

## Mixed Dementia Alzheimer and Lewy body with congenital diseases: Case Study

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### Abstract

**Objectives:** Dementia due to Alzheimer's disease (AD) and dementia with Lewy bodies (DLB) are the diseases that appear together, especially in elderly people. Still, clinical identification of dementia is difficult in such circumstances. Therefore, we conducted a case study with a comprehensive prospective clinical assessment and complete mental, physical, and psychiatric examination to diagnose such mixed cases clinically and for curative management of mixed dementia of Alzheimer's disease (AD) and dementia with Lewy bodies (DLB).

**Case:** a 76 years old woman have anxiety that fluctuated. The history of medical disorders, physical examination and supporting examinations, was found that the patient had hypertension, dyslipidemia, hypothyroidism in treatment, Barrett's esophagus in therapy, osteoarthritis genu dextra, history of malnutrition, breast cancer and hysterectomy. The patient was advised to administer antipsychotics because the patient's agitation was severe and the caregiver's distress was high. The patient improved with pharmacological therapy and family monitoring support.

**Conclusion:** The diagnosis of mixed dementia patients (Alzheimer's disease (AD) and dementia with Lewy bodies (DLB)) with a medical history of congenital disease has overlapping symptoms so that very selective drug treatment is needed so as not to worsen the condition of other diseases. The supportive role of the family can help cure mixed Alzheimer's disease (AD) and dementia with Lewy bodies (DLB) by creating a logbook of daily behavior and symptoms that appear in the patient.

**Keywords:** Alzheimer's disease; Dementia; Dementia Lewy body; Mixed dementia; Human outcome.

### 1. Introduction

Globally, there were 46.8 million people living with dementia in 2015. This number is projected to rise to 75 million by 2030 and 135 million by 2050[1]. It is projected that the number of individuals suffering from dementia would rise from 960,000 in 2013 to 1.89 million in 2030 and 3.98 million in 2050[2]. Nearly 60% of people with dementia worldwide are found in poor and developing countries [3,4]. Dementia is a National Health Priority in Australia, where it affects over 300,000 individuals and is the third largest cause of death and disability[5]. In terms of the number of dementia cases worldwide, Indonesia came in ninth place in 2015 with 1.2 million cases, according to a research published by Alzheimer's Disease International[6,7].

The prevalent neurodegenerative dementia known as dementia with Lewy bodies (DLB) in the elderly population is largely undiagnosed and underreported. Alpha-synuclein ( $\alpha$ -syn) is a synaptic protein that accumulates and aggregates over time to form Lewy bodies and Lewy neurites in the brainstem, limbic system, and neocortical areas. This is the hallmark of DLB histopathology[8,9]. When DLB is diagnosed clinically, cognitive impairment progresses gradually and is usually accompanied by parkinsonism, visual hallucinations, and cognitive fluctuations. It exhibits many of the same cognitive and non-cognitive symptoms as Parkinson's disease (PD) and Alzheimer's disease (AD). DLB is a frequently

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debilitating illness that is linked to mortality rates, increased caregiver burden, and a lower health-related quality of life than AD[10]. Of all neurodegenerative dementia cases, 50–70% are Alzheimer's disease (AD)[11], and is typified by tau and amyloid  $\beta$  ( $A\beta$ ) neuritic plaques as well as neurofibrillary tangles made by hyperphosphorylated tau[8]. The temporal start of these distinct diseases is frequently unclear, and clinical distinction is frequently challenging in patients of clinically diagnosed DLB that exhibit both AD and DLB pathology (AD +DLB).

Lewy body pathology, which affects 22.5% of the general population and 41.4% of demented subjects, frequently coexists with AD pathology, according to pathological studies using autopsy samples from the general population. Aging and AD also have a significant impact on the progression of DLB pathology, affecting clinical severity and prognosis [2,4]. Since DLB diagnoses are frequently overlooked, the true prevalence of DLB and the mixed disease of AD with DLB is probably substantially higher than that of clinically recognized cases. These results point to the limitations of the diagnostic criteria and biomarkers used today in terms of their ability to accurately identify patients with DLB or mixed dementia (DLB + AD) [1,2].

The coexistence of AD and DLB is referred to as mixed dementia (MD), and as the population ages, its prevalence is expected to rise. It must be acknowledged that symptom overlap and a lack of clear diagnostic criteria make it difficult to distinguish between AD, DLB, and MD [10,12]. While preventing or delaying the progression of MD is still a difficult clinical diagnosis to make, managing cardiovascular risk factors including hypertension and hyperlipidemia probably plays a significant role. In addition, the patients occasionally suffer from other congenital conditions as hysterectomy, breast cancer, malnourishment, and Barrett's oesophagus. Since older adults are more likely to experience neurodegeneration from both Alzheimer's disease and cerebrovascular illness, unified diagnosis to explain signs and symptoms, probably does not apply to this group of people. The diagnosis of mixed AD and DLB dementia and its treatment to lessen dementia symptoms are the goals of this case study.

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## 2. Case Presentation

A woman, 76 years old, who experienced anxiety for three months. The patient's anxiety pattern fluctuates. The patient's restlessness is accompanied by movement disorders such as tremors, imbalance when changing positions, the patient's inability to direct movements, and greatly decreased cognitive abilities, as well as limitations in movement, especially in the right knee area, visible swelling. The patient has no history of mental disorders, seizures, fainting, or serious head trauma, drugs, alcohol, or other addictive substances.

