

Dementia and Antisocial Behaviors

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Abstract

Background: As the Japanese society ages, the number of elderly people with dementia who commit criminal offenses is also increasing. Through a retrospective study of medical records, we investigated the relationship between dementia and antisocial behaviors in 239 outpatients who visited our psychiatric department during a 2-year period.

Methods: We examined the medical records of outpatients of St. Marianna School of Medicine Hospital from April 2015 until March 2017: 152 with AD dementia (AD or AD+Vascular Dementia [VaD]), 19 with non-AD dementia (VaD, Lewy Body Dementia [LBD], FTD, alcohol-related dementia, organic dementia) and 24 controls without dementia. We investigated the incidence of antisocial behaviors and Behavioral and Psychological Symptoms of Dementia (BPSDs). We then compared their age, sex, Hasegawa Dementia Scale-Revised (HDS-R) scores and the frequencies of antisocial behaviors and BPSDs using the chi-square test and analysis of variance.

Results: The frequency of antisocial behaviors among all dementia patients in our study was 6.4%, with no significant difference versus the controls. Analysis of variance revealed that the antisocial behavior, home invasion was significantly more common in the non-AD group (5.3%) than in the AD and control groups (both 0%, $p < 0.05$) and was significantly different between the AD and non-AD groups ($p < 0.05$).

Conclusion: We found a lower level of antisocial behaviors in people with dementia than reported in previous studies 7-9. The frequency of home invasion as an antisocial behavior and hallucinations and wandering as BPSDs was significantly higher in 1 patient with LBD (non-AD dementia). In this case, the hallucinations progressed to home invasion due to wandering. Antisocial behaviors with dementia mostly appear at the same time or after the development of BPSDs. Therefore, psychiatrists and caregivers should pay special attention to the treatment of BPSDs in patients with dementia to avoid the progression of these to antisocial behaviors.

Keywords: Antisocial; BPSD; Crime; Dementia; Elderly

Introduction

The prevalence of dementia is increasing as the elderly population grows worldwide. In 2012, Asada reported the prevalence of dementia to be 4.62 million, affecting about 1 in 7 elderly people [1]. In 2016, the Japanese Ministry of Health, Labour and Welfare estimated in the New Orange Plan that the number of elderly people with dementia will reach about 7 million in 2025 and that 1 in 5 elderly people will have dementia [2].

Related to this population aging, the proportion of arrests for penal code offenses over the last 20 years in Japan has significantly increased among elderly offenders while it has decreased among young offenders [3]. The number of arrests for theft, bodily injury and assault has been increasing among the elderly population but has remained the same for the population as a whole.

Japanese people generally believe that elderly people tend to be victims rather than perpetrators of crime, but cases involving elderly offenders have been described in the literature [4]. Saitou reported on newspaper coverage of elderly offenders, which included those who committed drug offenses because they had been using illegal drugs since their youth or those who were socially successful but committed fraud [5]. Obara reported cases of murder or bodily injury caused by a loss of control due to aging [6]. On the other hand, Menndez, Diehl-Schmid et al. and Liljegren et al. pointed out that some criminals, such as shoplifters, have some sort of dementia and that the frequency of criminal behavior is higher among persons with Frontotemporal Dementia (FTD) than among those with Alzheimer's disease (AD) [7-9].

Many studies have examined the relationship between dementia and driving ability [10-13]. Driving problems that are likely to occur in persons with AD include forgetting the destination and getting lost, hit and run

incidents, contact with objects or other cars when parking and slow speed. Conversely, persons with FTD typically have many aimless movements, rear-end collisions, tendency to miss signals and road signs, distraction due to poor attention and poor self-control. Thus, driving is considered to be more dangerous for persons with FTD than those with AD.

Given the above, we investigated the relationship between dementia and antisocial behaviors in 239 outpatients who visited our psychiatric department during a 2 year period.

