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Dementia with Lewy Bodies: Diverse Signs and Symptoms, Diverse Therapeutic Approaches - A Review of the Literature

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ABSTRACT

Dementia with Lewy bodies belongs to the most common neurodegenerative diseases; however, it is frequently misdiagnosed or underdiagnosed due to its broad spectrum of clinical signs and symptoms. The spectrum of possible clinical presentations is rather vast and encompasses not only diverse cognitive impairments and sleep disturbances but also Parkinsonian features, autonomic dysfunction, and psychiatric manifestations. To date, there is no treatment available that halts disease progression, and no single medication can address all its symptoms. Taking it into consideration, clinicians must treat every single symptom separately, often using multiple pharmacological interventions. It is important to bear in mind that every medication carries the possible risk of adverse effects, which may require dose reduction or even necessitate discontinuation of therapy. This review highlights the range of available treatment options for this type of dementia and calls for further research to address patients' needs and improve disease management.

Keywords: dementia with Lewy bodies, Lewy body dementia, dementia management, dementia treatment

1. INTRODUCTION

Dementia has become one of the most important public health concerns of the current century due to aging populations throughout the world, and necessitates rapid addressing. As life expectancy rises, more people are living into the age ranges where neurodegenerative disorders become common. As stated in the International Classification of Diseases - 11th revision (WHO, 2019), dementia is understood as marked impairment in at least two cognitive domains (e.g., memory, learning, language, attention, executive function, social cognition, visuoperceptual abilities) that cannot be explained by the effects of acute substance use or withdrawal. Cognitive impairment encompasses a range of features that cannot be

explained only by the expected characteristics of aging and that lead to significant troubles in independent functioning in everyday life (WHO, 2019; Wang et al., 2024).

Conventional classifications of dementia include two main categories: reversible and irreversible etiologies. Within the vast spectrum of reversible etiologies, one may identify: neurosurgical causes (e.g., subdural hematoma, normal pressure hydrocephalus), infections and inflammatory causes, metabolic conditions (e.g., hypo- or hyperthyroidism, hypo- or hyperparathyroidism), nutritional deficiencies (e.g., vitamin B1, B12, folate, or iron deficiency), and numerous others. The range of irreversible causes is comparatively limited and encompasses Alzheimer's disease, vascular dementia, Lewy body dementia (the term refers to two interrelated forms of dementia, i.e., Parkinson's disease dementia (PDD) and dementia with Lewy bodies), frontotemporal dementia, prion related dementia, Huntington's disease and Down's syndrome (Grover and Somani, 2016; WHO, 2019).

Dementia with Lewy bodies (DLB) is considered to be the most common form of dementia in the neurodegenerative disease spectrum, right after Alzheimer's disease (AD); however, it is difficult to unambiguously determine, as the exact prevalence estimates vary depending on the study. In everyday practice, DLB can pose a significant difficulty when it comes to making a diagnosis and is often underdiagnosed or misdiagnosed as AD, atypical Parkinsonian disorders, other types of dementia, and many more due to its heterogeneous presentation. Individuals affected by dementia with Lewy bodies may demonstrate: cognitive symptoms (fluctuating cognition and attention, memory problems), REM (rapid eye movement) sleep behaviour disorder, visual hallucinations, Parkinsonian symptoms (bradykinesia, rigidity, or rest tremor), autonomic dysfunction (orthostatic hypotension, constipation or urinary incontinence), psychiatric symptoms (depression, anxiety, apathy) (McKeith et al., 2017; Walker et al., 2015).

At present, there is no definitive cure for DLB. Because the spectrum of symptoms in this entity is broad, one should individualize management in order to address each patient's clinical profile properly. Therapeutic decisions must balance possible benefits with the risk of adverse effects to achieve optimal outcomes. It is not uncommon for patients to present with completely different symptoms, which may change over time within the same patient. Drug interventions may alleviate specific symptoms but can also worsen others, thereby complicating disease management. This review aims to present current pharmacological options for DLB management.

