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THE EPIDEMIOLOGICAL PROFILE OF DEMENTIA IN THE CENTER OF ATTENTION TO THE ELDERLY OF BALNEÁRIO CAMBORIÚ

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Abstract: With the increase in the number of elderly people, diseases typical of this age group will be more frequent, including dementia. This work aims to identify the epidemiological profile of dementia in the Balneário Camboriú Elderly Care Center (NAI). Because NAI serves this specific population, it is a rich setting for collecting data on the prevalence of diseases in the elderly. Services from 2016 to 2019 were quantified, looking for the number of cases of dementia treated and the prevalence of each subtype of dementia, degree of involvement, associated diseases and therapies instituted. A high prevalence of dementia was found among the pathologies treated at the NAI neurology service, the main one being Alzheimer's disease. The most relevant comorbidities found were systemic arterial hypertension, type 2 diabetes and mental disorders. Although most patients have mild dementia and have access to drug treatment, non-drug supportive therapies are not typically available. These data emphasize the need for greater attention when implementing future health policies.

Keywords: Major Cognitive Disorder; Epidemiology; Elderly.

INTRODUCTION

Advances in modern medicine, improved hygiene conditions, vaccination and the use of antibiotics have resulted in an increase in life expectancy worldwide. The UN estimates that by the year 2100 the world population will increase by approximately 3.6 billion people (JUAN & ADLAR, 2019). The aging of the population and the consequent epidemiological changes make new strategies necessary to face the medical and social demands related to the increase in this population. (LIMA-COSTA & BARRETO, 2003).

The aging of the population is accompanied by an increase in rates of dementia. Dementia,

or Major Neurocognitive Disorder, is defined by the Neurology Treatise of the Brazilian Academy of Neurology as "an acquired condition that represents a decrease in relation to the individual's previous cognitive level and with impairment of social and functional functions." (GAGLIARDI & TAKAYANAGUI, 2019 p.383). Epidemiological studies have demonstrated a significant increase in the incidence of dementia in the elderly population, especially in the population over 85 years of age. (SAVVA et al., 2009).

In view of this growing demand for care, the National Elderly Care Policy promoted the development of Elderly Care Centers (NAI), which aim to provide elderly people with healthy and active aging and ensure social inclusion. The NAI would be composed of a multidisciplinary team with general practice, psychiatry, geriatrics, psychology, social work, physiotherapy, occupational therapy and dentistry. (MINISTRY OF HEALTH, 2006). By serving this specific population, the NAI becomes a rich scenario for collecting data on the prevalence of diseases in the elderly population.

Population-based epidemiological studies aim to provide important information to guide public policies aimed at the community. In the health field, these studies are still scarce in Brazil. Information about the health conditions of the elderly and their demands are crucial for developing new care strategies. (LIMACOSTA & BARRETO, 2003).

Using an epidemiological profile, it is possible to better understand the affected population and develop actions aimed at the most prevalent diseases, aiming at health promotion and prevention. In this context, the theme of this article originates, which seeks to elucidate the epidemiological profile of dementia in the Elderly Care Center of Balneário Camboriú.

DEVELOPMENT

The World Health Organization defines dementia as a “syndrome that affects the brain – usually of a chronic or progressive nature – in which there are disorders of multiple higher cortical functions, including memory, thinking, orientation, comprehension, calculation, learning capacity, language and judgment” (WHO, 2012, p. 7, free translation). It is estimated that 7.7 million new cases of dementia are diagnosed annually, making medical costs for this syndrome exceed those caused by cancer and cardiovascular diseases combined. (RAZ, KNOEFEL, BHASKAR, 2016).

The World Health Organization (WHO,

2012) reinforces that in this syndrome consciousness is spared and recognizes that emotional skills, social behavior or motivation are often compromised. Dementia can be divided into several categories according to cause, location, age of onset, response to treatment and time of evolution. (ALZHEIMER’S ASSOCIATION, 2021).