Methods

The study involved 239 outpatients from the Department of Neuropsychiatry of St. Marianna School of Medicine Hospital from April 2015 until March 2017. Participants were examined during a same-day admission and underwent cognitive assessments such as the Mini-Mental State Examination (MMSE) and Hasegawa Dementia Scale-Revised (HDS-R), imaging studies (cranial magnetic resonance imaging or computed tomography) and assessment of their daily living activities. Sixteen of the 239 patients were excluded (2 did not undergo all examinations, 4 were examined twice in this period, 3 had

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neurosis, 3 had schizophrenia, 2 had depression and 2 had alcohol use disorder), leaving 223 patients. Of these, 171 were diagnosed as having dementia-138 with AD, 4 with vascular dementia (VaD), 8 with Lewy body dementia (LBD), 1 with FTD, 14 with AD and VaD, 1 with alcohol-related dementia and 5 with organic dementia and 28 were diagnosed as having mild cognitive impairment. Controls were 24 patients who visited our department with a complaint of memory loss and were not diagnosed with dementia or any other mental disorder following examination during a same-day admission.

We divided the 171 dementia patients into two groups: 152 patients with AD dementia (AD, AD+VaD) and 19 patients with non-AD dementia (VaD, LBD, FTD, alcoholic and organic). We then compared the characteristics and frequencies of antisocial behaviors and the Behavioral and Psychological Symptoms of Dementia (BPSDs) among the AD patients, non-AD patients and 24 controls using a chi-square test with R statistical package version 3.6 (<http://www.R-project.org/>). A level of $p < 0.05$ was considered statistically significant.

Using the medical records, we investigated whether patients had exhibited antisocial behaviors such as involvement in the following: Road traffic incidents (accidents and violations because of apraxia and executive function failure), destruction of furniture; home invasion (neighbors', relatives' and acquaintances' homes) because of disorientation in place; shoplifting or theft; public urination or inappropriate sexual behavior such as exposure and touching. We also investigated BPSDs such as irritability, violence (both verbal and physical), wandering, incontinence, depression, hallucinations, delusions and apathy.

This study was approved by the ethics committee at St. Marianna University School of Medicine, Japan (approval number 4154).

Results

Patient demographics and the frequencies of antisocial behaviors and BPSDs are shown in Tables 1, 2 and 3, respectively.

Analysis of variance revealed no significant differences in sex between the AD group (93 men, 59 women), non-AD group (8 men, 11 women) and control group (14 men, 10 women). Mean age was highest in the AD group at 80.9 ± 6.5 years, followed by 78.1 ± 5.2 years in the non-AD group and in control was 73.5 ± 9.6 years in the control group. There was a significant difference between the three groups ($p < 0.001$) but no significant difference between the AD and non-AD groups. HDS-R score was lowest in the AD group at 17.4

± 5.9 , followed by 20.0 ± 6.4 in the non-AD group and 26.5 ± 2.3 in the control group. Again, this represented a significant difference between the three groups ($p < 0.001$) but no significant difference between the AD and non-AD groups.

For dementia overall (AD and non-AD groups), the frequency of antisocial behaviors was 6.4% (11/171 patients) and BPSDs were present in 55.0% (94/171) (Table 2). None of the 171 dementia patients (in the AD and non-AD groups) had any recorded incidences of the antisocial behavior of theft, public urination or sexually inappropriate behavior (exposure or touching). None of the control group had any recorded incidences of home invasion, shoplifting, theft, public urination, inappropriate sexual behavior (exposure or touching), wandering, incontinence or delusions. In terms of BPSDs, the prevalence of depression was significantly higher in the control group at 29.2%, compared with 9.2% in the AD group and 10.5% in the non-AD group. There was a significant difference in the prevalence of depression between the three groups ($p < 0.05$) but not between the AD and non-AD groups.

