

NEUROEPIDEMIOLOGY OF VASCULAR AND ALZHEIMER'S DEMENTIA AMONG AFRICAN-AMERICAN WOMEN

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To better understand risk factors for Alzheimer's disease and vascular dementia, demographic, medical, and other epidemiological factors were compared for 83 African-American women with Alzheimer's disease and 46 with vascular dementia. Overall, the risk-factor profiles for Alzheimer's disease and vascular dementia were similar to those in other studies. However, Alzheimer's patients had a high frequency of hypertension and a relatively high frequency of diabetes mellitus. The presence of such risk factors raises the possibility that there is a vascular component to the dementia in these African-American women with Alzheimer's disease. Neuropathological studies are needed to help answer this question. (*J Natl Med Assoc.* 1995;87:741-745.)

Key Words • African-American women • dementia
• Alzheimer's disease • vascular dementia

Women in most developed countries outlive men by 5 to 9 years.¹ Women have lower mortality than men in

every age group and for most causes of death. Female life expectancy now exceeds 80 years in many countries, and elderly women outnumber elderly men by two to one in some nations. This unprecedented growth of elderly women has brought about a larger population at risk for dementia.

The number of black Americans over the age of 65 is growing substantially faster than the number of white Americans, and the number of black women seems to be increasing at the fastest relative rate.^{2,3} By the year 2000, it is estimated that there will be a 68% increase in African-American women ≥ 65 years compared with only a 38% increase for white women of comparable age, and a 62% increase in African-American women ≥ 85 years compared with a 39% increase for white women ≥ 85 years.⁴ To better understand antecedent factors for Alzheimer's disease and vascular dementia among African-American women, demographic, medical, and other epidemiologic factors were compared as part of a hospital and outpatient referral-based study in Chicago, Illinois.

PATIENTS AND METHODS

Patients

A total of 264 African Americans were enrolled in the study between September 1991 and September 1992. Eighty-three women were diagnosed with Alzheimer's disease and 46 with vascular dementia. Alzheimer's disease patients were referred from the Rush Alzheimer Disease Center, and vascular dementia patients were referred from the Rush Stroke Service or from a previously described, hospital-based vascular dementia case-control study.⁵ Inclusion and exclusion criteria and study methods are detailed elsewhere.⁶

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TABLE 1. DEMOGRAPHIC AND BACKGROUND VARIABLES AMONG AFRICAN-AMERICAN WOMEN WITH ALZHEIMER'S DISEASE AND VASCULAR DEMENTIA

Variable	No. of Patients (%)	
	Alzheimer's Disease*	Vascular Dementia†
Rural background	34 (41)	19 (41)
Retired	73 (88)	35 (76)
Widowed	58 (70)	32 (70)
Protestant	70 (84)	41 (89)
Medicare	74 (89)	43 (93)

*n=83.

†n=46.

Study Instruments

All patients underwent formal neuropsychological testing that was patterned after the Consortium to Establish a Registry for Alzheimer's Disease (CERAD) neuropsychological assessment⁷; epidemiologic interviews to ascertain demographic information, medical history, and risk factors^{5,8,9}; a neurological examination^{10,11}; and assessment of activities of daily living and dementia severity.^{10,12} Computed tomography (CT) and magnetic resonance imaging (MRI) scans were studied using the CERAD protocol for neuroimaging.¹³

Diagnosis of Alzheimer's Disease and Vascular Dementia

The diagnosis of Alzheimer's disease and vascular dementia was established according to history of cognitive dysfunction, neuropsychological test results, and CT or MRI findings. Alzheimer's patients had a history of insidious loss of cognitive dysfunction, including memory, and neuroimaging and neuropsychological profiles consistent with Alzheimer's disease.⁹ Vascular dementia patients had a history of loss of cognitive function temporally related both to stroke and neuropsychological and neuroimaging profiles consistent with vascular dementia.¹⁴ A detailed review of the criteria used to establish the diagnosis of dementia, Alzheimer's disease, and vascular dementia can be found elsewhere.⁶

Statistical Methods

Categorical variables were displayed as percentages and continuous variables as mean standard deviation.¹² Unadjusted comparisons were done with the chi-square test and the Fisher's exact test (two-tailed) for binary variables as appropriate, and the *t*-test was used for continuous variables.