There is no definitive test for diagnosing dementia (LAM et al 2019). Therefore, in most research, the criteria developed by the National Institute of Neurological Disorders (NINDS criteria) or the American Psychiatry Association, contained in the DSM-V, are used for diagnosis. (Dubois et al., 2007) For this research, the criteria present in the DSM-V were used:

Diagnostic Criteria
<p>A. Evidence of major cognitive decline from a previous level of performance in one or more cognitive domains (complex attention, executive function, learning and memory, language, perceptual motor, or social cognition), based on:</p> <ol style="list-style-type: none"> 1. Concern by the individual, a knowledgeable informant, or the clinician that there is a significant decline in cognitive function; It is 2. Substantial impairment in cognitive performance, preferably documented by standardized neuropsychological testing or, failing that, by another quantified clinical investigation. <p>B. Cognitive deficits interfere with independence in activities of daily living (i.e., at a minimum, requires assistance with complex instrumental activities of daily living, such as paying bills or controlling medication).</p> <p>C. Cognitive deficits do not occur exclusively in the context of delirium.</p> <p>D. Cognitive deficits are not better explained by another mental disorder (e.g., major depressive disorder, schizophrenia).</p> <p>Determine the subtype due to:</p> <ul style="list-style-type: none"> • Alzheimer’s disease • Frontotemporal lobar degeneration • Lewy body disease • Vascular disease • Traumatic brain injury • Substance/medication use • HIV infection • Prion disease • Parkinson’s disease • Huntington’s disease • Major and Mild Neurocognitive Disorders • Other medical condition • Multiple etiologies • Not specified

TABLE 1- DIAGNOSTIC CRITERIA FOR DEMENTIA OF ANY ETIOLOGY.

Source: Adapted from AMERICAN PSYCHIATRY ASSOCIATION, 2014.

The DSM-V diagnostic criteria make it possible to homogenize what we consider to be major cognitive disorders, in addition to providing a common language between clinical practice and research, in order to promote more efficient communication between these two areas. The biggest limitation of the DSM-V criteria is the requirement that there be an impact on activities of daily living for dementia to be characterized, and there is no way to objectively measure what this impact would be. (LAM et al., 2019).

The initial evaluation of a patient with suspected dementia must focus not only on cognitive changes in memory, but in all cognitive domains, and on a complete anamnesis and a physical examination, in order to exclude other possible pathologies such as delirium, depression, infections and nutrient deficiency. (GAGLIARDI & TAKAYANAGUI, 2019). The initial manifestations of dementia can be detected, in the context of primary health care, through the use of simple screening tests, such as the Mini Mental State Examination and the clock drawing test. (ESCHWEILER et al., 2010).

The Mini Mental State Examination (MMSE) is the most used screening test, having the advantage of being quick and easy to apply. (LAM et al., 2019). The test is divided into two non-timed sessions and is scored according to the number of correct answers, with a maximum score of 30 points. The first session assesses the domains of orientation, calculation, language, memory and attention and requires only verbal responses. Your maximum score is 21 points. The second session, in turn, tests visuospatial, language and command skills, and scores 9 points. As it requires reading and writing, the test is limited to illiterate and visually impaired patients. (FOLSTEIN; FOLSTEINS; MCHUGH, 1974).

The interpretation of the result is made according to the patient's level of education.

For illiterates the standard cut-off score is 13 points, for people with low or medium education 18 points and for those with high education 26 points. (LAM et al, 2019).

The Montreal Cognitive Assessment (MoCA) is a more sensitive screening test than the MMSE for mild cognitive disorders and addresses a wider area of cognitive domains, including, in addition to memory, language and attention, executive functions. Its application is longer but, unlike MMSE, it does not have a patent for use. (LAM et al., 2019).

The MoCA is also scored according to the patient's number of correct answers, with 30 being the maximum score. In cases of patients with less than or equal to 12 years of education, one point is added to the total. For the diagnosis of dementia, a score lower than 21 is suggested, and for mild cognitive impairment, lower than 26. (DAUTZENBERG; LIJMER; BEEKMAN, 2020).

Compared to the MMSE and the MoCA, the Clock Test requires lower language skills and education and can be administered quickly to a larger number of patients. The test, although simple, assesses multiple cognitive abilities such as comprehension, visuospatial notion, gross motor function, visual memory, concentration and numerical knowledge. (DONG et al, 2019.)

The test consists of asking the patient to draw a clock showing eleven hours and ten minutes. There are several scoring systems for watch testing, making standardization and comparison difficult. Due to its low specificity, many authors indicate its concomitant use with MMSE. (PAISETIA et al., 2018).

