Clinical Features of Delusional Jealousy in Elderly Patients With Dementia

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ABSTRACT

Objective: Delusional jealousy is a psychotic syndrome characterized by a belief in the infidelity of one's spouse that reaches delusional intensity. Although delusional jealousy has been described in relation to organic psychosis, little is known concerning the actual role of delusional jealousy in dementia. The aim of the present study was to investigate the clinical features of delusional jealousy and possible mechanisms whereby delusional jealousy arises in patients with dementia.

Method: We studied 208 consecutive outpatients with dementia (diagnosis based on *DSM-III-R* criteria; mean [SD] age of 77.0 [8.0] years; study period: September 2011–August 2012). *Delusional jealousy* was defined as a false belief derived from a pathological jealousy that makes the patient believe that his or her spouse is unfaithful. The prevalence of delusional jealousy was compared between Alzheimer's disease, dementia with Lewy bodies, and vascular dementia. Patients with and without delusional jealousy were compared in terms of general characteristics. In addition, each patient with delusional jealousy and their primary caregivers were interviewed about the clinical features of the syndrome.

Results: Of the 208 patients with dementia, 18 (8.7%) showed delusional jealousy. The prevalence of delusional jealousy in patients who had dementia with Lewy bodies (26.3%) was significantly higher than that in patients with Alzheimer's disease (5.5%) ($P < .01$). There were no significant differences between patients with and without delusional jealousy in regard to gender ($P = 1.00$), age ($P = .81$), educational attainment ($P = .29$), presence of other persons living with the couple ($P = .22$), and Mini-Mental State Examination score ($P = .47$). On the other hand, delusional jealousy was preceded by the onset of serious physical diseases in nearly half of the patients. Delusional jealousy resolved within 12 months after treatment in 15 of 18 patients (83%).

Conclusions: Although delusional jealousy is a considerable problem in dementia, the prognosis of delusional jealousy in demented patients appears to be relatively benign. In dementia, delusional jealousy may develop more easily in patients who have dementia with Lewy bodies and those with coexisting serious physical disorders.

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Delusional jealousy, also known as Othello's syndrome, is a psychotic disorder characterized by the belief in the infidelity of one's spouse or lover that reaches delusional intensity.[1,2] Delusional jealousy may be observed in many psychiatric disorders, but previous clinical reports have noted the association of this morbid condition in several organic psychoses, including stroke,[3,4] Parkinson's disease,[5,6] traumatic brain injury,[7] and dementia.[8] Soyka et al[9] found that the prevalence of delusional jealousy was highest in organic psychoses (7.0%), followed by paranoid disorders (6.7%), alcohol psychosis (5.6%), and schizophrenia (2.5%); whereas in affective disorder, delusional jealousy was found in only 0.1% of patients. These findings suggest that neurologic elements very likely combine with psychodynamic factors to produce this specific condition.[10]

In dementia, delusions constitute one of the most prominent psychiatric complications.[11] Delusional jealousy was described as the initial clinical symptom in the first clinical Alzheimer's disease case reported by Alois Alzheimer.[8] Tsai et al[12] comprehensively investigated the clinical features of delusional jealousy in patients with dementia within a psychiatric ward and identified delusional jealousy in as many as 15.6% of demented patients. Furthermore, with respect to individual delusional symptoms, delusional jealousy has been identified as a risk factor for aggression and homicide, especially against one's partner.[13] These findings suggest that evaluation and treatment of delusional jealousy are of considerable importance in practice for demented patients. However, to our knowledge, there have been few systematic studies about the clinical features of delusional jealousy in persons suffering from dementia,[12] and little is known concerning the actual role of delusional jealousy in dementia. The aim of this study was to investigate the clinical features of delusional jealousy and possible mechanisms whereby delusional jealousy arises in patients with dementia.

METHOD

All procedures followed the Clinical Study Guidelines of the Ethics Committee of Kumamoto University Hospital, Kumamoto, Japan, and were approved by the internal review board. Informed written consent was obtained from patients and their caregivers in compliance with the research standards for human research for all participating institutions and in accordance with the Helsinki Declaration.

