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CASE REPORT

The impacts of hospital admission in very late-onset schizophrenia-like psychosis: A case report

Shigeki Katakami MD[1] | Yuto Satake MD, PhD[1] | Takashi Suehiro MD, PhD[1] | Daiki Ishimaru PhD[1,2] | Erina Nakanishi MD, PhD[1] | Hideki Kanemoto MD, PhD[1] | Kenji Yoshiyama MD, PhD[1] | Manabu Ikeda MD, PhD[1]

[1]Department of Psychiatry, Osaka University Graduate School of Medicine, Suita, Osaka, Japan

[2]Department of Medical Technology, Osaka University Hospital, Suita, Osaka, Japan

Correspondence

Yuto Satake, MD, PhD, Division of Psychiatry, University College London, 6th Floor Wings B, Maple House, 149 Tottenham Ct Rd, London W1T 7NF, UK.
Email: y.satake@psy.med.osaka-u.ac.jp

Present addresses

Yuto Satake MD, PhD, Division of Psychiatry, University College London, London, UK.

Erina Nakanishi MD, PhD, Department of Psychiatry, Toyonaka Municipal Hospital, Toyonaka, Osaka, Japan.

Hideki Kanemoto MD, PhD, Health and Counseling Center, Osaka University, Suita, Osaka, Japan.

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Abstract

Background: Very late-onset schizophrenia-like psychosis (VLOSLP) is a psychotic disorder with an age of onset ≥60 years, and social isolation is a risk factor. Reports on the impact of interventions for isolation and loneliness on psychiatric symptoms in VLOSLP are limited.

Case Presentation: An 87-year-old woman, widowed and living alone, developed psychosis, including paranoia, erotomania, and visual hallucinations, at 84 years old during a period when her interactions with others were limited by the COVID-19 pandemic and osteoarthritis. She was eventually brought to our hospital with a local dementia outreach team. She was admitted and diagnosed with VLOSLP with mild cognitive decline through imaging and neuropsychological tests confirming the absence of dementia. Immediately after admission, her psychotic symptoms became inactive. She was transferred to another psychiatric hospital to prepare for her move to a long-term care facility because her psychosis was alleviated. During admission, she enjoyed the company of others and occupational therapy, and her score on the UCLA Loneliness Scale Version 3 improved from 44 at admission to 35 at discharge.

Conclusion: The admission itself improved the patient's psychosis, which seemed to be related to the alleviation of isolation and loneliness.

KEYWORDS

admission, isolation, late-onset psychosis, loneliness, nonpharmacological treatment

BACKGROUND

Very late-onset schizophrenia-like psychosis (VLOSLP) is diagnosed when schizophrenia-like psychotic symptoms develop at age ≥60 years.[1] Social isolation is a risk factor for VLOSLP.[1–3] Janzarik, who proposed the concept of Kontaktmangelparanoid, which has been encompassed by VLOSLP, stated that isolation contributes to the development of psychosis.[4] However, reports on the impact of interventions for isolation and loneliness on psychiatric symptoms in VLOSLP are limited. We report a case of a patient with VLOSLP in whom psychotic symptoms developed during periods of exacerbated isolation and improved through admission.

CASE PRESENTATION

The patient was a right-handed 87-year-old woman who was a high school graduate with two children. She had lost her husband 19 years before her first visit to our hospital and lived alone. Her medical history included diabetes, hypertension, dyslipidemia, angina

pectoris, chronic heart failure, knee osteoarthritis, and delirium during admission to another hospital for angina pectoris. The patient's grandmother had had dementia. Three years before the visit, the patient developed psychosis, when socializing with friends was reduced because of the COVID-19 pandemic and knee osteoarthritis pain. She had visual hallucinations, such as rainbow colors, snakes on the ceiling, and visions of her female neighbor peeping at her through a window. She also had erotomania, believing that her attending doctor wanted to divorce his wife and date her. One year before the visit, she developed paranoia, that is, she suspected that someone tried to harm her. It included partition delusions in which her neighbor tried to enter the room through the ceiling. The patient claimed to have seen lower limbs hanging from the closet ceiling where trousers were draped. The patient also ambivalently stated that she missed the neighbor without her intrusion. Although her daughters recommended that she see a psychiatrist, she opposed this. Finally, the patient was reported to a comprehensive community support center, brought to our hospital with a local dementia outreach team called the Initial-Phase Intensive Support Team (IPIST),[5] and was hospitalized. The IPIST reported that the patient experienced isolation and needed support.