The degree of dementia can be assessed using scales such as The Washington University Clinical Dementia Rating Scale (CDR Score). The CDR score analyzes 6 cognitive domains: memory, orientation, judgment and problem solving, community

affairs, home and hobbies, and personal care. (MORRIS, 1997). According to the patient's responses to the test, a score is given. Based on this score, it is classified into the following groups:

CDR-0: No cognitive impairment

CDR-0.5: Questionable or very mild dementia

CDR-1: Mild dementia

CDR-2: Moderate dementia

CDR-3: Severe dementia

The CDR was developed by the University of Washington in 1979 and first published in 1982, especially for use in dementia research. It has since been translated into more than 60 languages. (WILLIAMS, ROE, MORRIS, 2009). Despite being old, the CDR score continues to have a good reliability index, having demonstrated, in use by trained interviewers, an overall reliability of up to 83%. (MAIA et al., 2006). In Brazil, it is part of the Ministry of Health's protocol for dispensing special medications for Alzheimer's disease. (MAIA et al., 2006).

Once a major cognitive disorder has been identified, it is necessary to classify it among the different subtypes in order to clarify its etiology. Within the research context, in addition to the symptoms, some tests can be carried out to assist in the diagnosis, such as measuring the concentration of beta-amyloid peptide and Tau protein in the CSF. Imaging exams can also be useful tools in classifying dementia. (ESCHWEILER et al., 2010).

The most common subtypes of dementia in the elderly (over 60 years of age) are: Alzheimer's disease, vascular dementia, Lewy body dementia and frontotemporal dementia. Despite this division, in many cases there is not a single etiology and more than one subtype may coexist. (WHO, 2012).

Alzheimer's disease is more prevalent after age 65, accounting for a large portion

of dementia cases. (RIZZI, ROSSET, RORIZ-CRUZ 2014). It is characterized by an insidious impairment of memory leading to difficulty learning new information, followed by changes in executive, visuoconstructive and language functions that impair the patient's daily life activities. The majority of cases are sporadic, with less than 2% of cases of autosomal dominant inheritance. (ALZHEIMER'S ASSOCIATION, 2019).

The neuropathology of Alzheimer's disease is based on the extracellular accumulation of senile plaques, composed of beta-amyloid peptides, and neurofibrillary tangles, composed of hyperphosphorylated TAU protein. (RAS, KNOEFEL, BHASKAR, 2016). The accumulation of beta-amyloid peptides occurs due to the decrease in the action of the alpha-secretase enzyme, which produces soluble amyloid, in favor of the action of the beta and gamma-secretase enzymes, which produce insoluble beta amyloid. The accumulation of beta-amyloid in the extracellular environment leads to an inflammatory reaction of microglia, oxidative stress with an increase in free radicals, causing neuronal damage. Furthermore, the action of beta amyloid hinders cholinergic synaptic action and long-term action potential, important mechanisms for memory formation. (GAGLIARDI & TAKAYANAGUI, 2019).

The TAU protein, under normal molecular conditions, is associated with microtubules, which form the neuronal cytoskeleton responsible for axonal transport. In the disease, due to hyperphosphorylation, the TAU protein stops binding to microtubules, forming insoluble helical filaments, causing the accumulation of tangles initially in the entorhinal cortex and in the hippocampal formation. (GAGLIARDI & TAKAYANAGUI, 2019).

The definitive diagnosis of Alzheimer's disease is made post-mortem. For it to be confirmed, in addition to clinical symptoms, it is necessary to have large amounts of neurofibrillary tangles in the neocortex and the presence of amyloid plaques at brain autopsy. However, for clinical diagnosis to be made possible, and for there to be standardization for carrying out research, biomarkers and/or diagnostic criteria can be used. (NELSON et al., 2011).

The National Institute on Aging-Alzheimer's proposes the diagnostic classification of Alzheimer's disease as possible and probable. The diagnosis of dementia due to Alzheimer's disease is considered probable when it presents an insidious, progressive onset, with predominant cognitive deficit in the categories of amnesic (difficulty in retaining new information and recalling recent information) and non-amnesic (difficulty in recalling words) presentation. and recognition of people, places or objects). It is considered possible when it does not present an insidious condition, but the characteristics of the cognitive deficits are compatible with Alzheimer's dementia (atypical course) or when it meets the criteria for Alzheimer's dementia, but there is evidence of another concomitant cerebrovascular disease (mixed category). (MCKHANN et al., 2011)

Vascular dementia (VD), in turn, would have its pathophysiology explained by a recurrent decrease in blood flow to the brain, causing hypoxia, and consequent amyloid deposition and neurodegeneration. (RAS; KNOEFEL; BHASKAR, 2016)

VaD can be classified as multiple infarct dementia, small vessel dementia, hereditary syndromes (among them: Cadasil disease), among others. (O'BRIEN & THOMAS, 2015). It is common to present after cerebrovascular accidents (CVAs), especially in large thromboembolic lesions

(IONEL & CRISTINA, 2015), with the relationship of cognitive deficits to one or more cerebrovascular events being a criterion for diagnosing VaD according to the DSM-V. (AMERICAN PSYCHIATRY ASSOCIATION, 2014).

