Dementia by lewy body and alzheimer: difference in diagnosis

Demencia por corpos de lewy e alzheimer: diferença no diagnóstico

Demencia por cuerpos de lewy y alzheimer: diferencia em diagnóstico

RESUMO

Objetivo: com o envelhecimento da população brasileira e mundial, as demências estão cada vez mais prevalentes, A doença de Alzheimer (DA) e a Demência por corpos de Lewy (DCLewy) são as doenças degenerativas neurológicas mais diagnosticadas, sendo importante a diferenciação entre elas. Objetivo: discutir as duas formas mais comuns de demência, a Doença de Alzheimer e a Demência por corpos de Lewy; e por objetivos específicos identificar suas características e auxiliar no diagnóstico diferencial. Métodos: revisão de literatura sobre as características clínicas e de diagnóstico da DA e da DCLewy. Conclusão: A demência compromete o bem-estar, a qualidade de vida e a morbimortalidade de idosos e, por isso, todo o empenho deve ser desenvolvido em diagnosticar precocemente com a finalidade de melhorar a qualidade de vida destes pacientes.

DESCRITORES: demência; corpos de Lewy; Alzheimer.

ABSTRACT

Objective: with the aging of the Brazilian and world population, dementias are increasingly prevalent, Alzheimer's disease (AD) and Dementia by Lewy bodies (DCLewy) are the most diagnosed neurological degenerative diseases, and it is important to differentiate between them . Objective: to discuss the two most common forms of dementia, Alzheimer's Disease and Lewy Body Dementia; and for specific purposes to identify its characteristics and help in the differential diagnosis. Methods: literature review on the clinical and diagnostic features of AD and DCLewy. Conclusion: Dementia compromises the well-being, quality of life and morbidity and mortality of the elderly and, therefore, every effort must be made to diagnose it early in order to improve the quality of life of these patients.

DESCRIPTORS: dementia; Lewy bodies; Alzheimer's.

RESUMEN

Objectivo: con el envejecimiento de la población brasileña y mundial, las demencias son cada vez más prevalentes, la Enfermedad de Alzheimer (EA) y la Demencia por cuerpos de Lewy (DCLewy) son las enfermedades neurológicas degenerativas más diagnosticadas, siendo importante diferenciarlas. Objetivo: discutir las formas más comunes de demencia, la enfermedad de Alzheimer y la demencia con cuerpos de Lewy; y con fines específicos para identificar sus características y ayudar en el diagnóstico diferencial. Métodos: revisión de la literatura sobre las características clínicas y diagnósticas de la EA y DCLewy. Conclusión: La demencia compromete el bienestar, la calidad de vida y la morbimortalidad de los ancianos, por lo que se debe hacer todo lo posible por diagnosticarla precozmente para mejorar la calidad de vida de estos pacientes.

DESCRIPTORES: demencia; cuerpos de Lewy; alzhéimer

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INTRODUCTION

Aging is among the most discussed subjects nowadays, due to the epidemiological and demographic transition in which other countries and Brazil are. The aging process is inevitable and natural, encompassing a series of physical, cognitive and emotional changes. However, with the increase in life expectancy, neurodegenerative diseases and dementia may appear, which cause motor and cognitive decline. [1].

Statistical data indicate that in 2015 the elderly represented 14.3% of the population in Brazil and projections estimate that, by 2070, they will represent more than 35% of the Brazilian population. [2] The demographic growth of this age group has generated, in the scientific community, greater interest in understanding the aging processes, especially with regard to neurocognitive aspects.

In Brazil, about 1.2 million people live with some form of dementia and 100,000 new cases are diagnosed each year. Worldwide, the number reaches 50 million people. According to estimates by Alzheimer's Disease International (ADI), the numbers could reach 74.7 million in 2030 and 131.5 million in 2050, due to the aging of the population. This scenario shows that the disease characterizes a global health crisis that must be faced. [3]

Cognitive deficit or dementia is characterized by persistent cognitive decline, which interferes with the individual's social or professional activities, regardless of changes in the level of consciousness. [4]

Dementia syndromes can be classified into degenerative and non-degenerative. Non-degenerative ones result from nutritional deficiencies, vascular accidents, infectious processes, trauma, among other conditions. Among the degenerative diseases, the main one to be considered is Alzheimer's disease. [4]

In clinical practice, the four most frequent causes of dementia are Alzheimer's disease (AD), vascular dementia, dementia with Lewy bodies (DCLewy) and frontotemporal dementia. [5]

This article aims to discuss the two most common forms of dementia, Alzheimer's Disease and Dementia with Lewy Bodies; and for specific purposes to identify its characteristics and help in the differential diagnosis.