Her daughters reported her mild amnesia, cognitive fluctuations, apathy, constipation, and hyposmia. Her activities of daily living (ADL) were maintained. Neurological examination revealed no abnormal findings, including parkinsonism. Neuropsychological tests revealed mild impairments in memory, attention, and executive function (Table 1), although the patient remembered events in the ward well. Therefore, dementia was excluded. Brain magnetic resonance imaging showed only mild atrophy in the medial frontal lobes with a small subcortical infarction in the left periventricular white matter (Figure 1a, b), and iodine-123-labeled *N*-isopropyl-p-iodoamphetamine (^{123}I-IMP) single-photon emission computed tomography (SPECT) showed slight occipital hypoperfusion (Figure 1c, d). However, ^{123}I-*N*-fluoropropyl-2b-carbomethoxy-3b-(4-iodophenyl) nortropane SPECT showed no decreased striatal uptake (Figure 1e). Blood tests revealed no abnormalities except an HbA1c level of 7.8%. Electroencephalography showed a basic rhythm of approximately 8 Hz with sporadic mixing of slow waves of approximately 6 Hz. Alzheimer's disease (AD) biomarkers in the cerebrospinal fluid of this case were in the normal range. Based on the clinical course, examination, and tests, we diagnosed her with VLOSLP according to the criteria from a previous study.[1] Her visual hallucinations, cognitive fluctuations, constipation, and hyposmia made us suspect prodromal dementia with Lewy bodies (DLB) (psychiatric-onset).[6] Five illusory responses in the noise pareidolia test with cut-off scores of 0 as healthy controls and ≥1 as DLB patients[7] also supported Lewy body disease (LBD).

Even before the start of pharmacotherapy, her psychotic symptoms became inactive from the first day of admission, and her stable mental state persisted during admission, supported by changes in her Neuropsychiatric Inventory and Brief Psychiatric Rating Scale scores between admission and transfer (Table 1). She developed good relationships with several patients and medical staff and actively participated in occupational therapy (OT). The Japanese version of the UCLA Loneliness Scale Version 3 (UCLA-LS) showed improved total scores from 44 to 35 (Table 2). On Day 11, at night, after taking zolpidem (10 mg) for rescue medication, she asked, "Where is this

TABLE 1 Neuropsychological and other tests.

Test	Score	
	At the time of admission	Before transferring to another hospital
MMSE (30)	24	27
ADAS-J cog (70)	5.4	
FAB (18)	11	
ACE-III		
Total (100)	77	
Attention/ orientation (18)	15	
Memory (26)	15	
Verbal fluency (14)	5	
Language (26)	26	
Visuospatial skills (16)	16	
CDR	0.5	
NPI 12		
Total (144)	48	4
Delusions (12)	8	0
Hallucinations (12)	8	0
Agitation/ aggression (12)	6	0
Dysphoria/ depression (12)	0	0
Anxiety (12)	0	0
Apathy/ indifference (12)	8	0
Disinhibition (12)	6	2
Irritability/lability (12)	4	0
Nighttime behaviors (12)	8	0
BPRS		
Total (126)	35	25
Hallucinatory behavior (7)	5	2
Unusual thought content (7)	3	2
GDS (15)	1	4

Note: The numbers in brackets refer to the maximum values for the tests.
Abbreviations: ACE- III, Addenbrooke's Cognitive Examination-III; ADAS-J cog, Alzheimer's Disease Assessment Scale-Cognitive Subscale Japanese version; BPRS, Brief Psychiatric Rating Scale; CDR, Clinical Dementia Rating; FAB, Frontal Assessment Battery; GDS, Geriatric Depression Scale; MMSE, Mini Mental State Examination; NPI, Neuropsychiatric Inventory.