The relationship between vascular dementia and strokes is quite relevant, with 15-30% of patients who have suffered some type of stroke developing dementia 3 months after the event. (O'BRIEN & THOMAS 2015). This way, stroke prevention is intrinsically linked to the prevention of vascular dementia, as well as the risk factors for VaD are the same as those related to the atherogenesis process, such as: age, high blood pressure, smoking, diabetes and dyslipidemia. (IONEL & CRISTINA, 2015). The risk of developing vascular dementia increases with age, doubling every 3-5 years, and is directly related to cardiovascular risk. In addition, low education, depression and female sex are risk factors. (O'BRIEN & THOMAS 2015).

The clinical presentation of vascular dementia is much more heterogeneous than that seen in Alzheimer's disease, as its clinical manifestation depends on which areas in the brain have been affected by the vascular disease. However, subcortical vascular diseases are the most frequent, featuring a predominant clinical manifestation of deficits in attention and information processing, as well as difficulties in performing executive functions. (O'BRIEN & THOMAS 2015)

Dementia with Lewy bodies (MCI) is characterized by progressive cognitive decline, fluctuating cognitive deficits, visual hallucinations and parkinsonian motor symptoms. (NIH, 2019).

DLB is pathophysiologically characterized by the intracellular aggregation of the alpha-synuclein protein in Lewy bodies, with the abundant presence of senile plaques and sparse neurofibrillary tangles. (GAGLIARDI

& TAKAYANAGUI, 2019). The accumulation of these bodies leads to mitochondrial damage that initiates a cascade of events, culminating in apoptosis and cell death. There is evidence that this process originates in the enteric nervous system and progresses to the central nervous system. (SANFORD, 2018).

Due to the presence of Parkinsonian motor symptoms, differentiating between DLB and Parkinson's disease dementia is often difficult. However, in MCI, cognitive deficits precede or are concomitant with motor symptoms, while in Parkinson's disease, motor symptoms precede cognitive changes by at least one year. (SANFORD, 2018).

According to the DSM-V, to be classified as probable dementia with Lewy bodies, the presence of at least two central characteristics is necessary (cognitive fluctuations with significant variations in attention and alertness, complex and recurrent visual hallucinations, developed parkinsonian motor symptoms after cognitive decline) or one central and one suggestive feature (REM sleep behavior disorder, severe neuroleptic sensitivity). (AMERICAN PSYCHIATRY ASSOCIATION 2014).

Finally, frontotemporal dementia is a progressive neurodegenerative syndrome that covers a spectrum of dementias that are characterized by affecting the frontal and temporal lobes of the brain in a proportional or non-proportional way. (SIVASATHIASEELAN et al., 2019). It is manifested by progressive changes in behavior, language and executive functions. (BANG; SPINA; MILLER, 2015).

Within its spectrum, frontotemporal dementia presents two variants: behavioral variant frontotemporal dementia (bvFTD) and progressive aphasia. Examples of progressive aphasia include semantic dementia (DS) and progressive non-fluent aphasia (NPAP). VCFTD is manifested by behavioral changes,

disinhibition and apathy and impairment of executive functions. The patient's insight into the disease is impaired and some patients experience reduced pain sensitivity. In the semantic variant, loss of vocabulary, anomie and difficulty understanding language are observed. APNF presents with motor speech impairment or difficulty in constructing sentences. As the disease progresses and neuronal degeneration becomes more diffuse, the symptoms of the variants tend to overlap. (SIVASATHIASEELAN et al. 2019). Some patients may present motor deficits, parkinsonism or symptoms characteristic of motor neuron disease. (BANG; SPINA; MILLER, 2015).

Its etiology is varied, but half of the cases are related to changes in the TAU protein, which undergoes hyperphosphorylation, preventing the maintenance of the integrity of the neuronal cytoskeleton, leading to neural death. (GAGLIARDI & TAKAYANAGUI, 2019).

Frontotemporal dementia affects younger individuals, generally with a family history, starting between the ages of 45 and 65. (RICHARDSON & NEARY, 2008). Clinically, disinhibition in social activities, loss of self-criticism, irritability or apathy and changes in executive functions can be observed. Memory and visuospatial skills are generally preserved early in the disease. (CARAMELLI & BARBOSA, 2002).

