

Aggression in Individuals Newly Diagnosed With Dementia

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Aggression is often associated with dementia. In this study, aggression in veterans newly diagnosed with dementia was examined and characterized. Participants were ≥ 60 years diagnosed with dementia at the Michael E. DeBakey Veterans Affairs Medical Center in Houston, Texas, from 2001 to 2004. Aggression was defined as a positive caregiver response to 1 or more of 3 probes from the Ryden Aggression Scale, administered during a telephone screen. Of 1276 contacts, 385 (30%) were eligible and agreed to

participate; at initial screening, 75 (19.5%) were aggressive (23 [31%] verbally, 9 [12%] physically, 24 [32%] verbally and physically, and 19 [25%] with unspecified aggression). The surprisingly high prevalence of aggression in individuals newly diagnosed with dementia suggests the potential usefulness of early screening for aggression in this population.

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Aggressive behavior is common in persons with dementia. Although estimates vary, one large study of community-dwelling elders reported aggression in 23.7% of those with dementia.¹ Aggression results in many negative consequences,

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including referral to specialist services,² residential institutionalization,³ prescription of antipsychotic medications or use of physical restraints,⁴ greater health care costs, increased caregiver burden, and poor prognosis.^{5,6} Common aggressive behaviors among this population include biting, grabbing, kicking, spitting, pushing, hitting, scratching, cursing, yelling, and throwing objects. In addition to posing a danger to patients themselves, these behaviors are also a threat to family and caregivers.

Many factors have been associated with aggression in patients with dementia. These include depression,^{4,7} male sex⁷ and/or testosterone levels,⁸ impaired communication,⁴ psychoses,^{7,9} disorientation (with verbal aggression),⁴ situations involving personal care,¹⁰ neuropathologic correlates,¹¹⁻¹³ low serotonin levels,¹⁴ levels of 5-hydroxytryptamine and acetylcholine,² genetic risk factors,^{15,16} comorbid psychological conditions,¹⁷ pain,¹⁸ environmental factors,¹⁹ a high degree of dependency,²⁰ and interaction of multiple factors.²¹

It is well established that aggression increases with severity of dementia, but few studies have looked at aggression in community-dwelling patients newly diagnosed with dementia. The purpose of this

study was to document the prevalence and correlate the aggressive behavior in a sample of newly diagnosed patients at a large Veterans Administration (VA) Medical Center. To our knowledge, this is the only nonspecialty clinic-based study examining and characterizing the aggressive behavior in individuals newly diagnosed with dementia.

Methods

To be eligible to participate in this retrospective study that took place from September 5, 2003, to June 10, 2005, patients had to be veterans at least 60 years of age who had been diagnosed with dementia at the Michael E. DeBakey VA Medical Center (MEDVAMC) in Houston, Texas. Potential participants were identified from 2001 to 2004 VA outpatient data files stored at the Austin Automation Center in Austin, Texas. Patients who had received an initial outpatient *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* code for dementia (code 290.XX, 291.2, 292.82, 294.1, 294.8 or 331.0) within the past 12 months and who had no dementia codes recorded in the preceding 2 years were identified as having new-onset dementia. In addition, public service announcements disseminated through veteran service organizations were used to attract additional volunteers; and all primary care physicians at the hospital were invited to recruit patients. Exclusion criteria included receiving a diagnosis of dementia for more than 1 year before screening, living alone, living in a nursing home, or having a caregiver for less than 8 h/wk.

As approved by the local institutional review board, eligible subjects received a letter of notification that research staff would contact them unless they opted-out by calling (to decline participation in the study). Initial telephone screening occurred after a 10-day waiting period. The screening included confirmation of age, date of dementia diagnosis, status as community dwelling, and presence of caregiver, in addition to screening for aggression. Diagnoses of dementia were confirmed through medical records and caregiver report.

Aggression was defined as a positive caregiver response to 1 or more of 3 probes taken from the Ryden Aggression Scale,²² an instrument reported to have an α coefficient of 0.91 and a test-retest reliability of 0.86. These 3 questions concerned the following:

1. Any deliberately unfriendly or violent behavior that was not provoked, including hitting, pushing and/or throwing things, cursing a person, calling people names, and using hostile and/or accusatory language.
2. Physical aggression, such as hitting, pushing, or throwing things, that caused physical injury to the patient, caregiver, or others.
3. Verbal aggression, such as making verbal threats to hurt people, cursing people, or accusing people of doing things they had or had not done, in a hostile manner.

Ethnicity was measured by direct patient report from the following options: Black or African American, Hispanic or Latino, White, and other (American Indian or Alaskan Native, Asian [non-Vietnamese], Native Hawaiian or Pacific Islander, and Vietnamese).