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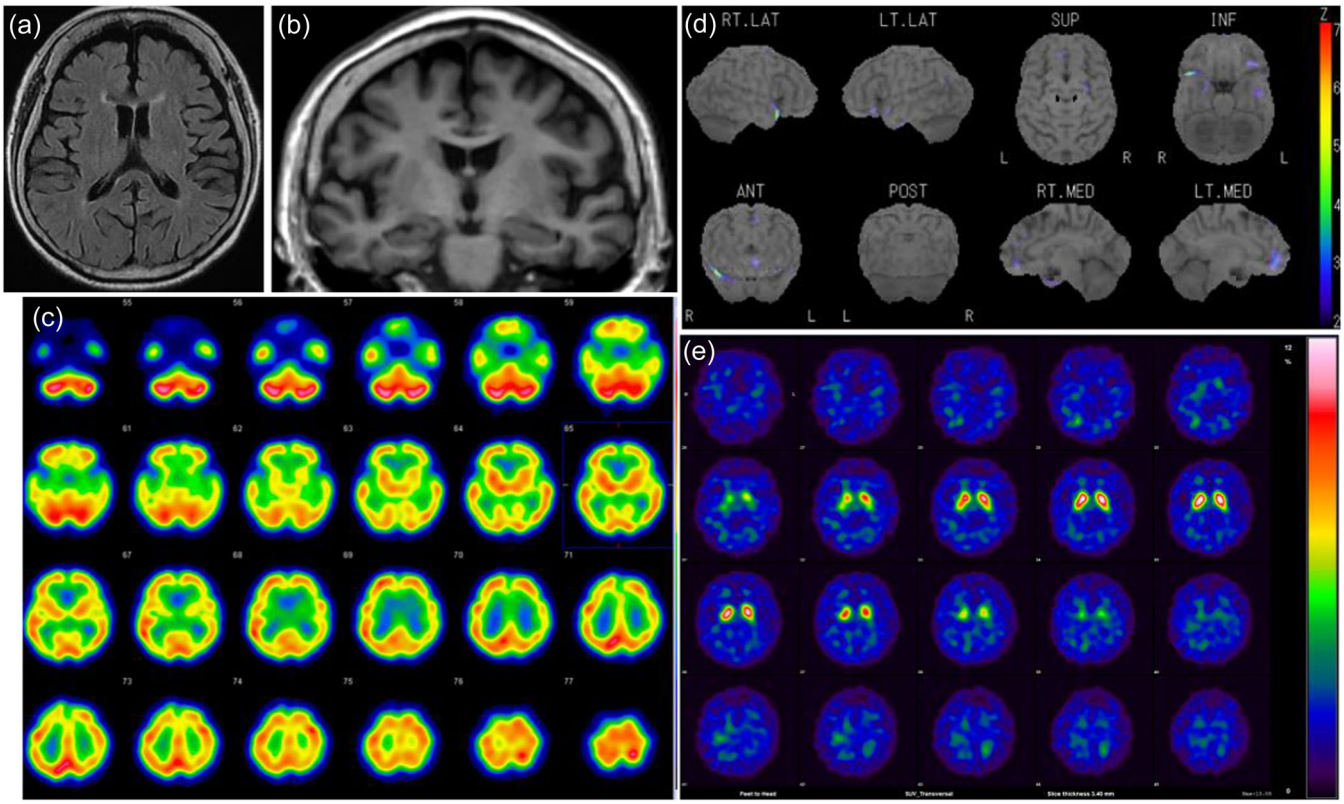