The treatment of major cognitive disorders aims to reduce symptoms and delay the progression of the disease, and there is still no curative therapy. Hence the importance of policies aimed at preventing risk factors. (LIVINGSTON et al., 2020). Among the risk factors already well established in the literature for dementia of any etiology are: education, systemic arterial hypertension, obesity, diabetes mellitus, alcohol consumption, smoking, brain trauma, air pollution, social

isolation, depression and hearing loss. (LIVINGSTON et al., 2020).

Chronic systemic arterial hypertension is a known factor in the development of both Alzheimer's dementia and vascular dementia. It is responsible for cerebrovascular remodeling, altering the morphology of the small cerebral arterioles that irrigate regions important for cognitive functioning. (RAS; KNOEFEL; BHASKAR, 2016).

The Honolulu-Asia Aging Study was a longitudinal epidemiological study that sought to investigate indices, risk factors, and abnormalities in neuropathology associated with cognitive decline in men of Japanese origin living in Oahu, Hawaii. (GELBER; LAUNER; WHITE, 2012). The study demonstrated that, in addition to the risk of stroke, hypertension is related to the formation of beta-amyloid plaques. (RAS; KNOEFEL; BHASKAR, 2016).

The same study pointed to type 2 diabetes mellitus (DM2) as a risk factor for dementia, relating a relative risk of 1.5 for dementia of any type, 1.8 for Alzheimer's disease and 2.3 for vascular dementia. (PEILA; RODRIGUEZ; LAUNER, 2002).

The risk of people with DM2 having brain complications, such as stroke and dementia, is probably due to the micro and macrovascular complications characteristic of the disease. However, evidence points to neurodegenerative complications of the disease, such as increased phosphorylation of the TAU protein, decreased amyloid degradation and contribution to the formation of neurofibrillary plaques and tangles. (BIESELS; DESPA, 2018).

There is a strong relationship between dementia and depressive symptoms, both as a direct risk factor and as a possible prodrome or initial symptom of dementia. (LIVINGSTON et al., 2020). Other psychiatric disorders such as bipolar disorder and schizophrenia appear to be linked to the development of dementia.

Studies show that the risk of dementia increases by 6% for each hospitalization suffered by a patient due to bipolar mood disorder. (GARCEZ et al., 2015).

Drug treatment for dementia, despite not containing its progression, can slow it down and aims to improve the quality of life of patients and caregivers. The most commonly used medications are cholinesterase inhibitors and glutamate regulators (anti-NMDA). (ALZHEIMER'S ASSOCIATION, 2019)

Acetylcholine is an important neurotransmitter in the formation of memory and attention. Cholinesterase inhibitors prevent the degradation and recycling of acetylcholine by blocking the enzyme acetylcholinesterase, leading to an increase in acetylcholine in the synaptic cleft. (BREIJYEHAND & KARAMAN, 2020). Given that this medication depends on the presence of acetylcholine receptors to perform its function, as the disease progresses and neurodegeneration exacerbates, its effect decreases. (STAHL, 2014).

Cholinesterase inhibitors are approved by the United State Food and Drug Administration (FDA) for the treatment of Alzheimer's disease, but there are benefits to their use in Lewy body disease and Parkinson's disease dementia. In frontotemporal dementia, in turn, cholinesterase inhibitors can worsen behavioral symptoms. Examples of this class of medicines are rivastigmine, galantamine and donepezil. (TISHER & SALARDINI 2019).

The use of anti-NMDA drugs is based on the hypothesis that neurofibrillary plaques and tangles would lead to an overactivation of glutamate discharge in neurons, increasing the supply of calcium ions and leading to neuronal damage. (BREIJYEHAND & KARAMAN 2020). The representative of this class is memantine. Its use is approved by the FDA for moderate to severe dementia, and has

not demonstrated significant benefit in use in mild dementia. (TISHER & SALARDINI 2019).

In practice, it is common to use combined therapy between the two classes, but there is insufficient evidence of benefit compared to monotherapy. (TISHER & SALARDINI, 2019).

Non-pharmacological approaches can also be used to treat dementia, but their effectiveness is still debated. An example of these is cognitive neurorehabilitation, carried out by neuropsychologists, which seeks to identify deficits based on family and patient demand and develop exercises and strategies to influence the improvement of that declining cognitive command. (TISHER & SALARDINI 2019). Non-pharmacological approaches, such as psychological therapy, music therapy, cognitive stimulation and exercise, have proven useful in treating the behavioral and psychological symptoms of dementia, presenting a significant impact in these areas, but they still require further studies. (DYER et al, 2019).

