Available online: https://e-journal.unair.ac.id/jps

Case Report

Cognitive Impairment Associated with Schizophrenia: A Case Report

Lia Jessica[1,2], Yulia Fatima Bessing[3], Erikavitri Yulianti[1,2], Salma Nur Fadhilah[4]

[1]Department of Psychiatry, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia
[2]Department of Psychiatry, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia
[3]Dr. Radjiman Wediodiningrat Psychiatric Hospital, Lawang, Indonesia
[4]MScDevelopmental Psychology & Psychopathology Student, King's College London, London, United Kingdom

Submitted : September 8, 2024
Revised : November 10, 2024
Accepted : January 17, 2025
Published : May 1, 2025

Correspondence Author:
Email: lijezz_89@yahoo.co.id

Abstracts

Introduction: First-generation antipsychotics could reduce the positive symptoms of schizophrenia but also impair cognitive function. Cognitive and negative symptoms in schizophrenia could be a significant burden experienced both by the patients and caregivers. Thus the treatment of cognitive impairment associated with schizophrenia should be addressed properly. The purpose of writing this article is to increase awareness in administering antipsychotics to elderly patients with schizophrenia, especially in the cognitive aspect and how to overcome possible cognitive decline. **Case:** An outpatient female schizophrenic patient who was on first-generation antipsychotic treatment complained of forgetfulness. The complaint started 5 years after she received her treatment. While she could still perform her activities of daily living independently, her instrumental activities of daily living were impaired. Her food got burnt while she was cooking, and she also took her medicine excessively because she forgot about it. Both of those events could be very dangerous for her. **Discussion: A**ntipsychotics are the first-line pharmacotherapy for the treatment of schizophrenia but could also cause cognitive impairment. Management of cognitive impairment associated with schizophrenia could be performed both non-pharmacologically, by giving cognitive remediation therapy or physical exercise, and pharmacologically, by giving cholinergic agents such as donepezil. **Conclusions:** Cognitive impairment associated with schizophrenia should be managed as well as psychotic symptoms.

Keywords: Cognitive Impairment, Schizophrenia, Antipsychotics

Cite this as: Jessica. L, Bessing. Y. F, Yulianti. E, Fadhilah. S. N. "Cognitive Impairment Associated with Schizophrenia: A Case Report". Jurnal Psikiatri Surabaya, vol. 14, no. 1, pp.128-132, 2025. doi: 10.20473/jps.v14i1.49488

INTRODUCTION

Schizophrenia is a severe mental illness with a 1% lifetime prevalence [1], [2]. It is considered a leading cause of disability worldwide, so it needs to be treated properly [3]. Cognitive and negative symptoms in schizophrenia could be a significant burden experienced both by the patients and caregivers because they are closely associated with the patient's functioning [4]. While giving antipsychotics as the main pharmacotherapy for schizophrenia, interventions for cognitive and negative symptoms are also needed to be adequately taken [5]. Cognitive decline in patients with schizophrenia could be caused by several factors, such as low cognitive/brain reserve due to schizophrenia itself, accelerated cognitive aging, increased cerebrovascular disease, or side effects of subsequent treatment with antipsychotics or other medications [6].

CASE

The patient was a 64-year-old Javanese female. She was married and had 3 children but currently lived alone with her husband. She came to the clinic for routine control. She suffered with schizophrenia and had been on regular medication for the past 12 years. Her first symptoms at that time were difficulty sleeping, feeling scared of a lot of people with no reason, and experiencing visual hallucination. She received antipsychotic with some dosage adjustments during her treatment and had been consuming Trifluoperazine 2.5 mg twice a day as her maintenance therapy until now. Currently she complained that she was being forgetful, especially if she got distracted while doing something. For example, she forgot that she had taken her medicine, so she took her medicine again, and sometimes she forgot that she had eaten and asked to eat again.