FIGURE 1 (a) Brain magnetic resonance (MR) FLAIR image. Mild atrophy was observed in the medial frontal lobes, and a small subcortical infarction was noted in the right periventricular white matter. (b) T1-weighted MR image. Atrophy was not evident in the medial temporal lobe. (c) Iodine-123-labeled *N*-isopropyl-*p*-iodo-amphetamine single-photon emission computed tomography (SPECT). Hypoperfusion was observed in the right frontal, left temporal, and occipital lobes. (d) Statistical images by three-dimensional stereotactic surface projection. The reference region is the whole brain. There were no significant hypoperfusion areas of note. (e) ^{123}I-*N*-fluoropropyl-2b-carbomethoxy-3b-(4-iodophenyl) nortropane SPECT. It showed no reduced striatal uptake. The right and left striatal-specific binding ratios were 6.19 and 5.87, respectively.

child from?" We considered it drug-induced delirium. Brexpiprazole (1 mg) was started on Day 22 for her residual delusional ideas. On the 34th night, she temporarily complained that she saw two dogs on the bed. On Day 37, we started administering donepezil (3 mg), considering the possibility of LBD. However, its effectiveness was unclear, and it was discontinued owing to loss of appetite. During admission, her ADL declined, including walker use, bathing assistance, and functional urinary incontinence, which may be attributable to exacerbated knee osteoarthritis or side-effects of brexpiprazole. She agreed with her eldest daughter's recommendation to move to a nursing home and was finally transferred to another hospital as a preparatory step. Figure 2 shows the overall clinical course of the patient. The IPIST reported that after the transfer, the patient maintained improvement in psychotic symptoms while actively participating in OT.

DISCUSSION

A widow living alone developed psychosis in a situation of increasing social isolation due to the COVID-19 pandemic and reduced activities due to knee osteoarthritis. Isolation is known as a risk factor for VLOSLP.[1–3] Isolation and loneliness are also associated with psychotic symptoms in healthy older adults, AD patients,[8] and patients with unspecified dementia.[9] A psychological study of healthy young people has also shown that paranoia is influenced and induced by manipulated subjective feelings of loneliness.[10] Older adults lacking communication with others or self-expression may also attempt to fulfill these needs by generating internal stimulation, leading to hallucinations.[8,11] Janzarik noted that delusions are not only a symptom but also a form of recreating lost relationships and function to reduce loneliness and that late-onset psychosis patients' psychotic symptoms improve with admission and relapse after discharge with returning to isolation.[4] These conclusions may be consistent with our patient's ambivalent statements of missing her neighbor without her intrusion and immediate improvement after admission. Her psychosis was likely influenced by isolation and loneliness.

Our patient enjoyed communicating with others, and her UCLA-LS scores decreased during admission, with the total score improving from 44 to 35. The mean score of UCLA-LS for older Japanese women was 40.6 with a standard deviation of 10.4.[12] Although the initial scores did not necessarily suggest loneliness, the changed scores were considered enough to judge a change in loneliness. There are various studies on interventions against the

TABLE 2 Results of the Japanese version of the University of California, Los Angeles Loneliness Scale Version 3.

Statement	Never	Rarely	Sometimes	Always
1. How often do you feel that you are "in tune" with the people around you?	4	3	2	1
2. How often do you feel that you lack companionship?	1	2	3	4
3. How often do you feel that there is no one you can turn to?	1	2	3	4
4 How often do you feel alone?	1	2	3	4
5. How often do you feel part of a group of friends?	4	3	2	1
6. How often do you feel that you have a lot in common with the people around you?	4	3	2	1
7. How often do you feel that you are no longer close to anyone?	1	2	3	4
8. How often do you feel that your interests and ideas are not shared by those around you?	1	2	3	4
9. How often do you feel outgoing and friendly?	4	3	2	1
10. How often do you feel close to people?	4	3	2	1
11. How often do you feel left out?	1	2	3	4
12. How often do you feel that your relationships with others are not meaningful?	1	2	3	4
13. How often do you feel that no one really knows you well?	1	2	3	4
14. How often do you feel isolated from others?	1	2	3	4
15. How often do you feel you can find companionship when you want it?	4	3	2	1
16. How often do you feel that there are people who really understand you?	4	3	2	1
17. How often do you feel shy?	1	2	3	4
18. How often do you feel that people are around you but not with you?	1	2	3	4
19. How often do you feel that there are people you can talk to?	4	3	2	1
20. How often do you feel that there are people you can turn to?	4	3	2	1

Note: Gray cells show the results at admission; red cells show the pretransfer results in which the degree of loneliness improved from admission; blue cells show the pretransfer results in which the degree of loneliness deteriorated from admission.