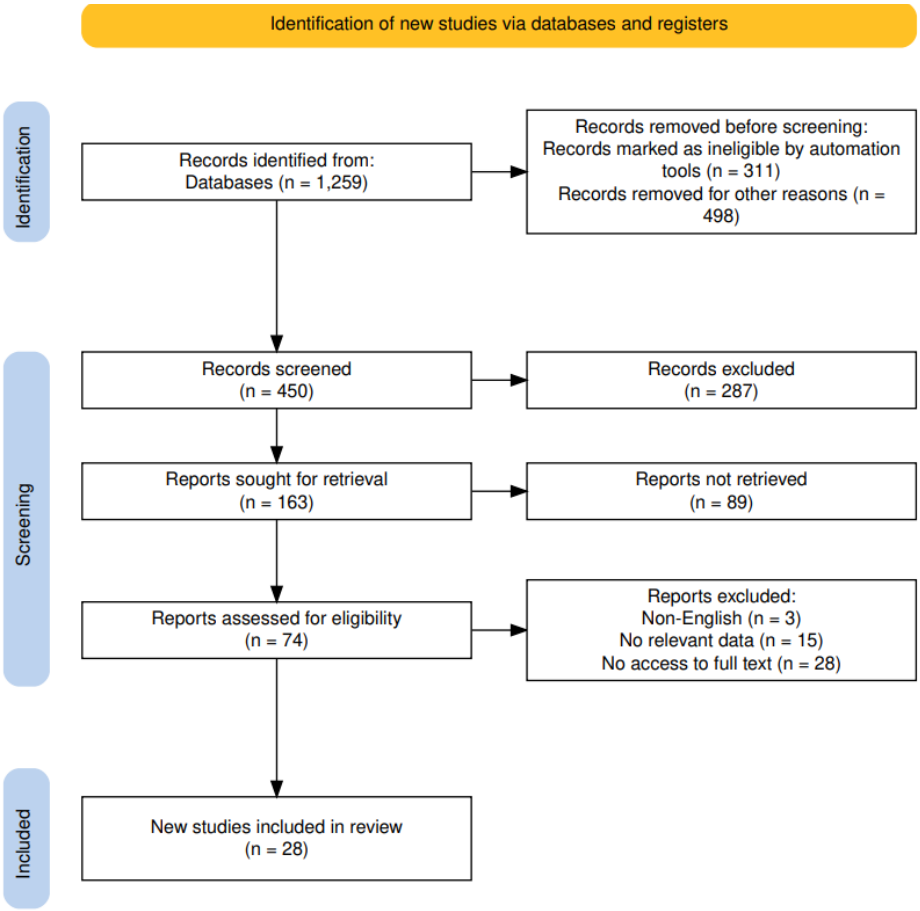

Figure 1. PRISMA flow diagram

2. REVIEW METHODS

The review article was based on an analysis of medical literature using openly accessible databases such as PubMed and Cochrane Library. In order to obtain a collection of articles to analyze, we used a combination of the following keywords: "dementia with Lewy bodies", "Lewy body dementia", "management", "treatment". We prioritised the most recent systematic reviews and meta-analyses published in English, focusing predominantly on papers published throughout the last 10 years. Non-English studies and studies without full-text access were excluded from the review. The included literature focuses on the current treatment methods. The evidence base also included the International Classification of Diseases - 11th revision, which supports clear communication among healthcare providers, researchers, and institutions and eliminates ambiguity. The selection process followed the PRISMA 2020 guidelines, and we present it using the PRISMA flow diagram (Fig.1).

3. RESULTS & DISCUSSION

3.1. Dementia Medications & Management

3.1.1. Acetylcholinesterase inhibitors (AChEIs) - donepezil, rivastigmine, galantamine

Cholinergic deficits are prominent in DLB, and cholinesterase inhibitors represent the best-supported class of symptomatic cognitive and neuropsychiatric improvement. Recent meta-analytic data show beneficial effects of rivastigmine and donepezil not only on cognition and neuropsychiatric symptoms, but also on attention and memory. Nevertheless, they do not improve visuospatial cognition compared with placebo (Meng et al., 2019). Moreover, both cholinesterase inhibitors, rivastigmine and donepezil, improve daily functional abilities, and their use was associated with reduced caregiver burden (Taylor et al., 2020). However, it is challenging to assess the safety as well as the efficacy of galantamine in the treatment of DLB due to the paucity of high-quality data. However, galantamine use is associated with an improvement in cognitive fluctuations, psychiatric symptoms, and sleep difficulties, but the evidence for a potential positive effect on cognition is inconclusive.

