Psychiatric Morbidity in Dementia Patients in a Neurology-Based Memory Clinic

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Abstract- The behavioral and psychological symptoms of dementia (BPSD) often present major problems for patients and their caregivers. In the past, neurologists paid less attention to such symptoms than to the cognitive symptoms of dementia. This prospective study investigated the prevalence of psychiatric morbidity in a neurology-based memory clinic and the stress of caregivers. Our patients with dementia were found to have a high prevalence of BPSD. The most frequent were anxiety, apathy, and delusion; the most distressing to caregivers were agitation, anxiety, delusion, and sleep disturbance. Using Clinical Dementia Rating (CDR), we compared BPSD between patients with mild dementia and those with moderate dementia. Only hallucinations and agitation were different significantly. Moderate dementia patients experienced these symptoms more frequently. The high prevalence of these symptoms might be explained by the fact that the cognitive symptoms were neglected or no enough information were received by many family members of patients with dementia until their own life quality was interfered and then they began to seek medical help. These symptoms and their effect of caregiver distress can be effectively reduced by pharmacologic and non-pharmacoloic managements, caregiver-focused training and education. They can be better approached by assessing neuropsychiatric symptoms regularly, educating the general population better, and treating these patients earlier.

Key Words: Behavior and psychological symptoms of dementia (BPSD), Psychiatric morbidity, Neurology-based memory clinic

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INTRODUCTION

Although dementia is popularly associated with cognitive dysfunction, most elderly patients with dementia develop behavioral and psychological symptoms of dementia (BPSD). These include psychosis, aggression, sleep disturbance, agitation, and mood disorders. These symptoms pose major difficulties in the day-to-day care of patients and are likely to impair the quality of life of both patients and caregivers. Patients exhibiting psychiatric morbidity should be assessed in a detailed clinical interview to establish symptoms caus-

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ing distress to the patient and/or caregiver. Several mood and behavior scales with good psychological properties are available and several studies have estimated the prevalence of BPSD. Depending on the method of assessment, BPSD affect 50% to 80% of persons with dementia during the course of the disease[1,2]. However, most studies of BPSD conducted in a clinical setting are subject to referral bias and may overestimate or underestimate the prevalence of BPSD. They are usually based on data collected from psychiatric evaluation. In this study, however, we explore BPSD and the distress they cause caregivers from the point of view of neurologists at a multidisciplinary memory clinic.

SUBJECTS AND METHODS

The memory clinic at the Kaohsiung Veteran General Hospital was established in March 2001 to improve the diagnostic evaluation and treatment of patients with memory problems and dementia. The clinic also aims to identify reversible diseases associated with cognitive dysfunction, concomitant conditions or risk factors, and non-progressive cognitive disturbances and to establish optimal management and care for patients with dementia and their caregivers.

Data for this study was collected consecutively from all patients being examined at the memory clinic at the Kaohsiung Veterans General Hospital, a multidisciplinary outpatient clinic in a neurological setting, between 1 March 2001 and 31 December 2002. The members of this multidisciplinary outpatient clinic include specialists in neurology, psychology and nutrition, specialized nurses, and social workers. The patients, who were referred to our clinic by neurologists and other specialists, were asked to bring a close relative, friend, or caregiver with them to the first interview and, if necessary, to all further visits in the clinic. Prior to the first interview, the patients were asked to fill out a questionnaire about health problems, medication, and other relevant information. All patients also received a series of medical examinations and tests, including laboratory screening tests (complete blood cell count, thyroid function tests, serum Vitamin B12, folate, and serological test for syphilis) and cranial computed tomography (CT). Optional tests included blood sedimentation rate, liver and renal function tests, electrolyte, glucose, serum lipids, chest x-ray, lumbar puncture, electroencephalography and cranial magnetic resonance imaging (MRI). All patients were classified according to their cognitive profile with the Mini-Mental State Examination (MMSE)[3,4] and the Cognitive Abilities Screening Instrument (CASI)[5]. The Clinical Dementia Rating (CDR)[6] served as the basis for overall staging of the progression of dementia. Criteria from the Diagnostic and Statistical Manual of Mental Disease, Fourth Edition (DSM IV)[7] were used for classification of dementia. DSM IV was also used to clinically diagnose Alzheimer's disease (AD) and vascular dementia (VD)[7]. All other diagnoses were classified according to the ICD-10[8] except dementia with Lewy Body (DLB) was according to the specific criteria[9]. Mild cognitive impairment (MCI) was defined based on the patient's CDR = 0.5 but his cognitive decline not meeting DSM-IV criteria for dementia[10,11,12]. All patients received a psychiatric evaluation based on the Neuropsychiatric Inventrory (NPI)[13] and DSM IV symptoms criteria for major depression[14].