METHOD

This is a study with secondary data collection, through a bibliographical survey to carry out an integrative review. The search was carried out on Pubmed, Scielo, and Google Academico platforms, between March and April 2023, using the descriptors: dementia, Lewy bodies and Alzheimer's, using among them Boolean operators OR, between similar terms and AND between the descriptors. Of the selected articles, a careful analysis and compilation of the data obtained was carried out in order to identify the clinical characteristics, diagnosis and treatment of both diseases.

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RESULTS

Alzheimer's disease

Alzheimer's disease, named after the German psychiatrist Alois Alzheimer, is the most common type of dementia and can be defined as a neurodegenerative disease, slowly progressive, characterized by neuritic plaques and neurofibrillary tangles, as a result of accumulation of amyloid-beta (Aβ) peptide in the most affected area of the brain, the medial temporal lobe, and neocortical structures[6,7].

Alzheimer's disease is the leading cause of dementia and is fast becoming one of the most expensive, lethal and costly diseases of this century. Currently, there are around 50 million AD patients worldwide and this number is expected to double every 5 years and increase to 152 million by 2050[5].

Although it can occur in younger people, it is mostly a disease of the elderly. The prevalence of AD increases markedly with advancing age. The incidence of dementia increases with age, approximately 5 to 8% are affected over 65 years, the number increases to 25 to 50% as age increases over 85 years. Globally, after age 65, the incidence rate of AD doubles every 5 years. AD prevalence for men was lower than for women at 19 to 29%[8].

It manifests with an insidious onset, presenting gradually and slowly, and may remain for long periods without significant changes. It is characterized by a progressive impairment in neurocognitive functions such as memory, orientation, judgment, planning and language. With the progression of dementia, the elderly begin to have difficulties in managing activities of daily living (ADLs), such as work, study, leisure and social life, and may even, in more advanced stages, have difficulties in taking care of basic issues, such as personal hygiene and food, making it necessary the presence of a caregiver [9].

The well-established risk factors for AD are age and family history of the disease, the risk increasing with the increasing number of affected first-degree relatives. The etiology of AD remains elusive, although considerable progress has been made in understanding its biochemical and genetic mechanisms. It is known that the amino acid fragment of the B-amyloid precursor protein is highly relevant in the pathogenesis of senile plaques and that most familial forms of the disease are associated with overproduction of this protein. Some proteins that make up neurofibrillary tangles, more especially hyperphosphorylated Tau protein and ubiquitin, have been identified, but the relationship between plaque formation, neurofibrillary tangled formation and cell injury remains uncertain. It is known that the E4 allele of the apolipoprotein E (ApoE) gene is about three times more frequent in people with AD than in age-matched control subjects and that, homozygotes for this gene are at greater risk for the disease than non-homozygotes. However, the specificity and sensitivity of the ApoE test are too low to allow its use as a screening test in the general population[3].

The identification of risk factors and the disease in its initial stage and the agile and appropriate referral to specialized care give Primary Care an essential character for a better therapeutic result and prognosis of cases.[3]

Lewy body dementia

Dementia with Lewy bodies (DCLewy) is the second leading cause of dementia of neurodegenerative etiology over the age of 65, leading to a progressive loss of cognitive abilities and autonomy, and a decrease in the quality of life of patients and their families. The name of the disease comes from the observation of α-synuclein protein aggregates, which accumulate in the brain (Lewy bodies and neurites) and are accompanied by neuronal loss[10].

A systematic review showed an average prevalence of DCLewy of 0.36% in the population aged over 65 years and 4.2% in the population with dementia. However, these authors estimated a clinical prevalence of 7.5% in the population with dementia in secondary health care[11].