Moreover, it is important to note that patients receiving treatment with AChEIs may experience adverse effects (the incidence is higher with rivastigmine than with donepezil): gastrointestinal (including nausea, vomiting, or weight loss), Parkinsonian, and psychiatric symptoms (such as tremor, somnolence, or insomnia). Taking this into account, doctors should recognize potential complications and be able to manage them properly (Stinton et al., 2015).

3.1.2. N-methyl-D-aspartate (NMDA) receptor antagonist - memantine

Memantine use can improve attention, executive functions, and processing speed. This NMDA receptor antagonist offers a favourable tolerability profile and, at the same time, has a low incidence of adverse effects. Furthermore, evidence indicates that memantine may reduce the occurrence of REM-related sleep disorders (Meng et al., 2019).

Da Re et al., (2015) in their retrospective study, reported that use of memantine may provoke agitation, induce hallucinations, and other psychotic manifestations. However, the authors highlighted that these adverse effects tend to resolve completely after dose reduction or discontinuation of the drug.

Nevertheless, evidence supporting the use of memantine in DLB is variable, with studies yielding inconsistent outcomes. While global improvement in patients receiving memantine compared with placebo has been reported in some studies, the results were somewhat inconclusive for cognitive domains (Taylor et al., 2020).

3.2. Sleep Disturbances

REM sleep behaviour disorder (RBD) is considered a key clinical feature of alpha-synucleinopathies. When one can diagnose mild cognitive impairment and RBD (confirmed in polysomnography) in a patient, this coexistence of features can suggest a potential prodromal phase of DLB. Nevertheless, it is highly important to remember that some patients may not exhibit any symptoms, or they can be simply unable to recognize sleep abnormalities during the disease course (McKeith et al., 2020). Additionally, alpha-synucleinopathies research showed that male patients suffering from DLB exhibit a higher prevalence of RBD and daytime somnolence (Couture et al., 2024).

The first-choice option for RBD should focus on non-pharmacological interventions, notably establishing a safe, well-controlled sleep environment to minimize the risk of injury, along with reinforcement of proper sleep hygiene practices. Melatonin represents one of the basic pharmacological options, as it has been shown to reduce REM sleep without atonia. Even though the exact mechanism of its therapeutic effect in RBD is not fully understood, its favorable efficacy profile, excellent tolerability, and minimal adverse effects

(including episodes of dizziness, headache, nausea, or drowsiness) make it a reasonable first-line pharmacological agent. In contrast, benzodiazepines are generally avoided in this patient population because they can provoke confusion, motor impairment, disorientation, and sedation, all of which may aggravate symptoms observed in these patients. However, when needed, clinicians can consider cautious use of clonazepam; it is recommended to thoroughly assess the patient's clinical status while using the drug (Hershey and Coleman-Jackson, 2019; McGrane et al., 2015; Erskine and Taylor, 2025; Iyer et al., 2025).

3.3. Visual Hallucinations

It is well known that patients suffering from DLB can experience visual hallucinations, which are usually well-formed and complex, and frequently involve people or animals. What is interesting is that there is proof that psychotic symptoms are more frequent in female patients affected with alpha-synucleinopathies. Notably, in several studies, it has been reported that such hallucinations may occur during the prodromal phase of the disease, and can affect as many as up to 25% of patients. It is also important to recognize that patients may present with non-visual hallucinations, although they are less common (Yamada et al., 2020; Wyman-Chick et al., 2022; Couture et al., 2024).

Psychotic symptoms do not always require pharmacological treatment, because they may, in some cases, have minimal impact on everyday life. Nevertheless, patients should be regularly assessed to identify any new disturbances in everyday life that may warrant therapeutic intervention. Before starting additional pharmacotherapy, it is recommended to make a detailed review of the patient's current medications, as it is common knowledge that many drugs may worsen or cause psychotic symptoms. While treating an individual with DLB, clinicians should be especially vigilant about dopaminergic therapies, including levodopa (especially at moderate to high doses), dopamine agonists, entacapone, and monoamine oxidase inhibitors (rasagiline, selegiline). Moreover, hallucinations may also result from the intake of other pharmacological agents for other disorders, including ertapenem, scopolamine, zolpidem, and tramadol (Taylor et al., 2020; Capouch et al., 2018; Abou Taam et al., 2015).