According to her husband, complaints of forgetfulness appeared more or less 5 years after the patient underwent treatment for schizophrenia. Complaints of forgetting appeared occasionally at first but increased frequently over time. The first sign that made him notice her forgetfulness was that she forgot that she was cooking and the food got burnt. She also took excess medication several times because she forgot that she had previously taken it and insisted on taking her medicine again. On a daily basis, she did not do much activity and spent more time watching television. Her Lawton Instrumental Activities of Daily Living scale score was 2 (dependent). She could still carry out her daily activities independently and properly. Her Katz Index of Independence in Activities of Daily Living score was 6 (independent). She could also perform her prayer movements correctly and in order. Prior to her illness, she was diligent, tidy, conscientious, and paid attention to details. After being sick, she became lazy and lacked the initiative to do things, only doing what her husband asked her to do.

The patient did not have a history of hypertension, diabetes, or other chronic disease that required routine medication or hospitalization. She was never hospitalized either due to physical or mental illness. Neither the patient nor the family had a history of prior psychiatric disorder. Her physical examination was within normal limits. Her Mini-Mental State Examination (MMSE) score at the time of examination was 14, which indicated severe cognitive impairment. There was Alzheimer's disease as her differential diagnosis at first, but considering that the onset of symptoms was 5 years after her antipsychotic consumption, at the age of 57 years old, with no disorientation in familiar places, no difficulty with language or finding words, no family history of dementia, and her lack of initiatives, we thought her cognitive decline is more likely caused by the side effects of antipsychotics rather than Alzheimer's disease.

DISCUSSION

Schizophrenia is a chronic neuropsychiatric disorder characterized by positive symptoms (such as hallucinations and delusions), neg-

ative symptoms (such as lack of motivation, social withdrawal, apathy, and amotivation), and cognitive impairments (including memory, attention, and executive functioning) [3], [7], [8]. 80% of schizophrenia patients show clinically significant cognitive impairment, and that is why it is called "dementia praecox" or premature dementia by Kraepelin many years ago [9]. While many patients suffering with schizophrenia experience cognitive impairment, the Diagnostic and Statistical Manual of Mental Disorders (DSM) has not included cognitive impairment as part of diagnostic criteria for schizophrenia [10]. After the onset of schizophrenia, usually it would lead to permanent socio-occupational decline, even if the psychotic signs remit [11].

Antipsychotics are the first-line pharmacotherapy for the treatment of schizophrenia [12]. The patient we discuss received Trifluoperazine as her antipsychotic for 12 years with some dose adjustments during the treatment over the years. Trifluoperazine belongs to typical or first-generation antipsychotics (FGAs) and is well known for treating positive symptoms of schizophrenia (such as hearing voices, seeing things, and having strange beliefs) by blocking postsynaptic D2 receptors in mesolimbic and mesocortical projection [12], [13]. It is inexpensive and widely accessible, although some studies say FGAs have the possibility to impair procedural learning and memory and may cause cognitive impairment worse in schizophrenia patients, especially at high doses [3], [13], [14]. A network meta-analysis on studies of antipsychotic effects found that haloperidol, which belongs to FGA, had negative effects on cognition [15]. One of the explanations for cognitive dysfunction under antipsychotic medication is the dopamine receptor blockade. Unbalanced dopamine receptor blockade leads to significantly less striatal and telencephalic activity when cognitive tasks are performed, with the most significant effects being on motor speed and attention [14]. The dose of antipsychotic medication also plays a role in cognition, with cumulative use of antipsychotics, such as higher antipsychotic doses, as well as antipsychotic polypharmacy, reported to be associated with worse cognitive functioning [8], [16].

Cognition is the ability to accurately perceive, attend to, process, and remember information [8]. Cognitive impairment is the malfunction of cognition or intellectual abilities such as perception, reasoning, and remembering [10]. Cognitive impairment associated with schizophrenia (CIAS) has a negative influence on their functions and can prevent them from living independently [7]. The American Psychiatric Association (APA) suggests the use of cognitive remediation therapy (CRT) for treating CIAS. The therapists help patients learn efficient strategies for completing cognitive exercises that can be linked to the completion of daily activities and generalized to everyday challenges. It may not be widely available because it should include a trained therapist and be combined with psychiatric rehabilitation for optimal outcomes [5], [17]. Another intervention that could be used for treating CIAS is physical exercise. A meta-analysis concluded exercise improves cognitive functioning in schizophrenia patients, particularly within domains of social cognition, working memory, and attention [18].