As shown in Table 3, the antisocial behaviors that showed significant differences between groups were as follows. Home invasion was significantly more common in the non-AD group (5.3%) than in the AD and control groups (both 0%, $p < 0.05$) and was significantly different between the AD and non-AD groups ($p < 0.05$). Wandering was significantly more common in the non-AD group at 26.3% compared with the AD and control groups (2.6% and 0% respectively, $p < 0.05$) and significantly different between the AD and non-AD groups ($p < 0.05$). The frequency of hallucination was significantly higher in the non-AD group (47.4%) compared with in the AD group and control groups (8.6% and 8.3%, respectively, $p < 0.001$) and between the AD and non-AD groups ($p < 0.001$) (Table 3).

There were no significant differences in the frequency of road traffic incidents between the three groups (3.9% in the AD group, 5.3% in the non-AD group and 4.2% in the control group) or between the AD and non-AD groups. However, the type of road traffic incident that occurred in each dementia group was typical for the type of dementia, as described in the Introduction.

In our study, only 1 FTD patient had multiple antisocial behaviors, namely, destruction of furniture and violent assault (both verbal and physical). Antisocial behaviors were present in 5.3% of AD patients and 100% of FTD patients but with no clear significant differences in their characteristics because of the small number of FTD patients included.

	AD	Non-AD	Control	AD vs. non-AD vs. C	AD vs. non-AD
Number	152	19	24	p-value	p-value
Male/female	93/59	8/11	14/10	n.s.	n.s.
Age	80.9 ± 6.5	78.1 ± 5.2	73.5 ± 9.6	**	n.s.
HDS-R	17.4 ± 5.9	20.0 ± 6.4	26.5 ± 2.3	**	n.s.

Table 1: Demographic characteristics. Chi-square analysis was performed. * $p < 0.05$, ** $p < 0.001$, n.s., not significant. Analysis of variance was used to compare the AD dementia, non-AD dementia and control groups and to compare the AD dementia and non-AD dementia groups. HDS-R, Hasegawa Dementia Scale-Revised version; AD, AD dementia; non-AD, non-AD dementia; C: Control

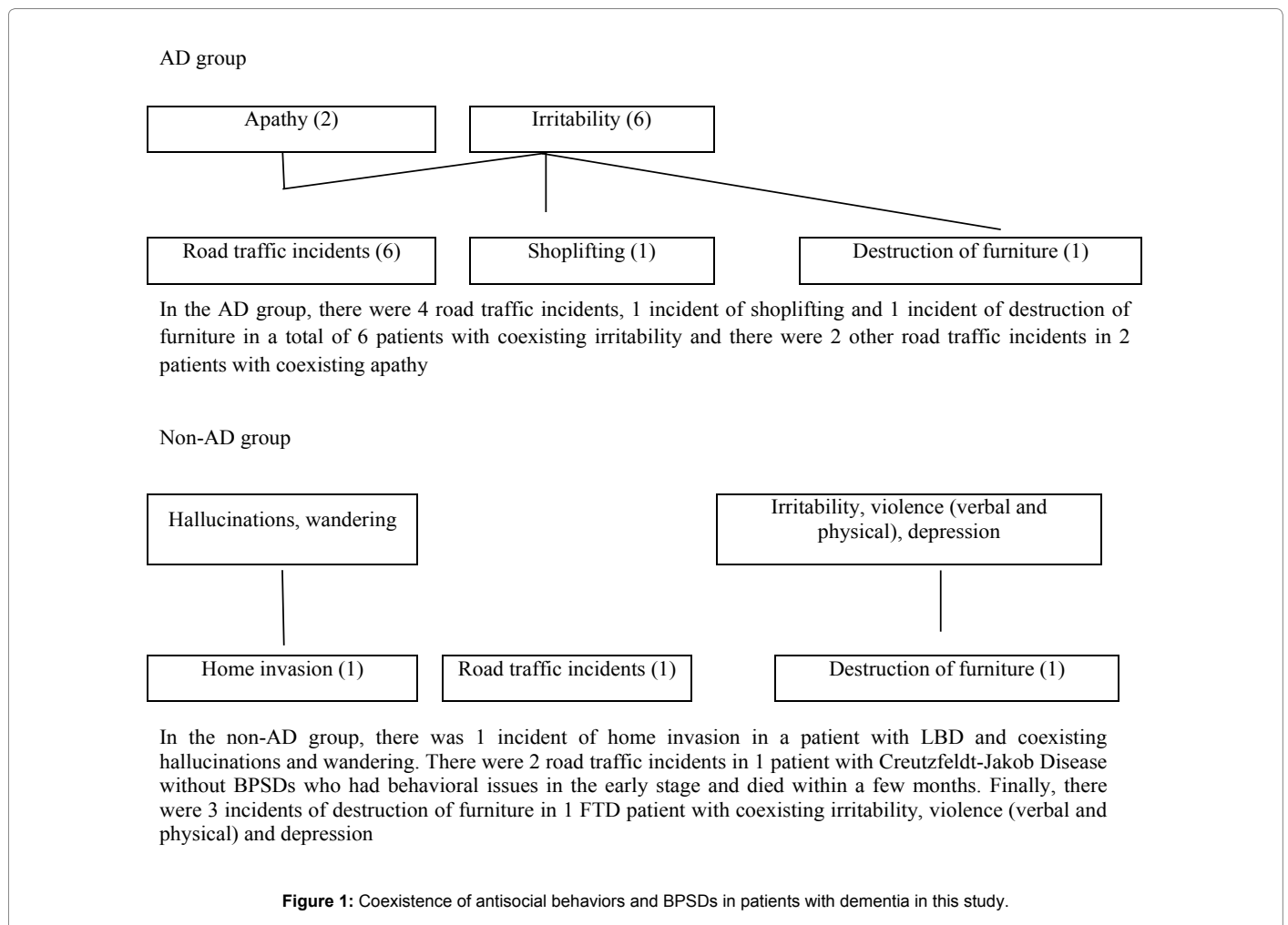
	Dementia % (n=171)	Control % (n=24)	p-value
Antisocial behaviors, total	6.4 (11)	8.3 (2)	1
BPSDs, total	55.0 (94)	37.5 (9)	0.16