When hallucinations significantly decrease quality of life or become troublesome, one can consider antipsychotic therapy. However, it is well known that patients with DLB are especially sensitive to antipsychotic treatments, which may lead to severe adverse reactions, including exacerbation of Parkinsonism, excessive sedation, and increased mortality. Consequently, the use of antipsychotics should be reserved for cases in which psychotic symptoms are challenging to handle, pose a risk to the patient, or other people. When pharmacological treatment is considered necessary, clinicians should prescribe the lowest effective dose and select agents with the least risk of extrapyramidal side effects. Olanzapine and quetiapine have been efficacious to some extent in reducing psychiatric symptoms, including hallucinations; however, approximately one-third of patients discontinue these agents due to adverse events. Evidence also suggests potential benefits from cholinesterase inhibitors such as galantamine, donepezil, and rivastigmine, though the supporting data for rivastigmine are weaker. Emerging research indicates that pimavanserin may be useful because it does not exacerbate motor or sedative symptoms; however, during its use, QT interval prolongation has been observed, and, as a result, it requires careful monitoring (Erskine and Taylor, 2025; Stinton et al., 2015; Hershey and Coleman-Jackson, 2019).

3.4. Parkinsonian Symptoms

Parkinsonian-spectrum symptoms, including bradykinesia, muscle rigidity, gait disturbances, and other motor symptoms, negatively impact daily living and require an adequate therapeutic approach. Levodopa is one of the most effective pharmacological agents for the management of Parkinsonian symptoms, providing measurable benefits in motor performance and tremor control. Nonetheless, one should remember that its use carries a risk of exacerbating psychotic symptoms, warranting careful titration and vigilant monitoring (Stinton et al., 2015).

Emerging evidence suggests that zonisamide, an antiepileptic agent, may improve Parkinsonian symptoms in patients with dementia with Lewy bodies. When used with levodopa, zonisamide reduced the severity of motor symptoms without aggravating cognitive impairment or psychiatric manifestations. It has been proven that the drug appears to have a good tolerability and safety profile; moreover, there were no significant safety concerns reported. The most commonly observed adverse effects include loss of appetite and body mass, and somnolence (Odawara et al., 2022).

3.5. Autonomic Dysfunction

There is no need to convince anybody that orthostatic hypotension, constipation, and bladder disturbances can dramatically influence patients' quality of life. What is especially interesting is that there is evidence suggesting that early onset may be perceived as an

important determinant of disease prognosis and survival in synucleinopathies, including dementia with Lewy bodies (De Pablo-Fernandez et al., 2017; Mizukami, 2023). Given the scarcity of clinical trials and research focused exclusively on dysautonomia in DLB, therapeutic approaches to this issue are primarily extrapolated from the better-established data in Parkinson's disease.

Once orthostatic hypotension (OH) is diagnosed, clinicians should start with non-pharmacological management strategies, such as dietary modification (adequate water and salt intake), an appropriate sleeping environment (elevating the head of the bed), regular physical activity, and the use of compression stockings to reduce symptom severity. Additionally, medical professionals should perform a thorough review of the patient's medications, as many agents may lead to a drop in arterial pressure. If a non-pharmacological approach is not sufficient to reduce the severity of symptoms, one should consider pharmacological therapy. Among the most commonly employed drugs, one can identify fludrocortisone, a mineralocorticoid which promotes sodium retention and increases plasma volume, and midodrine, an alpha-adrenergic agonist that increases vascular tone. These agents may be administered separately or in combination; however, their use requires regular blood pressure monitoring. In patients receiving fludrocortisone, serum electrolytes need to be regularly assessed, while in those receiving midodrine therapy, a regular evaluation of hepatic and renal function should be considered. Effective management of OH is critical because it has been associated with attention and executive dysfunction (particularly in Parkinson's disease), but also its occurrence can lead to syncope and falls, potentially leading to injuries, disability, or death (Taylor et al., 2020; Sepulveda and Camafort, 2025).