Because CIAS is thought to be the result of alterations in muscarinic and nicotinic receptor expression and function (cholinergic dysregulation), one of the cognitive-enhancing agents that are posited to improve cognitive performance is cholinergic agents [9], [19]. Donepezil hydrochloride is a centrally acting, rapid, reversible acetylcholinesterase inhibitor and approved by the U.S. Food and Drug Administration (FDA) [20]. It inhibits the metabolism of acetylcholine in the postsynaptic clefts, thus enhancing cholinergic neurotransmission [21]. Although some may not show noticeable improvements in cognition, they experience a plateau or slowing of the cognitive decline [22]. A meta-analysis

suggests that the use of anti-dementia drugs and antipsychotic treatment on schizophrenia patients improves cognitive symptoms of schizophrenia, which were measured using MMSE. However, it was a small to medium effect because there is a possibility of bias due to the small sample size [23]. We gave the patient donepezil 5 mg once daily at night to at least preserve her cognitive function from getting worse. After a week, we checked her MMSE score again, and it showed the same result as before, which is 14. The score showed that there was no decline in her score, which we could probably assume there was neither a further decline nor improvement of her cognitive function. It would be better to evaluate her MMSE score again after a longer period of Donepezil administration, such as 3 or 6 months later.

CONCLUSION

Schizophrenia is a chronic neuropsychiatric disorder characterized by positive symptoms, negative symptoms, and cognitive impairment. Antipsychotics are the first-line pharmacotherapy for the treatment of schizophrenia, although some studies say FGAs may cause cognitive impairment. Cholinergic agents such as donepezil could be given to preserve cognitive function in schizophrenia.

ACKNOWLEDGMENTS

The authors thank the patient and her husband who have agreed to provide data and consent for publication.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

FUNDING

No funding was received to assist with the preparation of this manuscript.

REFERENCES

[1] A. Hasan, P. Falkai, I. Lehmann, and W. Gaebel, “Schizophrenia,” Dtsch. Arztebl. Int., Jun. 2020, doi: 10.3238/arztebl.2020.0412.

[2] J. Schaefer, E. Giangrande, D. R. Weinberger, and D. Dickinson, “The global cognitive impairment in schizophrenia: Consistent over decades and around the world,” Schizophr. Res., vol. 150, no. 1, pp. 42–50, Oct. 2013, doi: 10.1016/j.schres.2013.07.009.

[3] S. A. Torrisi et al., “Dopamine, Cognitive Impairments and Second-Generation Antipsychotics: From Mechanistic Advances to More Personalized Treatments,” Pharmaceuticals, vol. 13, no. 11, p. 365, Nov. 2020, doi: 10.3390/ph13110365.

[4] C. U. Correll and N. R. Schooler, “Negative Symptoms in Schizophrenia: A Review and Clinical Guide for Recognition, Assessment, and Treatment,” Neuropsychiatr. Dis. Treat., vol. Volume 16, pp. 519–534, Feb. 2020, doi: 10.2147/NDT.S225643.

[5] M. Maroney, “Management of cognitive and negative symptoms in schizophrenia,” Ment. Heal. Clin., vol. 12, no. 5, pp. 282–299, Oct. 2022, doi: 10.9740/mhc.2022.10.282.

[6] D. H. Adamowicz and E. E. Lee, “Dementia among older people with schizophrenia: an update on recent studies,” Curr. Opin. Psychiatry, vol. 36, no. 3, pp. 150–155, May 2023, doi: 10.1097/YCO.0000000000000861.

[7] A. Vita et al., “European Psychiatric Association guidance on treatment of cognitive impairment in schizophrenia,” Eur. Psychiatry, vol. 65, no. 1, p. e57, Sep. 2022, doi: 10.1192/j.eurpsy.2022.2315.

[8] N. E. MacKenzie et al., “Antipsychotics, Metabolic Adverse Effects, and Cognitive Function in Schizophrenia,” Front. Psychiatry, vol. 9, Dec. 2018, doi: 10.3389/fpsyt.2018.00622.