Subjects

A total of 208 patients (mean [SD] age of 77.0 [8.0] years) were selected according to the following inclusion/exclusion criteria from a consecutive series of 327 demented patients who attended 1 of 2 dementia clinics from September 2011 to August 2012 at Kumamoto University Hospital or Heisei Hospital, which is a mental hospital. All patients were examined comprehensively

Table 1. Demographics of Demented Patients With and Without Delusional Jealousy

Characteristics	Delusional Jealousy Group (n = 18)	Non–Delusional Jealousy Group (n = 190)	*P* Value
Age, mean (SD), y	77.4 (5.6)	76.9 (8.2)	.81
Male/female, n/n	9/9	95/95	1.00
Education, mean (SD), y	10.1 (2.7)	10.9 (2.9)	.29
Presence of other people living with the couple, n (%)	6 (33)	92 (48)	.22
MMSE score, mean (SD)	18.7 (5.9)	17.5 (6.8)	.47

Abbreviation: MMSE = Mini-Mental State Examination.

Clinical Points

- Among diagnostic categories of dementia, delusional jealousy develops more easily in patients with dementia with Lewy bodies.
- In addition to cognitive decline, coexisting serious physical illness is a significant risk factor of delusional jealousy in demented patients.
- Although delusional jealousy is often accompanied by violent behavior and can add to the stress experienced by the patient's spouse, the prognosis of delusional jealousy in demented patients is relatively benign.

by senior neuropsychiatrists with sufficient experience in examining patients with dementia, and all patients underwent routine laboratory tests and standard neuropsychological examinations including the Mini-Mental State Examination (MMSE).[14] Brain magnetic resonance imaging (MRI) or computed tomography (CT) was also performed. Exclusion criteria consisted of the following: (1) patients with serious psychiatric diseases such as schizophrenia or major depression before the onset of dementia and (2) patients without a spouse.

The diagnosis of dementia was based on *DSM-III-R* criteria.[15] The diagnosis of each dementia was established according to the international consensus criteria. Diagnostic categories consisted of probable Alzheimer's disease (n = 127),[16] probable dementia with Lewy bodies (n = 38),[17] vascular dementia (n = 21),[18] frontotemporal lobar degeneration (n = 7),[19] possible idiopathic normal pressure hydrocephalus (iNPH) (n = 6),[20] probable progressive supranuclear palsy (n = 4),[21] probable corticobasal degeneration (n = 3),[22] and unspecified etiology (n = 2).

Assessments of Delusional Jealousy

In the present study, *delusional jealousy* was defined as a false belief derived from a pathological jealousy that makes the patient believe that his or her spouse is unfaithful.[12] Specifically, the delusion had to be clearly and repeatedly stated sometime during the follow-up period and had to require therapeutic intervention. Patients with these characteristics were assigned to the delusional jealousy group. Thus, the delusional jealousy group did not include patients with mild or episodic delusional jealousy without therapeutic intervention. The remaining patients were assigned to the non–delusional jealousy group. In each case in the delusional jealousy group, the patient and primary caregiver were interviewed by the authors, senior neuropsychiatrists, about the presence of the following features: (1) coexisting psychiatric symptoms such as hallucinations, other types of delusions, or depression; (2) coexisting severe physical disorder of the patient (*severe physical disorder* was defined as present if the disorder was severe enough to require hospitalization or to interfere with the patient's activities of daily living); (3) violent behavior by the patient; (4) past history of infidelity by the spouse; (5) health condition of the spouse; and (6) spouse's frequent absence in the home (*frequent absence* was defined as present if the spouse went out alone a few times a week or more).

Statistics

The prevalence of delusional jealousy was compared against each diagnostic category that comprised 10 or more patients. Fisher exact probability test was utilized. In addition, to examine risk factors for delusional jealousy, gender, age, educational attainment, presence of other people living with the couple, and MMSE scores were compared between the delusional jealousy and non–delusional jealousy groups. Student *t* test and χ^2 test were used when appropriate. The significance level was set at $P < .05$ for all analyses.