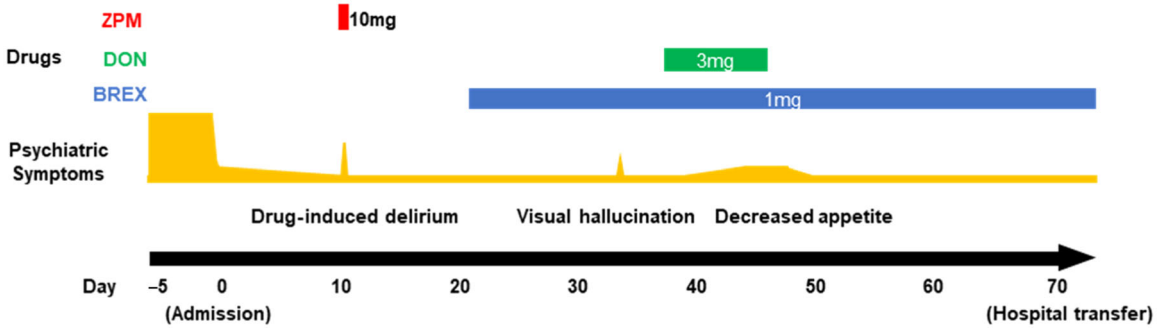

FIGURE 2 Clinical course during admission. BREX, brexpiprazole; DON, donepezil; ZPM, zolpidem.

isolation of older adults. One review of interventions against isolation and loneliness identified adaptability, a community development approach, and productive engagement as three key factors related to effectiveness in reducing isolation and loneliness.[13] A crucial aspect of adaptability is that services and supports can meet the individual needs of older adults. This patient would have required opportunities to interact with others. In addition, she may have required physical support owing to her very mild cognitive decline and physical comorbidities. Admission provided opportunities for her to interact with others. Furthermore, she lived safely, ate regular nutritious meals, and had plenty of physical support. In our case, admission provided for the most sought-after needs created through isolation. It may be regarded as a "health and social care provision" or a "social facilitation intervention," two of the six intervention categories proposed in the review.[13] Appropriate interventions for isolation throughout admission were made in the present case, which may have improved her psychotic symptoms. Similarly, there is a case report of late-onset delusional

disorder in which isolation interventions, including inpatient group OT, may have helped improve delusions.[14]

Although we described the therapeutic potential of non-pharmacologic approaches, antipsychotic medication is a reliable intervention for psychosis, and a body of evidence has supported the efficacy of antipsychotics in VLOSLP treatment.[15–17] However, the risk of antipsychotic side-effects is higher in older patients than younger ones.[18] Antipsychotic side-effects in older people include extrapyramidal symptoms, falls, and fractures.[19] Furthermore, LBD has hypersensitivity to antipsychotics.[20] Our present patient's visual hallucinations, cognitive fluctuations, history of delirium, constipation, and hyposmia suggested LBD.[6] As mentioned in our previous report, some VLOSLP patients may be in the prodromal stage of AD[21] or DLB.[22] In addition, while the biomarkers for AD and DLB were normal in this case, it is known that even if the DLB biomarker is normal in the prodromal stage, prodromal DLB cannot be ruled out.[23] Given the higher age and possibility of latent LBD, her exacerbation of gait disturbance during the admission was possibly affected by the side-effect of brexpiprazole. In VLOSLP treatment, it may be useful to pay close attention to the side effects of antipsychotic drugs and look for possible nonpharmacological treatment. In neuropsychiatric symptoms care in dementia, individualized inpatient treatment by a skilled multidisciplinary team was reported to be effective for up to 1 year postdischarge.[24] An intensive admission-based approach in which healthcare professionals evaluate and optimize pharmacological and nonpharmacological therapies may also be effective in managing VLOSLP.

