were males in the age group 50 and over.

Depression was the second most common cause of memory loss, and was found even in those who were younger than 60 years. Contrary to general belief, there were more males than females with depression.

MCI was the third most common cause for seeking medical attention. This impairment was more common in those over 70 years of age, though there were some who were younger. We also found that the gender distribution between them was more or less the same.

The miscellaneous conditions included a diverse range of diagnoses including phobia of dementia, dementia secondary to a medical illness, dementia due to normal pressure hydrocephalus, dementia with Parkinson's disease, and post-traumatic dementia.

DISCUSSION

There are some surprising findings in the analysis of cases from the Dementia clinic. While AD is reported to be the most common cause of degenerative dementia globally [13], in this series, LBD exceeds AD.

Globally LBD is the second most common variety of degenerative dementia after AD [8]. Its progress is slow, with daily fluctuations, and is accompanied by vivid visual hallucinations and Parkinsonian features. Clinically, it has been observed that this condition, particularly the hallucinations, respond well to memantine (an NMDA receptor antagonist). Memantine is not very effective in enhancing cognitive function in other cases of dementia.

The concept and characteristics of FTLD have evolved in the last few decades since being termed as Pick's disease in which there was significant atrophy (as seen on CT scans of the brain) in the frontal lobe. The specific pathology is Pick bodies which are abnormal collections of tau protein. The current understanding of FTLD includes diverse clinical syndromes including behavioral variants with or without motor neuron disease, primary progressive aphasia, progressive supranuclear palsy, and corticobasal syndrome [9]. In Western populations, it is the most common case of dementia in those younger than 65 [14]. In the Caucasian population, 30 to 50% of the patients have a positive family history [15]. FTLD is reportedly less common among the Asian populations as a cause of dementia in the young, and stands third after AD and VaD [16]. The proportion of those among this group with a positive family history ranges between 9.5 to 20% [17].

In this series, VaD due to large vessel or small vessel disease is not as common as expected, given the increasing incidence of stroke in India. The four common risk factors for cerebro-vascular disease (diabetes, hypertension, tobacco use, and obesity with corresponding hypercholesterolemia) are rampant and increasing in South-East Asia [18]. Yet not many cases of CVD report to hospitals; perhaps mortality is high outside the hospital.

Depression is a common cause of "memory loss" in this series. This may be due to older people living alone and away from their children who are often abroad. This has had a severe impact on the traditional caring system where the joint family featured prominently. The contribution of depression to disability adjusted life-years, which combines the number of years lived with disability (i.e. in less than optimum health) and the years of life lost due to premature death are greater than any other mental disorder [19]. It is also reported to be an under-diagnosed condition with patients presenting with other psychosomatic symptoms such as "forgetting". It is also an undertreated condition with most patients (as in this series) refusing treatment or being referred to a psychiatrist.

MCI causes cognitive changes that are serious enough to be noticed by the individuals experiencing them and or by their family members. Yet these changes are not severe enough to interfere with routine life or independent functioning. The number of cases of MCI in this series suggests that patients are seeking help quite early in the disease process. There may be more awareness of dementia among families who have seen cases of this kind in other family members or neighbors.

It should be noted that the differential diagnosis of the types of dementia done here was clinical. They were not based on sophisticated laboratory or radiological tests as these are unaffordable to most in a less resourced country where medical expenses are paid out of pocket. Consequently, no tests, such as amyloid imaging (not available in India as yet) or fMRI were done.

This study is the first, largest, and only case series examining the distribution of types of dementia seen in a Dementia clinic.

Other studies [20] generally deal with population-based studies of the prevalence of all dementias, with small number of subjects. They are conducted for awareness generation and planning.

Some of the studies have examined the sub-types of dementia among all cases identified. Generally, the sub-types identified are AD [3] and in one study [21], vascular dementia was analyzed separately. The numbers of cases in all these studies have been small.

The objective of this study (to study the sub-types of dementia in a clinical series) is different from the population-based studies of the prevalence of dementia.

There is limited information on risk factors for dementias in the cases studied. Cost is a major consideration among families of patients, many of whom have given up their jobs or are paying substantial sums of money for caregivers. Therefore, our established style of practice in the Dementia clinic is to recommend those tests which help us make a diagnosis (MRI brain). Other tests such as blood sugar and vitamin levels are available in most patients but not for the entire sample, thus meaningful analysis is not possible.

Also, the best known risk/protective factor, educational level, cannot be assessed in a structured manner, particularly in older patients who have been farmers or housewives. Thus asking a patient the number of grades of education would not apply.

Tests of research interest (APOE4) are not recommended.

The distribution of dementia types in this series, although small, and from one clinic, is surprising. Why LBD cases should out-number cases of AD remains unknown. One possible explanation could be the variation in genetic makeup of the Indian population which are widely known. For example, N-acetyltransferase 2 gene polymorphism as a predisposing factor for phenytoin toxicity in the Indian population [22], HLA-B 1502 allele and its role in carbamazepine toxicity in Indians and other Asian communities [23], and more recently the association of HLA with oxcarbazepine-induced toxicity in Asians [24] are well documented. The role of APOE4 in AD is also established and its distribution is similar between the Indian and US populations. However, the prevalence of dementia is lower in India compared to the USA [25]. Not much is known yet about the genetic abnormalities in LBD. Perhaps when the genetic markers in LBD are identified and extensively available in genetic laboratories, this could shed light on this difference.

Conclusion

This study suggests a different distribution of types of dementia in the cases seen in one clinic. This finding, if verified in population-wide studies in India and other Asian countries, would be important for two reasons: 1) Clinicians should be aware of the criteria for LBD and its positive and negative clinical aspects; and 2) Genetic researchers should attempt to identify the genetic variation in LBD, first in clinical series, then in populations both Asian and Caucasian.

With limited population-based or large clinical series data on dementia (other than extrapolation) from India, South-East Asia, and other less resourced countries, these data could be considered as a start. It may encourage other investigators from these countries to report their findings. It is only then that the picture of the global distribution of the types of dementias will emerge, filling the void which currently exists.

Whatever the short comings of the study design, perhaps local practitioners will be more aware of the types of dementia reported. In future, larger series would either confirm or refute these results.

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