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A 64 Year Old Woman With Neuropsychiatric Symptoms In Severe Dementia: A Case Report

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Abstract

Neuropsychiatric symptoms (NPS) in dementia involve changes of behavior and personality, agitation, anxiety, depression, hallucinations, sleep or eating disorders. NPS leads to worse prognosis and accelerates the progression to severe dementia. A 64-year-old woman with agitation. Alloanamnesis found that since 3 years ago, patient has become senile, memory worsens and gets lost when traveling. Patient always repeats the same sentence, walks aimlessly, has sleep disorder and visual hallucinations. Patient is completely dependent on her family. Family history of illness, the patient's mother experienced the same symptoms. Neurological examination found hemiparesis sinistra sequelae since 1 year ago. Non-contrast head CT scan showed infarct in the right lentiform nucleus and brain atrophy with total Global Cortical Atrophy (GCA) scale 17. Hachinski score 4. Neuropsychiatric inventory (NPI) score 77. Patient's previous treatment was not consistent. During initial treatment, the MMSE score 4, the MOCA Ina score 3, the IADL score 0. Patient received therapy with donepezil 5mg, olanzapine 10 mg, and fluoxetine 20 mg. Follow up result 1 month, MMSE score 10, MOCA Ina score 6, IADL score 2. The diagnosis of NPS in dementia is based on anamnesis, physical examination and supporting examination. Severe cognitive decline affecting domains of memory, language, attention and concentration, visuospatial function and executive function. Patient experienced clinical improvement after 1 month of pharmacological therapy. Early identification of neuropsychiatric symptoms in dementia patients is very important to provide appropriate management.

Keywords: Dementia; Neuropsychiatric Symptoms; ***Nps; Cognitive***

INTRODUCTION

In 2019, the global prevalence of people with dementia reached 57.4 million, and it is estimated to increase to 152.8 million by 2050 (Nichols et al., 2019). Neuropsychiatric Symptoms (NPS) were previously referred to as Behavioral and Psychological Symptoms in Dementia (BPSD) (Cerejeira et al., 2012). NPS is a cluster of non-cognitive symptoms that occur in dementia patients and affect the quality of life of both patients and their families. The prevalence of NPS is 67.9% (Vaingankar et al., 2017). Neuropsychiatric symptoms (NPS) in dementia include changes in personality and behavior, agitation, anxiety, depression, hallucinations, and changes in sleep patterns or appetite (Aalten et al., 2007).

The etiology of NPS is known to be complex and multidimensional (Kar, 2020). Clinically, NPS is grouped into six categories of symptoms and behaviors: 1) Affect, including depression, dysphoria, anxiety, euphoria, and apathy. 2) Aggression, such as agitation, irritability, and instability. 3) Circadian rhythm, for example, nighttime behavior and appetite disorders. 4) Executive dysfunction, for example, disinhibition. 5) Motor disorders, for example, wandering/pacing and repetitive movements. 6) Psychosis, such as delusions and hallucinations (Sabates et al., 2024). NPS worsens the prognosis and accelerates progression into severe dementia (Peters et al., 2015). The following is a case report of NPS in severe dementia.

RESEARCH METHODS

A 64-year-old woman presented with complaints of anxiety. Alloanamnesis revealed that since 3 years ago, the patient became forgetful and her memory progressively worsened over time. The patient could not remember the names of her three children and got lost when traveling. The patient always repeated the same sentences, walked aimlessly, experienced sleep disturbances, and had visual hallucinations. The patient completely depended on her family to perform daily activities. Family medical history showed that the patient's mother experienced the same symptoms. The family refused to have the patient referred to a hospital with *neurobehavior* services.

Physical examination showed vital signs within normal limits. Neurological examination showed the presence of left hemiparesis sequelae since 1 year ago. Non-Contrast Head CT Scan showed an image of infarction in the right lentiform nucleus, brain atrophy appearing as widened sulci and gyri of the cerebral cortex accompanied by enlargement of the bilateral lateral ventricles and the third ventricle, with a total Global Cortical Atrophy (GCA) scale of 17 **(Figure 1)**.

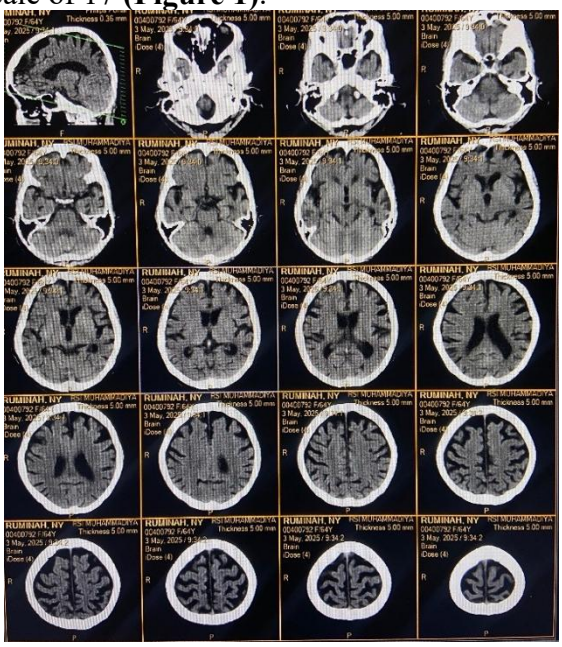

Figure 1. Non-Contrast Head CT Scan

The Hachinski score is 4. The Neuro Psychiatric Inventory (NPI) score is 77. The patient does not receive regular medical treatment. Upon initial arrival, MMSE examination was performed with a score of 4, MOCA-Ina with a score of 3, and IADL with a score of 0. These results indicate severe cognitive impairment with disruption in daily activities. The patient received therapy of donepezil 5mg, olanzapine 10mg, and fluoxetine 20mg. After a 1-month follow-up, the MMSE score was 10, MOCA-Ina score was 6, and IADL score was 2.