NPI was used to define the presence and severity of BPSD and the understanding of the distress to caregiver. The NPI, widely accepted as a measure of BPSD associated with cognitive disorders, rates symptoms in 12 domains: delusions, hallucinations, agitation/aggression, depression, anxiety, euphoria, apathy, disinhibition, irritability, aberrant motor behavior, sleep, and eating disturbance. Within each domain, NPI asks a screening question. The caregiver is asked whether the patient's behavior has changed after the onset of the dementia and if the altered behavior has been present during the past month or other specific period. The product of the frequency and severity scales within each domain was used to produce a total domain score (range, 0-12). Domain scores of 4 or more or total NPI scores of 4 or more are indicated clinical significance and were used as entry criteria for treatment[2,15]. The caregivers also reported the distress caused by these neuropsychiatric symptoms. The distress was rated on a 6-point severity scale (range, 0-5). Every patient was also screened for DSM IV criteria

for major depression. If the screening score of the patient was 5 or more, depression was suspected.

After the evaluative measures were completed, the primary diagnosis was done by a consensus panel decision and relevant clinical criteria. Then, multidisciplinary staff met to complete a consensus report on each patient. In the meeting a diagnosis and a plan for treatment and follow-up was made. Patients with severe behavioral symptoms were referred to the Department of Psychiatry for further evaluation. When relevant, patients with possible normal pressure hydrocephalus (NPH) were referred to the Neurosurgical Department as in-patients. Patient characteristics and data from the diagnostic evaluations were registered consecutively in a database.

Using the Statistical Package for the Social Sciences (SPSS), version 12.0, performed statistical analysis. We calculated the mean and standard deviation (SD) for the distress to the caregivers in the dementia group. The prevalence of neuropsychiatric symptoms, and the difference of individual NPI disturbances at different stages of dementia severity were compared using the chi-squared test. A *p* value below 0.05 was considered statistically significant.

RESULTS

Demographic data

Four hundred seventeen consecutive patients with memory problems, other cognitive symptoms or possible dementia were referred to the memory clinic over the 22-month period. Of the 417 referrals, 399 received the basic screening examination. Eighteen were lost to follow-up or did not have a complete set of screening tests. Therefore, this study included the 399 consecutive patients (158 women and 241 men) with a mean age of 71.6 ±12.0 years (range 14-96) and, a mean education of 7.3 ±5.0 years (range 0-24). Their mean MMSE-score was 18.7 ±8.0 (range 0-30) and CASI 60.9 ±25.6 (range 0-98). A full neuropsychological examination was performed in 284 patients (71.2%), including 31.8% of the patients classified as having 'CDR = 0'. About 86.5% of the patients with dementia and 75.2% of the patients

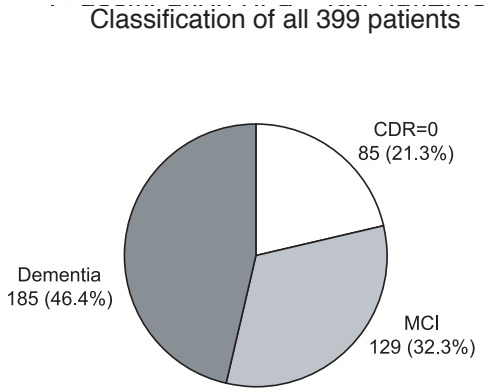

Figure 1. Distribution of patients with dementia, mild cognitive impairment (MCI), and CDR=0 according to consensus panel decision and relevant clinical criteria in our study.

with MCI underwent neuropsychologic examination. The patients were divided into three groups: dementia, MCI, and CDR=0 (Fig. 1). Approximately 46.4% fulfilled DSM IV criteria for dementia, 32.3% had MCI, and 21.3% had CDR=0. The primary etiologies for the dementia group (185 patients) are presented in Fig 2. AD, VD, and a mixed disease ('mixed' indicates patients with assumed mixed degenerative and vascular etiologies) comprised 85% of the patients. A total of 28 patients (15%) had other diagnoses including dementia with Lewy Body (DLB), normal pressure hydrocephalus (NPH), depression-distress, neurosyphilis, hypothyroidism, hypoxic encephalopathy, brain tumor, frontotemporal dementia (FTD), Parkinson's disease (PD), vitamin B12 deficiency, and unspecified etiology. The diagnosis of depression-distress was established when a patient was found to have both depression and cognitive impairments in the beginning but the cognitive impairment improved completely after treating depression[16].