Some studies indicate that DCLewy has a higher rate of cognitive decline, greater likelihood of institutionalization and shorter survival compared to Alzheimer's disease. It was also associated with higher rates of hospital admission and longer length of stay in relation to AD.[12]

DCLewy presents in its clinical picture cognitive decline associated with vivid and recurrent visual hallucinations. The manifestation of symptoms occurs in an unstable manner, with fluctuations in cognitive deficits in a matter of minutes or hours. [13] Signs of spontaneous parkinsonism are also part of the picture, specifically symptoms of the akinetic rigid type, which affects the individual with muscle stiffness and slowness to perform movements.[13]

Differential diagnosis between AD and DCLewy

It is known that the definitive diagnosis of some dementias is only possible in the post-mortem through histopathological examination of brain tissue. However, some procedures may provide greater accuracy in the differential diagnosis of dementia in the elderly. It is recommended for the investigation process a careful clinical evaluation that includes a detailed anamnesis, laboratory and neuroimaging tests and the survey of the performance of cognitive functions through neuropsychological evaluation. [14]

According to Parmera and Nitrini [15](2015), the main objective of the diagnostic investigation process is to verify whether there is a relationship between the symptomatological manifestation and a possible dementia syndrome. For this, it is necessary to characterize the affected cognitive

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domains, as well as to assess this impairment in the functional capacity of the elderly. The authors also reinforce that the neuropsychological evaluation can be extremely useful in initial cases and in individuals with a high level of education, where the manifestation of symptoms can be tenuous.

Neuropsychological assessment is a complex process that involves the elaboration of anamnesis, the observation of the individual's behavior in a clinical context and the administration of formal evaluation instruments of brain functioning to identify preserved and compromised neurocognitive functions[16].

Studies suggest the importance of gathering information about the individual's education, since a few years of formal education can alter the architectural and functional status of the human brain, influencing not only linguistic ability, but also the ability to process information and abstract reasoning, contributing to the formation of the Cognitive Reserve (CR) and consequently modifying the neuropathological indices. Another important argument that supports the need to gather information about schooling refers to the fact that quantitative assessment instruments are sensitive to this variable[17,18,19].

The clinical diagnosis of AD is based on a syndromic diagnosis of dementia of any etiology, according to the criteria of the National Institute on Aging and Alzheimer's Association Disease and Related Disorders Association (NIA/AA), endorsed by the Brazilian Academy of Neurology (ABN). Dementia is diagnosed when there are cognitive or behavioral (neuropsychiatric) symptoms that: (a) interfere with ability at work or usual activities; (b) represent decline from previous levels of functioning and performance; (c) are not explained by delirium (acute confusional state) or major psychiatric illness[3].

In AD, it is important to make the differential diagnosis of depression, which should also be screened. Vitamin B12 deficiency is common in the elderly, and serum B12 levels should be included in the evaluation routine. Due to the frequency, hypothyroidism should be investigated in elderly patients[3].

A brain imaging test, computed tomography (CT) or magnetic resonance imaging (MRI), is useful to exclude structural lesions that may contribute to dementia, such as cerebral infarction, neoplasia, and collections of extracerebral fluid. The diagnostic investigation process to fulfill the criteria includes a complete history (with patient and family member or caregiver), clinical evaluation, including the Clinical Dementia Rating Scale, cognitive screening (cognitive tests such as the Mini-Mental State Examination), laboratory tests (complete blood count, electrolytes (sodium, potassium, calcium), blood glucose, urea and creatinine, TSH and alanine aminotransferase (ALT/TGP)), aspartate aminotransferase (AST/TGO), vitamin B12, folic acid, serum serology for syphilis (VDRL) and HIV (in patients younger than 60 years), and brain imaging (non-contrast-enhanced CT or MRI)[3].

For DCLewy, the diagnosis is defined in the Fourth Consensus Report of the DLB Consortium, the presence of dementia is essential for the diagnosis of DCLewy, defined as progressive cognitive decline of sufficient severity to interfere with normal occupational or social functions, or usual daily activities. Typical cognitive changes include defects in attention, executive functions, and visual processing, even in the early stages of the disease[20].

The core clinical features of DCLewy are primary parkinsonism (i.e., not due to drugs or structural brain damage, such as vascular), recurrent and early visual hallucinations, REM sleep behavior disorder (REMPC), and cognitive and wakefulness fluctuations, with just two of these features (in addition to dementia) making the diagnosis of probable DCLewy[10].

