PROFILE OF DEMENTIA IN A NIGERIAN COMMUNITY–TYPES, PATTERN OF IMPAIRMENT, AND SEVERITY RATING

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Out of 2494 subjects screened in a Nigerian community, 28 patients with dementia were identified . Alzheimer's disease was diagnosed in 18 patients (64.3%), 16 of whom had probable Alzheimer's disease. Eight patients (28.6%) had vascular dementia while one patient each had parkinsonism with dementia and depression with dementia. Patients with Alzheimer's disease were significantly older, predominantly females and illiterates. Cognitive deficit commonly took the form of memory and judgment impairment while financial mismanagement was the most frequent impaired activity of daily living. More than half of the cases had mild disease on severity rating and were comprised mainly of Alzheimer's disease subjects. These results confirm the higher frequency of Alzheimer's disease over the other types as reported in other communities. (J Natl Med Assoc. 1997;89:392-396.)

Key words: dementia ◆ Alzheimer's disease ◆ impairment ◆ severity

Information on dementia in the elderly (>65 years old) is scanty in black Africa.[1] There is an impression that primary degenerative dementia is uncommon in most African communities based on studies in Nigeria and Ethiopia.[2-4] In a hospital-based study in Nigeria, vascular dementia appeared to predominate.[5] The extent of case ascertainment as well as the size and age distribution of the population studied are some of the factors that can affect comparability of results between studies. In one community-based study of dementia in Nigeria involving 932 predominantly younger subjects, no cases of dementia (according to the *Diagnostic and Statistical Manual for Mental Disorders-III-R* [*DSM-III-R*] criteria) were encountered as only 31% of the subjects were >65 years.[2]

The Ibadan-Indianapolis research on dementia in the elderly, funded by the National Institutes of Aging, was initiated to carry out cross-cultural studies on Nigerians and African Americans. The basis of this was to compare people of similar genetic heritage but living in different environments to determine the prevalence rates accurately using the same methodology and subsequently to tease out the putative etiologic factors. This article highlights the demographic features and pattern of impairment of the prevalent cases in the Nigerian community.

METHODOLOGY

This two-stage door-to-door community survey took place in the Idikan area (North-West 3, North-

West 2, and North-West 1 wards) of Ibadan city between May 1, 1992 and March 31, 1994. A total of 3489 households in the study area were enlisted, and from these, 2494 individuals who were >65 years and who consented to take part in the study were screened consecutively for dementia. Forty-one (1.6%) subjects did not participate either due to refusal or severe illness.

First Stage Assessment

Screening interviews were conducted in the community by trained interviewers who administered the Community Screening Instrument for Dementia (CSI-D) to the subjects and also interviewed the relatives. Details of the development, harmonization, and psychometric properties of the CSI-D have been described elsewhere.[6,7] From each interview data, a cognitive score that reflected the cognitive ability and a relative score that assessed the subject's performance in activities of daily living were derived. The scores of all subjects underwent discriminant function analyses (DFS), and the subjects were divided into three groups:
- those with good scores (DFS<.120 or cognitive score >29.5),
- those with intermediate scores (ie, DFS between 0.12 and 0.184 or cognitive score >28.5 and ≤29.5), and
- those who performed poorly (DFS ≥0.184 and cognitive score ≤28.5).

Earlier studies on dementia using the CSI-D had revealed a sensitivity of 100% and specificity of 79% for detecting dementia with these DFS ranges.[6]

Second Stage/Clinical Assessment

All subjects with poor performance were invited for clinical assessment as well as 50% of those with intermediate scores. For subjects with good scores, 5% of them were invited, but the selection was weighted to contain 75% of subjects >75 years. These criteria were used so as to increase the chance of getting demented cases and to increase the chance of examining older subjects.

The clinical assessment included physical and neurological examination in addition to a review of the history. The assessment followed the pattern of the Consortium to Establish a Registry for Alzheimer's Disease (CERAD) neuropsychological test battery[8] and was carried out by neurologists and psychiatrists in the research team. The assessing physician did not know the screening category

(DFS score) of the subject.

The historical aspect had four components:
- a review of the subject's cognitive function (ie, memory, language, judgment, and interpersonal relationships),
- a review of the subject's performance in activities of daily living (ie, chores, social activities, handling finances, and personal hygiene),
- a review of the subject's past medical history, and
- a check-list review of the possible causes of the dementia.