Psychiatric morbidity

In the dementia group, 160 patients (73 women and 87 men) received the NPI test and 137 patients (85.6%) presented psychiatric morbidity. Fig. 3 shows the frequency distribution of the number of NPI symptoms for the month prior to evaluation in the dementia group.

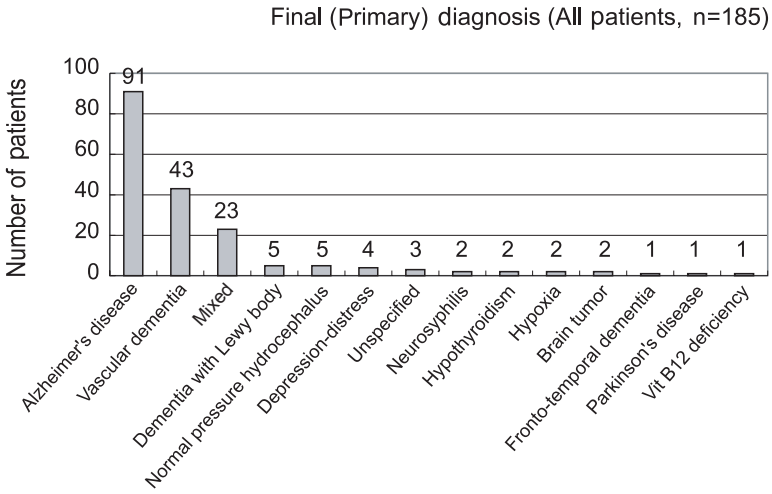

Figure 2. Distribution of the underlying causes of dementia. The primary diagnosis was the primary underlying cause of the presenting cognitive symptoms according to a consensus panel decision and relevant clinical criteria. 'Unspecified' dementia indicates patients in whom the specific diagnosis has not yet been determined. 'Mixed' indicates cases with assumed mixed degenerative and vascular etiologies.

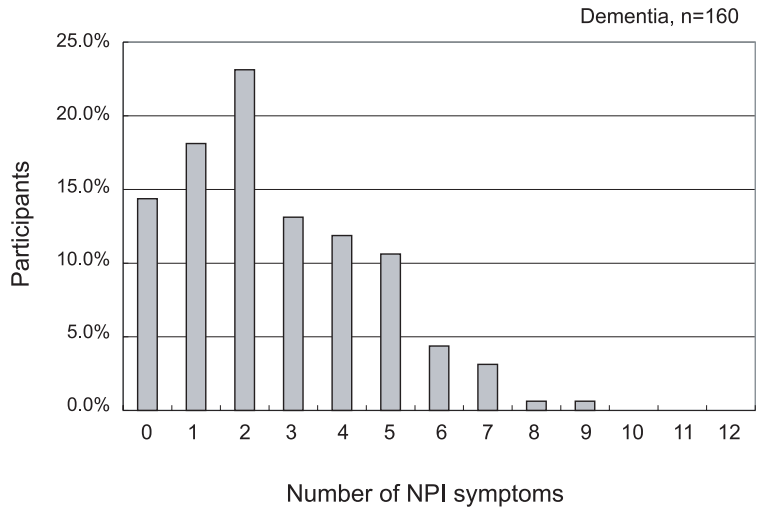

Figure 3. Frequency distribution of number of individual neuropsychiatric inventory (NPI) symptoms in the past month in the dementia group.

About 67.5 % of the dementia patients reported 2 or more NPI symptoms, and 44.3% reported 3 or more symptoms. Table 1 shows the prevalence of individual NPI symptoms. We report rates for any symptoms (NPI > 0), for clinically significant symptoms (NPI ≥ 4) by domain, and for distress to the caregivers. Fifty-four (33.8%) of our patients with dementia had symptoms of anxiety, fifty-three (33.1%) had apathy, and fifty-two (32.5%) had delusion. Clinically significant symptoms (NPI ≥ 4) included anxiety (27.5%), which was the most frequent, followed by sleep disturbance (21.9), and apathy (20.6). Caregiver rated the distress they felt in response to the following psychiatric morbidities: agitation (average distress: 3.0), anxiety (average distress: 2.9), delusion (average distress: 2.9), and sleep disturbance (average distress: 2.8). Twenty-five (13.5%) of our patients with dementia were found to have DSM-IV screening score of 5 or more for major depression.