RESULTS

Of the 208 demented patients with a spouse, 18 (8.7%) met the inclusion criteria for having delusional jealousy. Patients with delusional jealousy were found to have various types of dementia; 7 patients had Alzheimer's disease, 10 patients had dementia with Lewy bodies, and 1 patient had vascular dementia. The prevalence of delusional jealousy in patients with dementia with Lewy bodies (26.3%) was significantly higher than that in patients with Alzheimer's disease (5.5%) ($P < .01$), and patients with dementia with Lewy bodies tended to have a higher prevalence of delusional jealousy than patients with vascular dementia (4.8%) ($P = .08$). Nine patients already had delusional jealousy at the initial visit; in the other 9 patients, delusional jealousy developed during the follow-up period. Table 1 shows the clinical characteristics of the delusional jealousy and non–delusional jealousy groups. We found no significant differences between the 2 groups in regard to gender, age, educational attainment, presence of other people living with the couple, and MMSE scores. However, 10 of the 18 patients with delusional jealousy had mild dementia; these patients' MMSE scores were 20 or greater.

Table 2 shows a comparison of coexisting psychiatric symptoms among dementia with Lewy bodies, Alzheimer's disease, and vascular dementia. All but 1 patient with dementia with Lewy bodies had at least 1 other psychotic symptom. Eight patients with dementia with Lewy bodies exhibited visual hallucinations. The contents of the visual hallucinations included images of the patient's spouse in a sexual situation (2 patients), the spouse having an affair in the house (3 patients), and the spouse having a child with his or her lover (2 patients). Six patients with dementia with Lewy bodies misidentified his or her spouse as another

Table 2. Number of Patients With Coexisting Psychiatric Symptoms and Violence

	Dementia With Lewy Bodies (n = 10)	Alzheimer's Disease (n = 7)	Vascular Dementia (n = 1)	Total (N = 18)
Hallucinations				
Visual	8	0	0	8
Auditory	1	1	0	2
Delusions				
Misidentification	8	0	0	8
Theft	2	0	0	2
Persecution	2	2	0	4
Depression	2	1	0	3
Violence	6	5	0	11

Table 3. Period Between Initiation of Therapy and Disappearance of Delusional Jealousy[a]

	Dementia With Lewy Bodies (n = 10)	Alzheimer's Disease (n = 7)	Vascular Dementia (n = 1)	Total (N = 18)
1–3 months	3	3	1	7
4–12 months	4	4	0	8
Intractable	3	0	0	3

[a]Values represent the number of patients (n).

person in a delusional manner. In 1 patient with dementia with Lewy bodies, delusional jealousy persisted after the death of the spouse. Two patients with dementia with Lewy bodies were noted to have increased sexual desire after the onset of dementia. Two patients with Alzheimer's disease had other psychotic symptoms. One patient with Alzheimer's disease suffered from auditory hallucinations, including hearing knocking at the door that the patient attributed to the spouse's lover. In this series, 7 of 9 males and 4 of 9 females committed actual physical assault on their spouse. We found no significant gender differences in regard to the prevalence of violent behavior ($P = .15$).

Several precipitating or predisposing factors for delusional jealousy were identified. Delusional jealousy was preceded by the onset of serious physical diseases, such as cancer, aortic aneurysm, or femoral neck fracture in 8 patients (44%). In contrast, all the spouses, except for 1, who suffered from iNPH, were active and in good health. Eight of 18 spouses (44%) frequently spent time away from home without the patient. In the present study, only 1 spouse (5.6%) was confirmed to have a previous history of infidelity. Although delusional jealousy has been described in Parkinson's disease patients on dopaminergic therapy,[23,24] only 1 patient who had dementia with Lewy bodies was treated with antiparkinson medication in this series; this patient had undergone dopaminergic therapy 3 years prior to the development of delusional jealousy.