RESULTS

Demographic and Background Variables

Demographic and background profiles were similar among Alzheimer's disease and vascular dementia patients (Table 1). Most were retired, widowed, Protestant, and had Medicare. Many were from the rural South. Alzheimer's patients were older (77 ± 11.3 years versus 72.3 ± 9.7 years; $P < .05$), but there was no statistically significant difference in mean years of education between Alzheimer's disease and vascular dementia patients (9 ± 4.2 years versus 9.6 ± 4.2 years). The number of years of education for Alzheimer's patients was 9 ± 4.2 versus 9.6 ± 4.2 for vascular dementia patients.

Medical History and Related Variables

Vascular dementia patients had a higher frequency of cardiovascular disease risk factors such as hypertension, diabetes mellitus, myocardial infarction, and atrial fibrillation (Table 2). Of note is the high frequency of hypertension (53%) and the relatively high frequency of diabetes mellitus (14%) among the Alzheimer's patients. History of epilepsy and frequency of medications prescribed by a doctor were also higher among vascular dementia patients, while a history of hip fracture was more common among Alzheimer's patients. Although not statistically significant, a trend existed for a more frequent history of head injury with loss of consciousness and a family history of Alzheimer's disease, Parkinson's disease, or dementia among Alzheimer's disease cases. Family history of stroke was more common among vascular dementia patients but also existed among our Alzheimer's disease patients. This is to be expected as stroke risk is high among African Americans.

Physical, Functional, and Related Variables

Overall, vascular dementia patients more frequently had focal neurological impairments, impairments of gait and posture (Table 3), higher systolic and diastolic blood pressures, higher Hachinski Scores, fewer errors on the Blessed Memory-Information-Concentration Test, and lower scores on the Barthel Activities of Daily Living assessment (Table 4). Although not depicted in Table 4, vascular dementia patients generally scored better than Alzheimer's patients on assessment of instrumental activities of daily living.

DISCUSSION

The growing awareness about the importance of women's health issues coupled with recent women's

TABLE 2. MEDICAL HISTORY AND RELATED VARIABLES AMONG AFRICAN-AMERICAN WOMEN WITH ALZHEIMER'S DISEASE AND VASCULAR DEMENTIA

Variable	No. of Patients (%)		
	Alzheimer's Disease*	Vascular Dementia†	P Value
Hypertension	44(53)	39(85)	<.05
Diabetes mellitus	12(14)	16(35)	<.05
Myocardial infarction	4(5)	7(15)	<.05
Atrial fibrillation	2(2)	7(15)	<.05
Hip fracture	7(8)	0(0)	<.05
Epilepsy	4(5)	8(17)	<.05
Prescription medication	60(72)	42(91)	<.05
Head injury with loss of consciousness	9(11)	3(7)	NS
Family history			
Stroke	35(42)	24(52)	NS
Alzheimer's disease, Parkinson's, or dementia	21(25)	6(13)	NS

Abbreviations: NS = not significant.

*n = 83.

†n = 46.

TABLE 3. IMPAIRED PHYSICAL, FUNCTIONAL, AND RELATED VARIABLES AMONG AFRICAN-AMERICAN WOMEN WITH ALZHEIMER'S DISEASE AND VASCULAR DEMENTIA

Variable	No. of Patients (%)		
	Alzheimer's Disease*	Vascular Dementia†	P Value
Swallowing	1(1)	11(24)	<.05
Extraocular muscles	1(1)	0(0)	NS
Sensory examination	0(0)	6(13)	<.05
Visual fields	4(5)	12(26)	<.05
Speech (dysarthria)	4(5)	17(37)	<.05
Gait and posture	22(27)	29(63)	<.05

Abbreviations: NS = not significant.