[9] A. McCleery and K. H. Nuechterlein, “Cognitive impairment in psychotic illness: prevalence, profile of impairment, developmental course, and treatment considerations,” Dialogues Clin. Neurosci., vol. 21, no. 3, pp. 239–248, Sep. 2019, doi:

10.31887/DCNS.2019.21.3/amccleery.
[10] Y. Gebreegziabhere, K. Habatmu, A. Mihretu, M. Cella, and A. Alem, "Cognitive impairment in people with schizophrenia: an umbrella review," Eur. Arch. Psychiatry Clin. Neurosci., vol. 272, no. 7, pp. 1139–1155, Oct. 2022, doi: 10.1007/s00406-022-01416-6.
[11] R. de Oliveira-Souza, R. P. Marrocos, and J. Moll, "The dementias of schizophrenia," Dement. Neuropsychol., vol. 1, no. 2, pp. 124–130, Jun. 2007, doi: 10.1590/s1980-57642008dn10200003.
[12] K. Koch, K. Mansi, E. Haynes, C. E. Adams, S. Sampson, and V. A. Furtado, "Trifluoperazine versus placebo for schizophrenia," Cochrane Database Syst. Rev., vol. 2014, no. 1, Jan. 2014, doi: 10.1002/14651858.CD010226.pub2.
[13] L. de O. Marques, B. Soares, and M. Silva de Lima, "Trifluoperazine for schizophrenia," Cochrane Database Syst. Rev., Jan. 2004, doi: 10.1002/14651858.CD003545.pub2.
[14] M. Rehse, M. Bartolovic, K. Baum, D. Richter, M. Weisbrod, and D. Roesch-Ely, "Influence of Antipsychotic and Anticholinergic Loads on Cognitive Functions in Patients with Schizophrenia," Schizophr. Res. Treatment, vol. 2016, pp. 1–10, 2016, doi: 10.1155/2016/8213165.
[15] D. P. Baldez et al., "The effect of antipsychotics on the cognitive performance of individuals with psychotic disorders: Network meta-analyses of randomized controlled trials," Neurosci. Biobehav. Rev., vol. 126, pp. 265–275, Jul. 2021, doi: 10.1016/j.neubiorev.2021.03.028.
[16] L. Cai and J. Huang, "Schizophrenia and risk of dementia: a meta-analysis study," Neuropsychiatr. Dis. Treat., vol. Volume 14, pp. 2047–2055, Aug. 2018, doi: 10.2147/NDT.S172933.
[17] A. O. Ahmed, "Cognitive Remediation for Schizophrenia," Focus (Madison)., vol. 18, no. 4, pp. 436–439, Oct. 2020, doi: 10.1176/appi.focus.20200035.
[18] J. Firth et al., "Aerobic Exercise Improves Cognitive Functioning in People With Schizophrenia: A Systematic Review and Meta-Analysis," Schizophr. Bull., p. sbw115, Aug. 2016, doi: 10.1093/schbul/sbw115.
[19] D. C. Goff, M. Hill, and D. Barch, "The treatment of cognitive impairment in schizophrenia," Pharmacol. Biochem. Behav., vol. 99, no. 2, pp. 245–253, Aug. 2011, doi: 10.1016/j.pbb.2010.11.009.
[20] A. Kumar, V. Gupta, and S. Sharma, "Donepezil.," Treasure Island (FL), 2025.
[21] No Title. Bethesda (MD), 2012.
[22] J. Halter, J. Ouslander, M. Tinetti, S. Studenski, K. High, and S. Asthana, Hazzard's Geriatric Medicine and Gerontology, Sixth Edition. Mcgraw-hill, 2009. [Online]. Available: https://books.google.co.id/books?id=yjr9TUORAQYC
[23] T. Kishi, T. Ikuta, K. Oya, S. Matsunaga, Y. Matsuda, and N. Iwata, "Anti-Dementia Drugs for Psychopathology and Cognitive Impairment in Schizophrenia: A Systematic Review and Meta-Analysis," Int. J. Neuropsychopharmacol., vol. 21, no. 8, pp. 748–757, Aug. 2018, doi: 10.1093/ijnp/pyy045.