RESULTS AND DISCUSSION

The reported case is a 64-year-old woman with complaints of anxiety. In this patient, a chronic-progressive brain disorder was found, characterized by severe cognitive function impairment occurring across the domains of memory, language, attention and concentration, visuospatial function, and executive function.

The clinical diagnosis of dementia is established based on neurobehavioral history, physical neurological examination, and patterns of cognitive impairment. Generally,

dementia symptoms are divided into two categories, namely cognitive impairment and non-cognitive impairment. Cognitive complaints consist of memory impairment, especially the ability to learn new material, which is often the earliest complaint. Remote memory can be disrupted in advanced stages of dementia. Patients experience disorientation around the house or in relatively new environments. Non-cognitive complaints include neuropsychiatric symptoms. Behavioral components include agitation, aggressive and non-aggressive actions such as *wandering*. The most frequent complaints are depression, sleep disturbances, and hallucinations.

Psychotic symptoms in the form of visual hallucinations are associated with a significant increase in the density of *senile plaques* and *neurofibrillary tangles* in the prosubiculum and middle frontal cortex, as well as a decreased number of neurons in the parahippocampal region. In addition, delusions or hallucinations are associated with an increased density of extracellular tangles in the parietal lobe and a higher number of neuritic plaques in the occipital cortex.

The Hachinski score is useful for distinguishing Alzheimer's dementia from vascular dementia, and the score result is 4, which means the dementia in this patient is Alzheimer's dementia because the score is <7. The Neuro Psychiatric Inventory (NPI) score result was 77. The NPI is a structured interview method aimed at obtaining information regarding the frequency and severity of NPS. The NPI assesses 12 symptoms, including delusions, hallucinations, agitation, depression, anxiety, euphoria, apathy, disinhibition, irritability, abnormal motor behavior, nighttime behavior, and changes in eating patterns. Frequency assessment: Score 1 is rare (less than once a week) to score 4 (very frequent). Severity assessment ranges from score 1, which is mild (does not cause much distress to the patient), to score 3, which is severe (highly disruptive to the patient and difficult to redirect). The score for each subscale is obtained from the multiplication of the frequency and severity of each specific symptom. The total score is obtained by adding up the scores for all subscales and ranges from 0 points (no neuropsychiatric impairment) to a maximum of 144 points.

	MMSE Score	MOCA-Ina Score	IADL Score
Before receiving therapy	4	3	0
1 month after receiving therapy	10	6	2

Table 1 Results of MMSE, MOCA-Ina, IADL Examination

Upon initial arrival at the hospital, this patient was assessed to have an MMSE score of 4, which falls within the 0-16 range classified as a definite cognitive impairment. The patient was still delirious and anxious, unable to follow instructions, and experienced sleep disturbances. After receiving therapy and undergoing a 1-month follow-up, the MMSE score increased to 10. The patient became cooperative, calm, and able to sleep, although occasionally still delirious and unaware of her whereabouts.

Cognitive function was measured using the MMSE and MOCA-Ina instruments. The overall impression showed that the patient experienced severe dementia. This is in line with research showing a significant negative correlation, meaning that the lower the MMSE score (the worse the patient's cognitive function), the higher the GCA score (the more severe the atrophy condition).

This is consistent with a systematic review and meta-analysis of 90 publications by Sabates, et al. (2024), which reported a significant correlation between NPS and cognition; patients experiencing NPS tend to have poorer cognitive levels. Head CT scan findings showing cerebral atrophy in dementia patients indeed imply the presence of neuronal damage. Cerebral atrophy is the shrinking of the brain, which can be caused by various

conditions including dementia such as Alzheimer's. This neuronal damage can be visible on a CT scan and becomes one of the important indicators in the diagnosis of dementia (Cummings et al., 2016).

The patient received medical therapy including donepezil 5mg, olanzapine 10 mg, and fluoxetine 20 mg. Donepezil is a cholinesterase inhibitor. The decline in cognitive function is caused by the progressive loss of cholinergic neurons and the reduction of *acetylcholine* in the brain. Donepezil is proven to be effective for the treatment of NPS in dementia. The use of donepezil is associated with a reduced need for antipsychotic and antidepressant medications.

The patient also received olanzapine, which is an atypical antipsychotic to control visual hallucinations. Indications for the use of antipsychotics in NPS include: 1) When there is a specific indication (e.g., depression, psychosis) regardless of the severity or frequency of symptoms. 2) When symptoms are severe and therapy is urgently needed. 3) When behavior has no clear trigger or occurs in conditions where the family cannot manage serious behavioral symptoms.

The antidepressant administered is fluoxetine, which belongs to the Selective Serotonin Reuptake Inhibitor class, proven to be effective for treating depressive episodes in dementia. The patient experienced improvement in cognitive and psychotic symptoms with a combination of pharmacological therapies. Early identification of neuropsychiatric symptoms in dementia patients is highly critical to provide appropriate management.

CONCLUSION

Basic neurobehavioral examination is highly required in every healthcare facility. Cognitive decline renders patients unable to perform self-care; hence, managing behavioral and psychological symptoms in dementia is crucial.

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