Information on the mode of onset, pattern of progression, and disease duration was obtained whenever disability was documented. The findings on physical examination were combined with the historical inventory to arrive at the most likely diagnosis. The diagnosis then was confirmed through relevant ancillary investigations (brain CT scans, hematologic profile, serum chemistry, and thyroid hormones).

A subject was considered to have impaired activities of daily living if the interviewed family member reported that the subject had difficulty in personally handling any, some, or all of the following: finances, usual household chores, usual social activities, and toileting in the absence of other physical disability. For the diagnosis of dementia, subjects had to meet both the DSM-III-R[7] and ICD-10 criteria.[9,10] The demented subjects were categorized using ICD-10 guidelines for vascular dementia and the other types. For the Alzheimer's disease cases, National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (NINCDS-ADRDA)[11] criteria were used for subtype diagnoses. The severity of dementia was graded as mild, moderate, or severe using DSM-III-R,[9] ICD-10,[10] and clinical dementia ratings.[12]

The final diagnoses were made at group meetings during which there had to be consensus on each case. Inter-site review of data was made by investigators from Indianapolis to ensure consistency and agreement in diagnoses. The World Health Organization-Age Associated Dementia inter-rater reliability study on the diagnosis of dementia syndrome, subtypes, and grading used these same diagnostic criteria.[13]

Data Analysis

Frequency counts were used for all the variables. Demographic features and patterns of impairment

Table. Presenting Features and Pattern of Impairment According to Dementia Classification

Features	No. (%) Alzheimer's Disease	No. (%) Non-Alzheimer's Disease		
		Vascular	Others	Total
Demographic				
Total no.	18	8	2	28
Mean age (years)	82.6	77.4	80.0	81.0
Standard deviation	9.2	11.2	10.0	9.9
Sex (males:females)	2:16	6:2	0:2	8:20
Literate	1 (5.6)	3 (37.5)	—	4 (14.3)
Cognitive Impairment				
Memory deficit	17 (94.4)	6 (75.0)	2 (100)	25 (89.3)
Judgment impaired	16 (88.9)	6 (75.0)	2 (100)	24 (85.7)
Language problem	9 (50.0)	6 (75.0)	1 (50.0)	16 (57.1)
Personality change	6 (33.3)	3 (37.5)	1 (50.0)	10 (35.7)
Impaired Activities of Daily Living				
Finances	11 (61.1)	5 (62.5)	2 (100)	18 (64.3)
Social	8 (44.4)	7 (87.5)	2 (100)	17 (60.7)
Chores	9 (50.0)	6 (75.0)	2 (100)	14 (60.7)
Personal hygiene	3 (16.7)	6 (75)	1 (50.0)	10 (35.7)
Clinical Dementia Rating[11]				
0.5 to 1.0 (mild)	14 (77.8)	1 (12.5)	1 (50)	16 (57.1)
2.0 (moderate)	2 (11.1)	4 (50.0)	1 (50.0)	7 (25.0)
3.0 (severe)	2 (11.1)	3 (37.5)	—	5 (17.9)

were compared in the Alzheimer's disease and vascular dementia cases. The two subjects with the other dementia subtypes were excluded from analysis. Student's t test was used to compare mean ages, and tests of proportions (z test) were done whenever indicated. Probability value <.05 was considered statistically significant.

RESULTS

A total of 28 subjects were diagnosed as demented. They were comprised of 20 females and 8 males with a male:female ratio of 1:2.5. Their ages ranged from 68 to 100 years (mean: 81 years [standard deviation=9.9 years]). Four of the demented subjects (14.3%) were educated (the literacy rate in the whole population was 15.2%). Eighteen subjects (64.3%) fulfilled the criteria for Alzheimer's disease, 16 of whom were diagnosed as probable Alzheimer's disease. Eight of the remaining 10 subjects had vascular dementia (28.6%). Dementia with depression was diagnosed in a blind subject, and the last subject had parkinsonism with dementia. None of the subjects had thyroid disorder, deafness, diabetes mellitus,

hematologic disorder, or congestive cardiac or respiratory failure.

The Table lists the features encountered in the subjects according to the type of dementia. The subjects with Alzheimer's disease were significantly older than those with vascular dementia (Student's t test=2.67; $P<.001$), while the vascular dementia group was comprised of almost all males and had a higher proportion of educated subjects ($P<.01$).