The distribution of neuropsychiatric symptoms reported by informants for participants are shown in Table 2. The severity of dementia symptoms in that table are subdivided into mild (CDR 1), moderate (CDR 2), or

Table 1. *Prevalence of any NPI disturbance, disturbance score ≧4 and distress to the caregivers in the dementia group*

	NPI > 0	Disturbance score of ≥ 4	Distress
	N = 160	N = 160	
NPI symptom	n (%)	n (%)	Mean ± SD (N)
Delusions	52 (32.5)	29 (18.1)	2.9 ± 1.5 (52)
Hallucinations	34 (21.3)	10 (6.3)	1.9 ± 1.8 (34)
Agitation/Aggression	34 (21.3)	22 (13.8)	3.0 ± 1.7 (34)
Depression	45 (28.1)	14 (8.8)	1.8 ± 1.6 (45)
Anxiety	54 (33.8)	44 (27.5)	2.9 ± 1.8 (54)
Euphoria	3 (1.9)	1 (0.6)	0.3 ± 0.6 (3)
Apathy	53 (33.1)	33 (20.6)	1.8 ± 1.6 (53)
Disinhibition	8 (5.0)	4 (2.5)	2.6 ± 1.9 (8)
Irritability	24 (15.0)	15 (9.4)	2.7 ± 1.4 (24)
AMB	37 (23.1)	25 (15.6)	2.5 ± 2.0 (37)
Sleep disturbance	47 (29.4)	35 (21.9)	2.8 ± 1.6 (47)
Eating disturbance	30 (18.8)	23 (14.4)	2.0 ± 1.5 (30)
Any symptom	137 (85.6)	111 (69.4)	-

* NPI indicates Neuropsychiatric inventory, AMB indicates aberrant motor behavior.

Table 2. *Number and percentage of participants reported to have individual NPI disturbances at different stages of dementia severity, as designated by score on the CDR*

	CDR scores = 1	CDR scores = 2	CDR scores = 3-5
	N = 101	N = 47	N = 12
NPI symptom	n (%)	n (%)	n (%)
Delusions	27 (26.7)	20 (42.6)	5 (41.7)
Hallucinations**	13 (12.9)	17 (36.2)	4 (33.3)
Agitation/Aggression*	16 (15.8)	16 (34.0)	2 (16.7)
Depression	26 (25.7)	14 (29.8)	5 (41.7)
Anxiety	35 (34.7)	18 (38.3)	1 (8.3)
Euphoria	1 (1.0)	1 (2.1)	1 (8.3)
Apathy	29 (28.7)	17 (36.2)	7 (58.3)
Disinhibition	6 (5.9)	2 (4.3)	0 (0.0)
Irritability	12 (11.9)	10 (21.3)	2 (16.7)
AMB	20 (19.8)	11 (23.4)	6 (50.0)
Sleep disturbance	24 (23.8)	17 (38.3)	5 (41.7)
Eating disturbance	16 (15.8)	9 (19.1)	5 (41.7)
Any symptom	87 (86.1)	39 (83.0)	11 (91.7)

*: p< .05, **: p< .01; using chi-squared test between CDR scores= 1 group and CDR scores= 2 group. NPI indicates Neuropsychiatric inventory, CDR indicates clinical dementia rating, AMB indicates aberrant motor behavior.

severe (CDR 3-5). About 86.1% of the patients with mild dementia and 83.0% of the patients with moderate dementia were reported to have at least one NPI neuropsychiatric symptom. We excluded the severe dementia group because it contained only twelve with this diagnosis. We compared the neuropsychiatric symptoms of the mild and moderate groups and found significant difference in hallucinations (12.9% in mild dementia, and 36.2% in moderate dementia) and agitation/aggression (15.8% in mild dementia, and 34.0% in moderate dementia). No other BPSD differed in frequency between these two groups.

All patients with psychiatric morbidities and their caregivers were offered the education. If symptoms persisted or the patient was diagnosed as moderate to severe BPSD, the patient was given pharmacologic treatment or referred to the Department of Psychiatry.

DISCUSSION

This study reports the prevalence of psychiatric morbidities and BPSD data in dementia patients in a neurology-based memory clinic. Accurate diagnosis is essential to determine the appropriate treatment, to plan psycho-social interventions, to provide information about prognosis and possible distress to the patients and the family, and to determine the needs for professional follow-up and long-term social and health care planning. Traditionally, neurologists have paid less attention to psychiatric morbidities that come with dementia than its cognitive symptoms. They have not view them as symptoms of a brain disease requiring treatment, and they have not been aware of treatment opportunities. Although many studies and reports have focused on BPSD in dementia patients in Taiwan[17,18,19], ours is the first prospective study to investigate the prevalence of psychiatric morbidities with NPI in a consecutive series of patients referred to a neurology-base memory clinic. With this report, we hope to draw more attention of clinical neurologists to the psychiatric symptoms in their patients with dementia.