Psychiatric diagnoses were defined by the following ICD-9 codes. For psychotic disorders: 290.12, 290.20, 290.30, 290.42, 290.8, 290.9, 291.0, 291.3, 291.9, 293.0-293.82, 293.85-293.9, 295.0-295.9, 297.0-297.9, 298.3-298.9; depressive (affective) disorders: 290.13, 290.21, 290.43, 293.83, 296.0-296.99, 300.4, 309.0, 309.1, 311.0; and anxiety disorders: 293.84, 293.89, 300.00-300.09, 300.20-300.29, 300.3, 308.3, 309.24, 309.81.

Medical comorbidity was calculated using the Deyosum method developed by Richard Deyo.²³ The Deyosum is a particular method for calculating a comorbidity index value derived from the Charlson method,²⁴ in which any given condition defined by ICD-9 codes receives a weight determined by the severity of the condition. The sum of the weighted values for each comorbid condition for each individual is the resulting score. The use of a comorbidity index has been shown to be both valid and reliable.²⁴

Use of health services was calculated for inpatient and outpatient neurology, mental health, and medical or surgical visits for each individual, as recorded in the VA Administrative Database. Inpatient information was gathered from the bed-section variable, whereas the clinic-stop variable was used to gather outpatient information. In both cases, the dates of each visit were checked to ensure that the visits occurred in the year prior to the screening date.

We used χ^2 tests and Kruskal-Wallis rank-order analyses to test the associations between aggression and our categorical and continuous measures, respectively. The Deyosum score for medical comorbidity was analyzed using a *t* test. Statistical Analysis

Table 1. Demographic Characterization of Sample

	Total ^a	Nonaggressive	Aggressive	P Value
Sex				
Male	383	308	75	1.0
Female	2	2	0	
Age				
≤75 y	167	132	35	.63
>75 y	211	171	40	
Marital status				
Married	290	237	53	.43
Not married	94	72	22	
Dementia type				
Alzheimer's	82	64	18	.59
Vascular	70	54	16	
Other	226	185	41	
Medical comorbidity (Deyosum score)		n = 303, 75.88	n = 75, 75.86	.137
Race				
African American	104	79	25	.005
Hispanic	23	13	10	
Caucasian	239	204	35	
Other	18	13	5	

^aTotals differ as complete data were not available for all patients.

Systems software (SAS Institute Inc, Carey, North Carolina) version 9.1 was used for all analyses.

Results

In total, 1276 subjects were identified for screening. Of these, 891 were ineligible for the following reasons: 121 called to opt out of the study, 9 had a caregiver that opted not to participate, 53 could not be reached, 55 were deceased, and 3 could not be traced. In addition, 29 patients who received a call refused screening; and 44 lived alone, 113 lived in a nursing home, and 17 had insufficient caregiver support. Finally, 27 were not veterans, 2 were younger than 60 years, 187 had no diagnosis of dementia, and 231 had a dementia diagnosis for more than 1 year. Consequently, the sample included 385 (30%) participants.

Of the 385 participants, 75 (19.5 %) were aggressive at the initial telephone screening. In all, 23 (31%) were verbally aggressive, 9 (12%) were physically aggressive, 24 (32%) were both verbally and physically aggressive, and 19 (25%) had unspecified aggressive behavior. Table 1 shows the demographic characteristics of participants with and without aggression. There were no differences in age, marital status, type of dementia, or medical

comorbidity. However, significantly more Hispanics (43%) had aggressive behavior than African Americans (24%) or Caucasians (14.6%; $P = .005$).

Table 2 shows the outpatient and the inpatient use of medical or surgical, neurological, and mental health services. In all, 20 patients had not received care at the MEDVAMC during the preceding year, so they were not included in this analysis. Overall, 29% (107 of 365) of participants had used medical or surgical outpatient clinics only; whereas 35% (128 of 365) had used mental health and medical or surgical clinics, 23% (83 of 365) had used medical or surgical and neurology clinics, and 13% (47 of 365) had used medical or surgical, mental health, and neurology clinics. No difference was found in outpatient use between aggressive and nonaggressive participants ($P = .471$).

In all, 23% percent (86 of 365) of participants had an inpatient admission during the year preceding screening, as follows: 16% (59 of 86) medical or surgical; 8% (7 of 86) mental health; 9% (8 of 86) neurology; 5% (4 of 86) medical or surgical and mental health; 8% (7 of 86) medical or surgical and neurology; and 1% (1 of 86) medical or surgical, mental health, and neurology. No difference in inpatient use was found between aggressive and nonaggressive participants ($P = .342$).

Table 2. Outpatient and Inpatient Service Utilization

	Total ^a	Nonaggressive	Aggressive	P Value
Outpatient services				
Med or surg only	107	83	24	0.471
Med or surg + MH	128	105	23	
Med or surg + neuro	83	68	15	
Med or surg + MH + neuro	47	34	13	
Inpatient services				
Med or surg only	59	46	13	0.342
MH only	7	4	3	
Neuro only	8	5	3	
Med or surg + MH	4	3	1	
Med or surg + neuro	7	6	1	
Med or surg + MH + neuro	1	0	1	

Abbreviations: Med or surg, medical or surgical clinics; MH, mental health clinics; neuro, neurology clinics.