This study had several limitations. First, the patient's psychosis may have improved not only because of reduced loneliness and isolation but also because admission may have separated her from her neighbor, the object of her paranoia, and from items in her home that might induce hallucinations. Trousers draped in the closet may have caused the visual hallucination of the lower limbs. However, it would be difficult to explain all improvements in psychotic symptoms, including erotomania, by separation from them. Second, although we considered the improvement in the UCLA-LS score to be an improvement in loneliness, it is important to note that there was deterioration in the subitems 5, 6, 9, and 15 of this scale. However, the worsening may have been due to being surrounded by people whose identities were unknown and who were more outgoing than she was, and not necessarily due to increased loneliness.

CONCLUSION

We report the case of a patient who developed psychosis in her 80s during sustained social isolation and loneliness, which improved after hospital admission. For some VLOSLP patients, admission itself may have therapeutic significance.

AUTHOR CONTRIBUTIONS

Shigeki Katakami conducted the neuropsychological assessments of the patient, collected the data, and wrote the initial draft of this article. Erina Nakanishi and Takashi Suehiro managed the patient, and Daiki Ishimaru implemented OT and assessment of environmental factors for psychiatric symptoms. Yuto Satake, Kenji Yoshiyama, Hideki Kanemoto, and Manabu Ikeda participated in the discussion of the results and revised the manuscript accordingly. All the authors discussed the diagnosis of the case and approved the submitted manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data supporting the results of this study are available upon request from the corresponding author, Yuto Satake. The data are not publicly available due to restrictions such as the inclusion of information that may compromise the privacy of a study participant.

ETHICS APPROVAL STATEMENT

The Osaka University Clinical Research Review Committee approved this report.

PATIENT CONSENT STAYEMENT

Written informed consent for the publication of the clinical course was provided by the patient.

CLINICAL TRIAL REGISTRATION

N/A.

ORCID

Shigeki Katakami http://orcid.org/0009-0009-7289-7818
Yuto Satake http://orcid.org/0000-0002-9350-3162
Daiki Ishimaru https://orcid.org/0000-0002-9213-8220
Hideki Kanemoto http://orcid.org/0000-0003-3662-1469

REFERENCES

1. Howard R, Rabins PV, Seeman MV, Jeste DV, Late-Onset I. Late-onset schizophrenia and very-late-onset schizophrenia-like psychosis: An international consensus. Am J Psychiatry. 2000;157(2):172–8.
2. Kay DWK, Roth M. Environmental and hereditary factors in the schizophrenias of old age ("late paraphrenia") and their bearing on the general problem of causation in schizophrenia. J Ment Sci. 1961;107:649–86.
3. Stafford J, Dykxhoorn J, Sommerlad A, Dalman C, Kirkbride JB, Howard R. Association between risk of dementia and very late-onset schizophrenia-like psychosis: a Swedish population-based cohort study. Psychol Med. 2023;53(3):750–8.
4. Kojo K. Review Article: Late-onset schizophrenic syndromes in socially isolated situations: a comparison of Janzarik's 'Kontakt-mangelparanoid' and late paraphrenia. Psychogeriatrics. 2010;10(2):83–9.