Memory loss was the most common cognitive deficit and was more frequent in the Alzheimer's disease cases (94%). Personality change was the least frequent of the disturbed higher mental functions in all the groups. Problem with handling finances was the most common activities of daily living disturbance in the study subjects. It took various forms such as failure of recognition of the usual currency and its value, giving the wrong change during transactions, and one subject actually set money on fire. The proportion of subjects manifesting this deficit was similar in the Alzheimer's disease and vascular dementia cases. Subjects with vascular dementia had more impair-

ment in social activities, chores, and personal hygiene (Table).

The dementia was rated as mild in 16 subjects (57%). The majority of the subjects in this category had Alzheimer's disease, whereas vascular dementia cases predominated in those more severely affected.

DISCUSSION

Dementia is the most devastating of all conditions that affect the elderly worldwide. Developing countries need to show concern because of the rising proportion of the elderly in their population. This was the first study using validated, universally accepted, and standardized test batteries to determine the burden of dementia in subjects >65 years in black Africa. The results therefore should afford better comparison with data from western countries in addition to serving as a basis for observing time trends. An interaction of aging, genetic susceptibility, and environmental factors appears to be important in the causation of Alzheimer's disease which is the most severe type of dementia.

The strength of our design lies in the fact that the role of the environment could be properly investigated through studying people of the same ethnic origin (ie, African Americans and Nigerian Africans) living in different environments and at different levels of social, economic, and technological development. The computed prevalence rate of dementia in the Nigerian community was 2.29% (95% confidence interval [CI]=1.17% to 3.41%), and was significantly lower than the prevalence rate of 4.82% (95% CI=3.66% to 5.99%) in the African-American community.[6]

These results showed that Alzheimer's disease existed in a Nigerian community contrary to reports from previous studies.[2,3] The presence of Alzheimer's disease cases corroborates the findings from neuropathologic studies that showed that βA_4 amyloid, a pathological hallmark of Alzheimer's disease, was deposited in the brains of elderly Nigerians.[14] It would have been most surprising if the clinical manifestation was silent in Nigerians, more so in this large population of subjects >65 years. Probable Alzheimer's disease was the most common type of dementia in this community, accounting for about 57% of the cases. This is within the usual range of 50% to 60% for Alzheimer's disease in most studies. However, the frequency of 28.6% for vascular dementia was slightly higher than the often quoted 10% to 20% in other studies.[15-18]

A sex predilection was observed in the demented subjects, with Alzheimer's disease diagnosed more frequently in the female subjects. The result in this regard agrees with the observation of Schoenberg et al,[18] who reported that chronic progressive dementia, presumably Alzheimer's disease, was more common in females than in males in Copiah County, Mississippi. However, this sex predilection is not universal as some workers failed to report this.[7] The fact that men are probably at greater risk of stroke than women[19] could account for the higher frequency of vascular dementia in our male subjects. Women, in general, tend to live longer than men, and therefore, could be at a higher risk for developing Alzheimer's disease since it is an age-associated disorder.

It is difficult to comment on any possible association between illiteracy and dementia from this study because of the high illiteracy rate in the community. However, an association between limited education and the development of Alzheimer's disease was reported in the African Americans[20] we studied concurrently, and many other studies also have reported such an association.[1,4,18]

The patterns of impairment in cognitive ability and activities of daily living suggest that progressive memory lapses, impaired judgment, and financial mismanagement occur more frequently in Alzheimer's disease subjects. The greater functional and social impairment in our vascular dementia cases probably was related to the additional physical disability caused by their previous strokes. However, the progressive loss of brain function that is associated with the development of dementia would have contributed adversely to this. Also supportive of this is the fact that these subjects had more severe dementia rating.

Our subjects with Alzheimer's disease predominantly had mild disease on severity rating, hence, frequencies of language problems, personality change, difficulties with handling chores, and toileting were less. Longitudinal studies will be required to determine the rate of progression and prognosis in these cases.

CONCLUSIONS

This study confirms that Alzheimer's disease is the most common type of dementia in this community, similar to the findings from other studies in western countries. The subjects with Alzheimer's disease were older with a suggestion of female predilection. The pattern of functional impairment

peculiar to these patients was documented and could prove useful for comparison of results from other communities in Africa. Longitudinal studies on time trends, prognosis, and the putative risk factors are essential for detailed information on dementia, which is relatively understudied in African countries.

Acknowledgments

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