All 10 patients who had dementia with Lewy bodies were treated with donepezil medication. In addition to donepezil, treatment for 6 of the patients with dementia with Lewy bodies also included atypical neuroleptics such as quetiapine, olanzapine, and aripiprazole. All 7 patients with Alzheimer's disease were treated with neuroleptic medications: 6 were treated with risperidone, and 1 was treated with sulpiride. In 3 of the 7 patients with Alzheimer's disease, donepezil was discontinued or decreased. One patient who suffered from vascular dementia improved with risperidone medication for a couple of months. Delusional jealousy resolved after treatment in 15 of 18 patients (83%) (Table 3), and all of the 7 patients with Alzheimer's disease experienced complete resolution of delusional jealousy within 12 months, although antipsychotic therapy continued for over 12 months after delusional jealousy disappearance in all patients. In 3 patients with dementia with Lewy bodies, delusional jealousy showed no response to treatment. In 1 female patient with dementia with Lewy bodies, delusional jealousy improved with donepezil administration for 8 months; however, she had a relapse in delusional jealousy after an improvement in her husband's health following an operation for iNPH. Two of the 3 recalcitrant patients exhibited visual hallucinations of their spouses in sexual acts, and the remaining patient recurrently mistook her husband for her father-in-law. Only 1 patient with dementia with Lewy bodies was placed in a nursing home due to active delusional jealousy.

DISCUSSION

Although delusional jealousy is a known risk factor for violence and homicide,[13] it has been considered a rare syndrome. Soyka et al[9] studied the prevalence of delusional jealousy in over 8,000 psychiatric inpatients and found an overall low prevalence of 1.1%. However, the authors also found that delusional jealousy was most frequently seen in patients with organic psychoses, in whom its prevalence reached 7.0%. In the present study, we reported that 8.7% of demented patients exhibited delusional jealousy, which was well within the 2.3%[25] to 15.6%[12] range reported in previous studies. These findings suggest that delusional jealousy is a frequent symptom in dementia and that neurologic elements including cognitive decline quite likely produce delusional jealousy in combination with psychosocial factors.

The most remarkable finding of the present study was the fact that as many as 26.3% of patients with dementia with Lewy bodies exhibited delusional jealousy, and the prevalence of delusional jealousy in patients with dementia with Lewy bodies was significantly higher than that in patients with Alzheimer's disease. Although delusional jealousy has been observed in neurologic patients, particularly in those with Parkinson's disease,[5] little is known about the association between delusional jealousy and dementia with Lewy bodies. In a recent case series of 105 patients with delusional jealousy, Graff-Radford et al[26] reported that 29 of 56 patients with a neurodegenerative disorder had Lewy body disease, which was seen with a higher frequency than Alzheimer's disease (n = 22). Both the findings of Graff-Radford et al and the present study indicate the possibility that patients with dementia with Lewy bodies exhibit a higher frequency of delusional jealousy as compared to other demented patients, including those with Alzheimer's disease.

Most of the patients with dementia with Lewy bodies in the present study presented with visual hallucinations with concrete contents suggesting spousal infidelity. This phenomenon had been reported elsewhere. Graff-Radford et al[26] reported that 4 of 20 patients with dementia with Lewy bodies had visual hallucinations specific to spousal infidelity resulting in delusional jealousy. Although visual hallucinations and delusions are common symptoms in patients with dementia with Lewy bodies,[27,28] the underlying mechanisms of these symptoms have not been fully clarified. Nagahama et al[29] investigated the association between psychotic symptoms in dementia with Lewy bodies and brain perfusion using single-photon emission computed tomography and revealed that delusions and visual hallucinations were served by distinguishable cerebral networks. On phenomenological grounds, it is not clear whether visual hallucinations pertaining to a sexual theme induced the thought of the spouse's infidelity or whether suspicion about the spouse's infidelity induced hallucinations involving the spouse committing sexual indiscretions. Nevertheless, the common theme of visual hallucinations with delusional jealousy may suggest a potential link between these symptoms in dementia with Lewy bodies.