*n = 83.

†n = 46.

health-care initiatives have been an outgrowth of our relative lack of understanding of antecedents and treatments for medical problems that affect women, the more prominent political and social presence that has been attained by women, and the awareness of underrepresentation of women and minorities in clinical research.¹⁵ The lack of representation of minorities in clinical research is a major focus of concern, both because minorities often suffer a disproportionate burden of disease,^{16,17} and because the minority elderly are growing substantially in numbers.^{2,3} A better understanding of women's and minority-related health will allow us to properly plan for future allocation of health-care resources.

Our study is unique in that it focuses solely on African Americans. African-American women comprised a large percentage of our overall study group; 73% of the Alzheimer's disease patients and 58% of the vascular dementia patients were African American. The African-American women in this study generally were retired, widowed, Protestant, and had medical insurance; many were born in the rural South. Their risk-factor profiles were similar to those reported in other studies of Alzheimer's disease¹⁸⁻²⁰ and vascular dementia,^{5,21,22} in that the Alzheimer's patients were older and the vascular dementia patients had a preponderance of cardiovascular disease risk factors and focal neurologic deficits. There

TABLE 4. MEAN BLOOD PRESSURE MEASUREMENTS AND PSYCHOLOGICAL TEST SCORES AMONG AFRICAN-AMERICAN WOMEN WITH ALZHEIMER'S DISEASE AND VASCULAR DEMENTIA*

Variable	Alzheimer's Disease†	Vascular Dementia‡	P Value
Blood pressure (mm Hg)			
Systolic	133 ± 22.1	144.8 ± 21.2	<.05
Diastolic	76 ± 11.7	83 ± 14.7	<.05
Psychological test scores			
Barthel Activities of Daily Living	5.3 ± 20.1	75.2 ± 26.2	<.05
Blessed Memory, Information, Concentration (errors)	20.6 ± 7.3	11.3 ± 8.1	<.05
Hachinski score	2.4 ± 2	11.4 ± 2.2	NS

Abbreviations: NS = not significant.
 *Given as mean ± standard deviation.
 †n = 83.
 ‡n = 46.

was also a trend for family history of Alzheimer's, Parkinson's, and dementia among the Alzheimer's patients. Family history of stroke was frequent among the vascular dementia patients and also was common among the Alzheimer's patients. This is to be expected as stroke risk is high among African Americans.

Of note was the high frequency of hypertension among Alzheimer's cases and the relatively high frequency of diabetes mellitus. Such factors place an individual at risk for stroke and raise the possibility that there is a vascular component to the dementia in these Alzheimer's patients.²³ Further clinical and neuropathologic studies are needed to help answer this question.

This study must be interpreted within the context of possible study limitations. First, the referral patients may not be representative of elderly African-American women with dementia in the community at large. Second, the clinical diagnoses were not validated by neuropathological study, and it is possible that some cases were misclassified. Third, there is limited information about the validity and reliability of neuropsychological test instruments in African Americans. Fourth, multiple statistical comparisons raise the potential problem of showing falsely significant differences.

CONCLUSION

Targeted epidemiologic studies of women and minorities will play an important role in our understanding of risk factors for dementia and other major causes of morbidity and mortality in the elderly. The growing numbers of women and minorities have mandated the need for such studies.

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Stanley Spencer had a stroke. It came from high blood pressure.

If only he had listened to his doctor.

Now he can't even talk to him.

Stanley Spencer's stroke didn't have to happen.
He should have taken his medicine, and stayed on his diet.
If you have high blood pressure, listen to the doctor.

It's your health. It's your life. It's your move.

The National High Blood Pressure Education Program
The National Heart, Lung, and Blood Institute; National Institutes of Health; Public Health Service; U.S. Department of Health and Human Services.