^aTotals differ, as complete data were not available for all patients. In addition, only the 365 patients who had received care at the Michael E. DeBakey VA Medical Center during the year preceding screening were included in these totals.

Table 3. Comorbid Psychiatric Diagnoses

Disorders	Total ^a	Nonaggressive	Aggressive	P Value
Psychotic	107	81	26	0.530
Depressive	62	48	14	
Anxiety	6	4	2	
Psychotic + depressive	33	30	3	
Psychotic + anxiety	5	4	1	
Depressive + anxiety	16	12	4	
Psychotic + depressive + anxiety	16	12	4	
Total	245	191	54	

^aOnly the 365 patients who had received care at the Michael E. DeBakey VA Medical Center during the year preceding screening were included in these totals.

Dementia was not the only psychiatric diagnosis; 67% of participants (245 of 365) had a comorbid psychiatric diagnosis and 44% had a comorbid psychotic disorder. Other comorbid diagnoses included the following disorders: depressive (25%), anxiety (1.6%), psychotic + depressive (13.5%), psychotic + anxiety (2%), depressive + anxiety (6.5%), and psychotic + depressive + anxiety (6.5%). There were no differences in psychiatric comorbidity between aggressive and nonaggressive participants (Table 3; $P = .53$).

Discussion

We have documented the prevalence of aggressive behavior in a sample of VA patients newly diagnosed

with dementia; 20% of the participants exhibited aggressive behavior on initial screening. Lyketsos et al¹ reported the incidence of aggression in dementia to be 13% in mild stages, 23% in moderate stages, and 29% in severe stages. Our results are in accordance with these percentages; however, a rate of 20% is perhaps a little surprising in the newly diagnosed.

Several factors could account for our finding that 1 in 5 in this sample of patients newly diagnosed with dementia was aggressive. It could be that patients are not being diagnosed early in the course of their disease; however, given the reliance upon integrated care and referral to specialty clinics that characterize the VA system, this possibility seems somewhat unlikely. Another factor could be the predominance of men within the sample, which might predispose to increased tendency toward aggression. However, another possibility is that veterans as a group could have greater tendency to be aggressive than the usual community-dwelling patient.

Although we report that significantly more Hispanics were aggressive than African Americans and Caucasians, we previously found no differences between Caucasians and African Americans with dementia and behavioral symptoms.²⁵ To our knowledge, this is the first reported finding of a higher incidence of aggression in Hispanics; however, though the finding was significant, the number of Hispanics was so small in comparison with the number of Caucasians and African Americans that we cannot say with certainty whether this finding would be replicated in a larger group. We found no differences in other demographic variables, such as age, marital status, type of dementia, and medical comorbidity.

We report that 29% of the individuals with a new diagnosis of dementia used outpatient medical or surgical services only, whereas 71% of the individuals used a range of outpatient services, including neurology and/or mental health. This reflects a high percentage of patients using specialty clinics. One explanation might be that perhaps neurologists and mental health care providers diagnose and code dementia more frequently than other specialists. This finding might also be unique to the VA system, which emphasizes integrated care and referral to specialty clinics more frequently than community settings.

Although two-thirds of the participants had a comorbid psychiatric diagnosis in addition to dementia, we found no difference between those who were aggressive and those who were not aggressive, in contrast to the literature. In this study, most patients with a comorbid psychiatric diagnosis were being seen by mental health providers and treated for their comorbid psychiatric conditions, so their symptoms did not predispose them to aggression. However, given our sample and study design, it is impossible to distinguish whether aggression is caused primarily by psychiatric problems or whether it is secondary to dementia.

Our study is limited. In this study, we did not have a measure for severity of dementia, which would have provided more definite information about the stage of dementia; we studied a veteran sample predominately consisting of men; and we did not gather information regarding predementia rates of aggression in participants. In addition, our sample size was small for looking at service use. Further study is needed that includes a broader sample of subjects that is more inclusive of women and that provides a more precise diagnosis of dementia and measure of aggressive behavior.

Nevertheless, we hope that our finding of the prevalence of aggressive behavior in individuals newly diagnosed with dementia will suggest the usefulness of early screening for aggression in this population. Aggression in patients with dementia is an important precursor of institutionalization, and evidence suggests that some fairly simple nonpharmacological interventions for patients²⁶⁻²⁸ and caregivers^{29,30} appear promising for reducing aggression. Early identification of dyads requiring assistance in dealing with this aspect of dementia might facilitate care for these patients in the community setting and help them and their caregivers to more easily cope with this unfortunate but common neuropsychiatric symptom. Thus, we conclude that even

patients newly diagnosed with dementia would benefit from aggression screening.

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