Table 2: Comparison of the frequency of total antisocial behaviors and BPSDs between the dementia and control groups. Chi-square analysis was performed. Analysis of variance was used to compare the dementia group (both AD and non-AD groups) and the control group.

	AD % (n=152)	Non-AD % (n=19)	Control % (n=24)	AD vs. non-AD vs. control p-value	AD vs. non-AD p-value
Antisocial behaviors, total	5.3 (8)	15.8 (3)	8.3 (2)	0.21	0.21
Road traffic incidents	3.9 (6)	5.3 (1)	4.2 (1)	0.96	0.78
Destruction of furniture	0.7 (1)	5.3 (1)	4.2 (1)	0.16	0.08
Home invasion	0 (0)	5.3 (1)	0.0 (0)	9.5 × 10⁻³	4.6 × 10⁻³
Shoplifting	0.7 (1)	0 (0)	0.0 (0)	0.87	0.73
Theft	0 (0)	0 (0)	0.0 (0)	-	-
Public urination	0 (0)	0 (0)	0.0 (0)	-	-
Inappropriate sexual behaviors	0 (0)	0 (0)	0.0 (0)	-	-
BPSDs, total	51.3 (78)	84.2 (16)	37.5 (9)	7 × 10 ⁻³	1.3 × 10 ⁻²
Irritability	17.1 (26)	10.5 (2)	8.3 (2)	0.4	0.43
Violence (verbal)	5.9 (9)	5.3 (1)	4.2 (1)	0.93	0.91
Violence (physical)	1.3 (2)	5.3 (1)	4.2 (1)	0.38	0.22
Wandering	2.6 (4)	26.3 (5)	0.0 (0)	7 × 10⁻²	3.5 × 10⁻²
Incontinence	6.6 (10)	15.8 (3)	0.0 (0)	0.12	0.15
Depression	9.2 (14)	10.5 (2)	29.2 (7)	1.9×10 ²	0.37
Hallucinations	8.6 (13)	47.4 (9)	8.3 (2)	6 × 10⁻⁶	2 × 10⁻⁶
Delusions	4.6 (7)	10.5 (2)	0.0 (0)	0.26	0.28
Apathy	19.7 (30)	15.8 (3)	4.2 (1)	0.17	0.68

Table 3: Comparison of the frequencies of antisocial behaviors and BPSDs.