Recurrent and complex visual hallucinations are very common, occurring in up to 80% of patients with DCLewy. They are well formed, detailed and colorful, usually adults, children or animals, and there may also be 'passing' hallucinations (brief and on the peri-

Table 1: Differences between Alzheimer's disease and Lewy body dementia

CHARACTERISTICS	ALZHEIMER'S DISEASE	LEWY BODY DEMENTIA
Pathology	Senile plaques, neurofibrillary tangles, and beta amyloid deposits in the cerebral cortex and subcortical gray matter	Lewy bodies in neurons of the cortex
Epidemiology	Affects twice as many women	Affects twice as many men
Heredity	Familiar in 5-15% of cases	Rarely familiar
Daily fluctuation	Some	Prominent

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Short term memory	Lost early in disease	Less affected. More deficits in alertness and attention than in memory acquisition
Parkinsonian symptoms	Very rare, occurring late in the disease. Regular gait	Prominent, evidenced early in the disease. Axial rigidity and unsteady gait
Autonomic dysfunction	Rare	Common
Hallucinations	Occur in about 20% of patients, usually when disease is moderately advanced	They occur in about 80% of patients, usually early in the disease. The most common are visual
Adverse effects with antipsychotics	Common. May worsen symptoms of dementia	Common, acutely worsening extrapyramidal symptoms and may be severe or life-threatening

Source: MSD, Handbook for Healthcare Professionals, 2023 [22]

phery of the visual field), sensation of 'presence' and visual illusions. Combining visual hallucinations with visuospatial dysfunction helps to distinguish DCLewy from AD[20].

In the case of dementia, the best imaging tests available are magnetic resonance imaging and tomography. In AD, there is a better visualization of the neuronal tissue, allowing the visualization of hippocampal and cerebral cortex atrophy. The distribution of this atrophy can be diffuse or localized with greater prevalence in the posterior region. Although the imaging exams present the alterations described above, it is necessary to perform anatomopathological confirmation for diagnostic confirmation[21].

For DCLewy, in the image, generalized atrophy and white matter lesions are nonspecific findings in dementia; however, magnetic resonance imaging (MRI) can identify more specific regional atrophy patterns for Lewy bodies such as more pronounced cortical atrophy than in patients with other dementias. Volumetric analyzes of MRI scans also demonstrate atrophy of the putamen and dorsal mesopontine gray matter. Hippocampal atrophy seen on coronal MRI slices, not as prominent compared to Alzheimer's. [21] Table 1 shows the main differences.

Treatment

The treatment of AD must be multidisciplinary, contemplating the different signs and symptoms of the disease and its peculiarities of conduct. The objective of drug treatment is to provide for the stabilization of cognitive impairment, behavior and performance of activities of daily living (or modify the manifestations of the disease), with a minimum of adverse effects[3].

There is no cure for AD, however there are therapies that can reverse some of the damage and prevent the pathology from developing into more deteriorating stages. The treatment aims to relieve behavioral changes and cognitive deficits, thus improving the individual's quality of life and providing greater autonomy. In addition to pharmacological therapies, there are therapies applied in a multidisciplinary way that complement drugs, such as: nutritional guidance, cognitive training, physical exercise programs, information and psychological support for caregivers and family members[12,23].

To Farid et. Al.[24] (2011), neuroleptic intolerance is often found in DCLewy, causing serious complications that can lead to death. Adverse neuronal action has been described following the use of neuroleptics by patients with DCLewy, accompanied by a decrease in striatal nicotinic receptors. The diagnosis of DCLewy is therefore particularly important, as it is necessary to avoid the use of neuroleptics in these patients as much as possible. However, they are still often prescribed (especially before diagnosis) due to the frequency of hallucinations and behavioral disturbances.

First-line drug treatment for hallucinations is based on acetylcholinesterase inhibitors (ACEIs). These molecules can also improve cognitive disorders, delusions, apathy and anxiety symptoms. Rivastigmine and donepezil are the two molecules with the greatest benefit.[25].

Caregiver- and patient-centered non-drug therapeutic interventions are critical. However, its effectiveness remains poorly validated, probably related to methodological problems. Information about the disease, psycho-education and cognitive-behavioral therapies are among the most interesting avenues[25].

CONCLUSION

The importance of dementia among the diseases that affect the elderly is undeniable, especially due to its prevalence, favored by the rapid demographic transition, a fact observed worldwide and, especially, in Brazil. Dementia compromises the well-being, quality of life and morbidity and mortality of the elderly and, therefore, every effort must be made to diagnose early in order to, with measures mainly centered on the caregiver and his understanding, improve the quality of life of these patients.

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