Our report found a high prevalence of BPSD, with 85% of participants with dementia having one of any number of symptoms, 69.4% with clinically significant symptoms, and more than 60.0% with 2 or more neuropsychiatric symptoms in a one-month period. The incidence of delusion, hallucinations, depression, anxiety and sleep disturbance in our patients are similar to previous studies[18,19], although different psychiatric evaluation methods were used. The prevalence of BPSD in our patients with dementia and other studies in Taiwan[17,19] may be high because their caregivers do not pay much attention to the patients' cognitive dysfunction or because they do not receive much information on BPSD until it has become more noticeable. As a result, patient visits to the memory clinic might have been postponed until BPSD had become exacerbated.

It is interesting to note the differences in the prevalence of NPI disturbances across stages of dementia severity. In our study, only hallucinations and agitation/aggression differed significantly between mild and moderately severe dementia groups. Other possible differences were observed to be few and inconsistent. Delusions, anxiety, apathy, irritability, elation, and disinhibition all had about the same prevalence regardless of severity of dementia. Two previous studies have shown the frequency of behavioral disturbances to be more common in later stages of dementia and have postulated that this finding may reflect a progressive disturbance in the control of behavior accompanying the advancing brain damage of dementing disease[17,20]. That our patients showed less significant psychiatric and behavioral abnormalities may be due to the fact that we only compared BPSD of patients with mild and moderate CDR scores. Because our study of 399 patients only covered 22 months, we did not observe the course of the disease for a long enough period. Therefore, further comparisons need to be done for longer observation periods.

When assessing the BPSD in individuals with dementia, physicians need to keep the quality of the patient's care and the needs of the caregivers in mind. Because the high prevalence of BPSD and the changes in social structure (for example, a decreased number of available caregivers in the household) can bring increased distress to caregivers[21], BPSD must be detected and treated before caregiver "burnout" occurs and there is irretrievable damages to the support environment. The assessment plan should consider the severity and pervasiveness of the behavior and whether it warrants nonpharmacologic intervention only or is severe enough to require a combined pharmacologic and psychological intervention. Nonpharmacologic treatments for both the patients and caregivers are recommended as first line therapy for BPSD. Individualized music therapy, bright light treatment, and aromatherapy have been found to improve certain problematic behavioral symptoms under controlled conditions in dementia patients[22], but more evidence is required in this area. For the caregivers, improving caregiver support, increasing "time for self," and providing caregiver education and training in the management of BPSD can be effective in lowering burden level and modifying its impact[23]. These interventions may not only decrease caregiver burden and improve the tolerability of the particular BPSD[24] but

may also influence patient behavior in a positive way and possibly delay institutionalization[25]. Drug treatment in BPSD should be evidence-based and targeted to specific syndromes that are clinically significant because of their frequency, pervasiveness, or impact. Appropriate pharmacotherapies for persistent and moderate to severe BPSD include antidepressants for mood disorders, anticonvulsants for nonpsychotic agitation, and antipsychotics for aggression, agitation, and psychosis[26]. Patients with severe behavioral symptoms can be referred to the outpatient clinics in the department of psychiatry for further evaluation and treatment.

Although dementia syndrome is defined by its core cognitive features, it seems clear that individuals with dementia will exhibit mental or behavioral disturbances at some point in their illness[26,27]. These disturbances add substantially to the morbidity and disability of their illness and to its burden on their caregivers. Our study found a high prevalence of BPSD, with most of our patients exhibiting clinically significant symptoms and co-occurrence of multiple symptoms. The most frequent BPSD in our patients were anxiety, apathy, and delusion; however, the patient agitation, anxiety, delusion and sleep disturbance were most often distressful to their caregivers. We recommend nonpharmacologic treatments for BPSD as first line therapy, followed by a pharmacologic treatment for the patients and intervention, mostly education, for the caregivers.

This study shows a multispecialist approach to patient management in outpatient memory clinics[28]. Because the dementia patients in our study and many other studies in Taiwan had a relatively high prevalence of BPSD, we suspect that most of their families neglect the cognitive symptoms of the patients or do not receive enough information about dementia until BPSD becomes more noticeable. Based upon this possibility, more information about dementia should be disseminated and more educational programs offered. We also suggest routine neuropsychiatric assessment and early treatments for such BPSD. This study also has significant implications for further studies of the pathophysiology and treatment of BPSD in patients with dementia. In particular it would be interesting to know if different BPSD symptoms could be associated with different types of dementia.

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