5. Satake Y, Taomoto D, Suzuki M, Shigenobu K, Kanemoto H, Yoshiyama K, et al. Complex cases with suspected dementia in the community need psychiatric support: results from a nationwide survey in Japan. Asian J Psychiatr. 2024;91:103840.
6. McKeith IG, Ferman TJ, Thomas AJ, Blanc F, Boeve BF, Fujishiro H, et al. Research criteria for the diagnosis of prodromal dementia with Lewy bodies. Neurology. 2020;94(17):743–55.
7. Mamiya Y, Nishio Y, Watanabe H, Yokoi K, Uchiyama M, Baba T, et al. The pareidolia test: a simple neuropsychological test measuring visual hallucination-like illusions. PLoS One. 2016;11(5):e0154713.
8. El Haj M, Jardri R, Larøi F, Antoine P. Hallucinations, loneliness, and social isolation in Alzheimer's disease. Cogn Neuropsychiatry. 2016;21(1):1–13.
9. Sun W, Matsuoka T, Oba H, Narumoto J. Importance of loneliness in behavioral and psychological symptoms of dementia. Int J Geriatr Psychiatry. 2021;36(4):540–6.
10. Lamster F, Nittel C, Rief W, Mehl S, Lincoln T. The impact of loneliness on paranoia: an experimental approach. J Behav Ther Exp Psychiatry. 2017;54:51–7.
11. Badcock JC, Dehon H, Larøi F. Hallucinations in healthy older adults: an overview of the literature and perspectives for future research. Front Psychol. 2017;8:1134.
12. Masuda Y, Tadaka E, Dai Y. Reliability and validity of the Japanese version of the UCLA Loneliness Scale version 3 among the older population. J Jpn Acad Com Health Nurs. 2012;15(1):25–32.
13. Gardiner C, Geldenhuys G, Gott M. Interventions to reduce social isolation and loneliness among older people: an integrative review. Health Soc Care Community. 2018;26(2):147–57.
14. Kanemoto H, Kawasaki T. Care for social isolation and loneliness in a case with late-onset delusional disorder. Cureus. 2024;16(3):e56697.
15. Jeste DV, Lacro JP, Gilbert PL, Kline J, Kline N. Treatment of late-life schizophrenia with neuroleptics. Schizophr Bull. 1993;19(4):817–30.
16. Essali A, Ali G. Antipsychotic drug treatment for elderly people with late-onset schizophrenia. Cochrane Database Syst Rev. 2012;2012(2):CD004162.
17. Howard R, Cort E, Bradley R, Harper E, Kelly L, Bentham P, et al. Antipsychotic treatment of very late-onset schizophrenia-like psychosis (ATLAS): a randomised, controlled, double-blind trial. Lancet Psychiatry. 2018;5(7):553–63.
18. Uchida H, Mamo DC, Mulsant BH, Pollock BG, Kapur S. Increased antipsychotic sensitivity in elderly patients: evidence and mechanisms. J Clin Psychiatry. 2009;70(3):397–405.
19. Khalid J, Aparasu RR. Adverse effects associated with antipsychotic use in older adults. Expert Opin Drug Saf. 2024;23 (9):1–15.
20. McKeith I, Fairbairn A, Perry R, Thompson P, Perry E. Neuroleptic sensitivity in patients with senile dementia of Lewy body type. BMJ. 1992;305(6855):673–8.
21. Satake Y, Kanemoto H, Taomoto D, Suehiro T, Koizumi F, Sato S, et al. Characteristics of very late-onset schizophrenia-like psychosis classified with the biomarkers for Alzheimer's disease: a retrospective cross-sectional study. Int Psychogeriatr. 2024;36(1):64–77.
22. Kanemoto H, Satake Y, Suehiro T, Taomoto D, Koizumi F, Sato S, et al. Characteristics of very late-onset schizophrenia-like psychosis as prodromal dementia with Lewy bodies: a cross-sectional study. Alzheimer's Res Ther. 2022;14(1):137.
23. Kobayashi R, Iwata-Endo K, Fujishiro H. Clinical presentations and diagnostic application of proposed biomarkers in psychiatric-onset prodromal dementia with Lewy bodies. Psychogeriatrics. 2024;24(4):1004–22.
24. Rouch I, Pongan E, Trombert B, Fabre F, Auguste N, Sellier C, et al. One-year evolution of behavioral and psychological symptoms of dementia in patients initially hospitalized in cognitive behavioral units: the EVITAL prospective cohort. J Alzheimer's Dis. 2017;57(1):147–55.

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