Based on data obtained from the history of medical disorders, physical examination and supporting examinations, it was found that the patient had: hypertension, dyslipidemia, and hypothyroidism in treatment, Barrett's esophagus in therapy, osteoarthritis genu dextra, and history of malnutrition, breast cancer and hysterectomy. The discrepancy between what the family expects and the patient's actual condition causes "unmet needs" to continue to occur and causes a two-way escalation, leading to caregiver burden. This caregiver burden greatly reduces the quality of patient care. Comprehensive assessment of patient function using a scale Global Assessment of Functioning (GAF). The GAF scale currently obtained is 30. Scale GAF highest level past year (HLPY), namely the patient's best condition during the last year 65.

The patient was advised to administer antipsychotics because the patient's agitation was severe and the caregiver's distress was high. By administering quetiapine, the dose starts with a dose of 25 mg for the initial dose, start low, go slow. Families are advised to make a logbook, recording what happens to the patient, so that the patient's fluctuating anxiety condition can be understood. Give donepezil 10 mg in 6 – 8 weeks, and reduce the dose of memantine to 1 x 5 mg. After being evaluated for 3-4 months, this administration was quite successful in reducing the patient's agitation, as seen in the decreased NPI score, and the caregiver's distress also decreased. Tension was also successfully stabilized in the range of 140/90 - 150/100.

The family succeeded in reducing the patient's emotional escalation, although the patient still appeared to hit or pinch, but the frequency was less frequent. Then the family gradually returns to a schedule of activities that the patient can still do, such as walking around the house 6-7 rounds, at least 3 times a day. Then in 2021 Quetiapine came back in, 25 mg at night. Also given melatonin 1 mg and increased to a dose of 3 mg. The patient's sleep at night is better. Currently, the patient wants to be left alone at home with a household assistant, without family, for around 2-3 hours. The patient also did not get angry when she saw her husband going to India for treatment. The basis for giving melatonin is that melatonin can improve REM sleep disturbance disorder. What is recommended besides melatonin is clonazepam, however for patients, clonazepam will increase the risk of falls because of its sedation effect. So melatonin was chosen.

### 3. Discussion

Dementia causes a significant decline in cognitive function but also interferes with a person's activities in daily life [13]. In DSM-5 dementia is referred to as a major neurocognitive disorder with diagnostic criteria for impairment in one or more cognitive domains including attention, executive function, learning, memory and language; There are limitations to daily activities; Can be caused by Alzheimer's disease, vascular disease, frontotemporal degeneration, Lewy body disease, Parkinson's; May be associated with behavioral disorders in the form of delusions, hallucinations, mood symptoms, apathy; Classified into mild, moderate and severe based on the severity of daily activities [2,4,14].

This patient shows symptoms of apathy which are similar to anhedonia in depression, but the symptoms of apathy are more associated with cognitive decline: the patient shows symptoms of daydreaming while bathing then not remembering the next steps and becoming passive, or the patient's repeated questions about preparations for the patient's death ceremony, where the patient says this without looking sad rather looks flat. In this patient, GDS could not be performed because the patient did not answer when asked the GDS question, but the MADRS showed no depression [1,15,16].

Symptoms of Alzheimer's and Lewy body dementia are proven by post mortem examination of brain tissue. This examination is to show the presence of Beta amyloid or alpha sin nuclei in the brain. However, it turns out that in Alzheimer's, apart from getting beta amyloid, you can also get alpha sin nuclei at the same time, which gives rise to mixed symptoms of Alzheimer's Dementia and Lewy Bodies Dementia. Alzheimer's is often found mixed with vascular dementia, but in this patient there were no signs and symptoms leading to stroke [2,12].

In patients there is RBD which appears after cognitive decline, parkinsonism, falls, anxiety which appears at any time, behavioral symptoms which appear at any time, occurs more often in dementia patients with a mixture of Alzheimer's and Lewy bodies. Considering this, the diagnosis in patients is probable Lewy body dementia or mixed Alzheimer's Lewy body dementia. Diagnosis can be made during a post mortem examination. Based on the patient's overall medical history from dementia to Alzheimer's and within 1.5 years BPSD symptoms appeared accompanied by typical symptoms of Lewy body dementia, the patient's diagnosis was more towards mixed type dementia (Alzheimer's and Lewy Body) with behavioral and psychological disorders. Both Alzheimer's dementia, Lewy body dementia and mixed Alzheimer's and Lewy body dementia lead to problems of genetic susceptibility, especially in the patient's children and grandchildren. Because on the husband's side, there is a genetic susceptibility to Parkinson's, and on the patient's side there is a genetic susceptibility to dementia mixed type [4,12,14,17].

These four things underlie the patient's behavioral and psychological symptoms. The patient experiences pain, limitations in movement, delusions of persecution, and the inability to regulate his movements so that he often becomes violent, whereas so far the patient has never been violent with anyone. BPSD in patients is also shown in the NPI examination that has been carried out. The patient's family is confused by the patient's condition which has changed drastically, and when good days appear, it raises hopes that the patient does not have dementia. This family's expectations are not in line with the patient's needs (unmet needs), thus causing further escalation of emotions in the patient. Behavioral and psychological symptoms in dementia patients present their own challenges for caring families [4,8,18,19].

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### 4. Conclusion

The diagnosis of mixed dementia patients (AD and DLB) with a medical history of congenital disease has overlapping symptoms so that very selective drug treatment is needed so as not to worsen the condition of other diseases. The supportive role of the family can help cure mixed AD and DLB dementia by creating a logbook of daily behavior and symptoms that appear in the patient. Further research is needed regarding the specific diagnosis of mixed DLB and AD dementia using both physical and psychiatric tests so that it is easier to determine and treat, especially in patients who have a history of many congenital diseases.

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### Compliance with ethical standards

#### *Disclosure of conflict of interest*

There is no conflict of interest to declare.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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