Urinary tract disturbances, including urgency, frequency, and incontinence, are common among older adults and are even more frequent in individuals with DLB. As a general principle, the use of antimuscarinic agents - such as oxybutynin, trospium, solifenacin, and darifenacin - should be avoided in this population. These medications are associated with multiple adverse effects, including xerostomia, constipation, and visual disturbances, and, importantly, they carry a substantial risk of worsening cognitive function (Vouri et al., 2017; Taylor et al., 2020).

It is also important to consider other treatment options. Mirabegron is a selective beta-3-adrenergic receptor agonist that activates these receptors in the detrusor muscle, resulting in its relaxation during the bladder storage phase, thereby increasing bladder capacity. Owing to this, the drug is an effective option for managing an overactive bladder. Clinical studies have shown that mirabegron is not less effective than antimuscarinic agents and, at the same time, offers a better cognitive safety profile. However, there are some adverse effects associated with the use of this drug, which limit its use, such as elevated blood pressure, increased heart rate, and arrhythmias, particularly atrial fibrillation (Allan, 2019; Wang et al., 2024; Griebling et al., 2020).

Constipation is among the most frequently reported non-motor symptoms in patients with alpha-synucleinopathies. It is considered one of the most common autonomic disturbances during the premotor phase of dementia with Lewy bodies (Table 1). As a first option, a non-pharmacological approach should be implemented, including proper hydration, increased fiber intake, and regular physical activity. At the moment of constipation occurrence, it is vital to exclude any medication-induced signs and symptoms, as constipation can frequently be one of the major undesirable effects of opioid or anticholinergic agents use. When lifestyle and dietary interventions prove insufficient, pharmacological therapy may be initiated. Osmotic or stimulant laxatives - such as psyllium, lactulose, macrogol, or bisacodyl - are recommended as initial pharmacological options. In refractory cases, the use of serotonin receptor agonists (e.g., mosapride or prucalopride) or chloride channel activators (e.g., lubiprostone) may be considered (Palma and Kaufmann, 2018).

Table 1. Summary of the principal medications in the management of dementia with Lewy bodies and their associated or characteristic adverse effects.

MEDICATION	ADVERSE EFFECTS (COMMON OR CHARACTERISTIC)
AChEIs: rivastigmine, donepezil, galantamine	nausea, vomiting, weight loss tremor somnolence, insomnia
memantine	agitation hallucinations
melatonin	dizziness, headache, nausea, drowsiness
clonazepam	confusion, disorientation motor impairment

antipsychotics: olanzapine, quetiapine	exacerbation of Parkinsonism excessive sedation increased mortality
pimavanserin	QT interval prolongation
levodopa	psychotic symptoms exacerbation
zonisamide	decreased appetite and body mass somnolence
fludrocortisone	altered serum electrolytes concentration
midodrine	hepatic or renal dysfunction
mirabegron	urinary retention hypertension, tachycardia, atrial fibrillation

Abbreviations: AChEIs - acetylcholinesterase inhibitors

4. CONCLUSION

There remains a critical need for a more comprehensive and in-depth understanding of DLB. Despite continuous advances in elucidating its pathophysiological mechanisms, and the incorporation of an increasing number of biomarkers into clinical practice - such as cerebrospinal fluid analyses, and neuroimaging modalities including positron emission tomography (PET), magnetic resonance imaging (MRI), single photon emission computed tomography (SPECT) - effective disease-modifying interventions remain elusive. While more and more treatments are becoming available, most current approaches still focus on managing symptoms instead of influencing the disease pathophysiology. The lack of specific, validated DLB biomarkers and the limited understanding of the precise molecular mechanisms underlying this entity make it difficult to develop targeted therapies that could modify the disease course.

The objective of this article was to illustrate the vast spectrum of possible clinical presentations that can be observed in patients with DLB and the even wider range of potential therapeutic strategies for managing its symptoms. We have outlined the main features of the disease and reviewed current evidence on managing its different symptoms. This review also discusses the challenges of choosing the appropriate medication for DLB, where doctors must weigh the impact of symptoms against potential treatment side effects. We hope that this work will stimulate further research into novel and yet-to-be-established pharmacological approaches for the management of dementia with Lewy bodies.

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Conflict of interest

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Data and materials availability

All data associated with this study will be available based on reasonable request to the corresponding author.

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