Chi-square analysis was performed. Analysis of variance was used to compare the AD dementia, non-AD dementia and control groups and to compare the AD dementia and non-AD dementia groups. AD, AD dementia; non-AD, non-AD dementia.



Discussion

Frequency of antisocial behaviors in dementia

The frequency of antisocial behaviors among all dementia patients in our study was 6.4%, with no significant difference versus the controls. This percentage is lower than that reported by both Diehl-Schmid et al. (37.3%) and Liljegen et al. (16.1%) [8,9]. Likewise, the frequency of antisocial behaviors in AD patients was lower in our study (5.3%) than in their studies (12% and 7.7%, respectively), but it was higher at 100% in FTD patients (versus 54% and 37.5% for the behavioral variant of FTD, respectively).

FTD was found in 1 out of 171 dementia patients (0.6%) in our study, which is slightly lower than the proportion of FTD in all Japanese dementia patients (1%) [1]. Mimura and Ikeda noted that FTD is not appropriately diagnosed in Japan [14]. The clinical symptoms of FTD have not yet been established, which might cause underdiagnosis of FTD due to misdiagnosis as another psychotic disorder such as schizophrenia or overdiagnosis of FTD because they just did antisocial behaviors influenced as reported in earlier studies [7-9].

Coexistence of antisocial behaviors and BPSDs

The clinical course of BPSDs in AD is thought to vary according to stage [14]. Irritability, depression and delusions appear from the early stage, wandering appears at the middle stage and incontinence and apathy appear at the late stage [15]. In our study, 8 patients with antisocial behavior also had BPSDs-6 had coexisting irritability and 2 had coexisting apathy (Figure 1).

Home invasion was seen in only 1 participant, resulting in significantly higher frequency in the non-AD group and this patient had LBD and coexisting BPSDs of hallucinations and wandering, which also contributed to the significantly higher frequency in the non-AD group (Figure 1). This LBD patient who engaged in home invasion had visual hallucinations from an early stage, followed by wandering outside and eventually invaded a neighbor's apartment, located one floor below. The clinical course of BPSDs in this LBD patient was the same as that in AD patients.

Other antisocial behaviors in the non-AD group were seen in 2 patients: 1 FTD patient engaged in destruction of furniture and also showed irritability, violence (verbal and physical) and depression; the other patient who had Creutzfeldt-Jakob disease without BPSDs was involved in 2 road traffic incidents but the problem resolved within a few months because of death.

The lower frequency of antisocial behaviors in our study was considered to be because all the participants were outpatients who themselves sought to be assessed for the presence of dementia. Almost all of those diagnosed with dementia had early or middle-stage disease. In addition, Japanese people might not consider people with dementia-related behaviors to be antisocial because almost all antisocial patients have some BPSDs coexisting with antisocial behaviors.

Limitations

The participants in this study were all outpatients who sought examination for dementia diagnosis by themselves. To clarify the association of dementia with antisocial behaviors, further investigation is warranted of dementia at all disease stages and in different settings (eg, at home or receiving care in facilities or hospitals).

Conclusion

We found a lower level of antisocial behaviors in people with dementia than reported in previous studies [7-9]. The frequency of home invasion as an antisocial behavior and hallucinations and wandering as BPSDs was significantly higher in 1 patient with LBD (non-AD dementia). In this case, the hallucinations progressed to home invasion due to wandering.

Antisocial behaviors with dementia mostly appear at the same time or after the development of BPSDs. Therefore, psychiatrists and caregivers should pay special attention to the treatment of BPSDs in patients with dementia to avoid the progression of these to antisocial behaviors.

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