Low self-esteem and feelings of insecurity and inferiority have been considered central to many psychological theories of delusional jealousy in the literature.[1,2,30] According to Sibisi,[31] the accusation of infidelity develops in parallel with deteriorating cognitive function. However, we found no significant differences between the delusional jealousy and non–delusional jealousy groups in regard to MMSE score. Rather, in 10 of the 18 patients with delusional jealousy, MMSE score was greater than 20, suggesting that the occurrence of delusional jealousy may require a certain level of cognitive function. In dementia, especially in mild cases, cognitive decline can give the patient a feeling of inferiority compared to his or her spouse. Numerous studies have reported that awareness of deficits decreased with disease progression in patients with dementia,[32] meaning that impaired intellect in the later stages of dementia could weaken the patient's feelings of inferiority. Thus, delusional jealousy in patients in earlier stages of dementia may be strengthened by the fact that the patient has considerable remaining intellectual ability, and is thus more likely to have feelings of inferiority.

Disparities in health between the patient and spouse have also been proposed as specific and distinct risk factors for delusional jealousy in the elderly.[33] In the present study, 8 patients (44%) had serious physical diseases before the onset of delusional jealousy; as a result, these patients became more dependent upon their spouses for daily living and activities. In contrast, all but 1 of the spouses were active and in good health. In addition, nearly half of the spouses in our study often spent time away from the home alone. Physical disorders of the patient and good health of the spouse could therefore contribute to the patient's feelings of inferiority with regard to the spouse. In addition to cognitive decline, coexisting serious physical disorders may be a significant risk factor of delusional jealousy in demented patients.

Most catamnestic studies have shown that delusional jealousy in older patients usually has a poor prognosis.[2,34,35] Jørgensen and Munk-Jørgensen[34] followed up with patients over 60 years of age who were diagnosed with paranoid psychosis over 5–15 years and reported that only 2 of 24 patients with delusions comprising sexual ideas or jealousy achieved full remission. In contrast, in the present study, delusional jealousy disappeared within 1 year after treatment in as many as 83% of the patients with dementia. In addition, all but 1 patient with dementia with Lewy bodies who was placed in a nursing home due to active delusional jealousy continued outpatient treatment without institutionalization or hospitalization. These findings suggest that delusional jealousy in patients with dementia may have a much better prognosis than those with other psychiatric disorders. It is noteworthy that all of the patients with treatment-resistant delusional jealousy in the present study had dementia with Lewy bodies. In addition, 1 patient with recurrent episodes of delusional jealousy had dementia with Lewy bodies. Generally, the prognosis for delusional jealousy is considered to depend on the existence of comorbid mental disorders.[36] The existence of other psychotic symptoms, such as visual hallucinations, may result in a worse prognosis in patients with dementia with Lewy bodies.

Several methodological issues limit the interpretation of the present results. First, psychiatric symptoms were assessed by a clinical interview without using a structured assessment scale, such as Neuropsychiatric Inventory (NPI).[37] In addition, delusional jealousy can be difficult to diagnose because of the reluctance of patients and caregivers to discuss personal matters. These methodological problems can make the current prevalence of delusional jealousy seem lower than it is. In the present study, senior neuropsychiatrists investigated the contents of delusional jealousy and coexisting psychiatric symptoms using both the patient and their primary caregiver. Moreover, this research excluded subjects with mild or episodic delusional jealousy and focused on clinically relevant delusional jealousy, allowing us to obtain robust observations about delusional jealousy. Second, the statistical evaluation was limited by the small sample size of the delusional jealousy group. Third, premorbid personality of demented patients was not considered in the present study. Specific types of premorbid personality (passive personality, borderline personality, or paranoid personality) have been hypothesized to be significant factors in the development of delusional jealousy.[38] In future studies, the relationship between delusional jealousy and premorbid personality in people with dementia should be evaluated.

Drug names: aripiprazole (Abilify), donepezil (Aricept and others), olanzapine (Zyprexa and others), quetiapine (Seroquel and others), risperidone (Risperdal and others).

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Author contributions: Dr Hashimoto designed this study, worked on data analysis, and drafted the article. Dr Sakamoto helped to collect the data and analyzed and interpreted the data. Dr Ikeda supervised this study and was responsible for the statistical design of the study.
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