New therapies that aim to modify the course of the disease are in the research and development phase, including monoclonal antibodies, beta-1-secretase inhibitors, anti-amyloid agents and TAU protein aggregation inhibitors. (BREIJEHAND & KARAMAN, 2020).

METHODOLOGY

This work is characterized by being a descriptive study, whose objective is to determine the prevalence of major cognitive disorder in patients treated at the Elderly Care Center (NAI) in the city of Balneário Camboriú, as well as the most commonly found subtypes.

Descriptive studies aim to determine the distribution of diseases according to time, place and/or characteristics of individuals,

with the role of descriptive epidemiology to examine the prevalence of a disease in comparison to certain factors such as sex and age. (LIMA-COSTA & BARRETO 2003).

Other secondary objectives of this study are: to address the degree of involvement, the existence of associated diseases and the therapies instituted, in addition to comparing the data collected with other epidemiological research.

Studying the particularities of a syndrome within a community context allows us to more specifically outline which conditions coincide with the disease (GANGULI et al., 2018). This way, this study seeks to understand the particularities of the presentation of dementia syndromes, in order to provide data that can guide new actions to improve treatment and prevention of dementia syndromes in our community.

This study was carried out at the Elderly Care Center (NAI) in the city of Balneário Camboriú, with approval from the Research Ethics Committee (CEP) of ``Universidade do Vale do Itajaí``. Care was quantified, through the analysis of medical records, from January 2016 to January 2020, looking for the number of cases of dementia treated, the prevalence of each subtype of dementia, the degree of involvement and the therapies instituted.

In order for the diagnosis and quantification of the degree of involvement of dementia syndromes to be made, patients referred to geriatric neurology underwent screening with a mini mental state examination, and were then referred to the cognitive geriatric neurology outpatient clinic where, in addition to the mini mental state examination, the clock drawing test, the Montreal Cognitive Assessment, the application of the CDR scale and clinical, laboratory and neuroimaging criteria could be used. For the diagnosis of comorbidities, the diagnosis made by the specialist was considered: for Systemic Arterial

Hypertension (SAH) by the cardiologist, for Type 2 Diabetes Mellitus (DM2) by the endocrinologist or clinician/geriatrician, and for mental disorders by the psychiatrist or geriatrician.

RESULTS

In the period between January 2016 and January 2020, 3942 consultations were carried out in the neuro-geriatrics specialty at NAI. Of these, 1765 were discarded because they were

returns or patients who were not subjected to the aforementioned methodology. Of the 1885 consultations considered, 742 (39%) presented a diagnosis of dementia. Among dementia diagnoses, the most prevalent dementia syndrome was Alzheimer's disease, responsible for 65% (482) of cases, followed by vascular dementia syndrome and dementia related to parkinsonism, with 17% (126) and 8% (66) respectively.

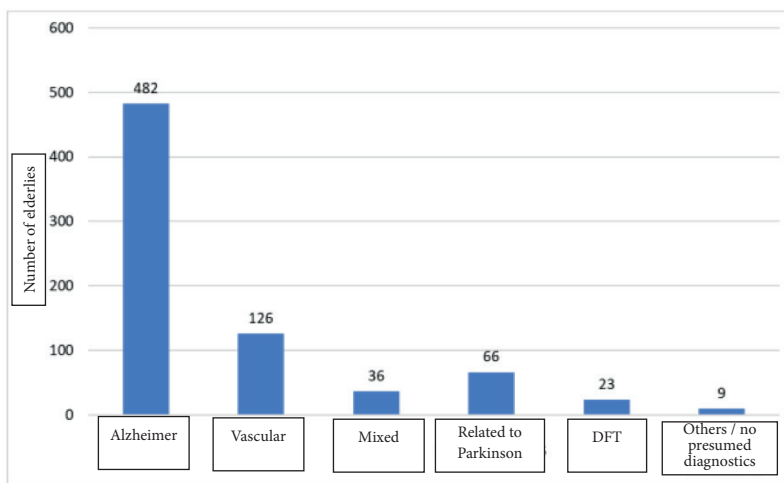


FIGURE 1 - NUMBER OF ELDERLY PEOPLE ACCORDING TO DEMENTIAL SYNDROME.

Source: Elaborated by the author

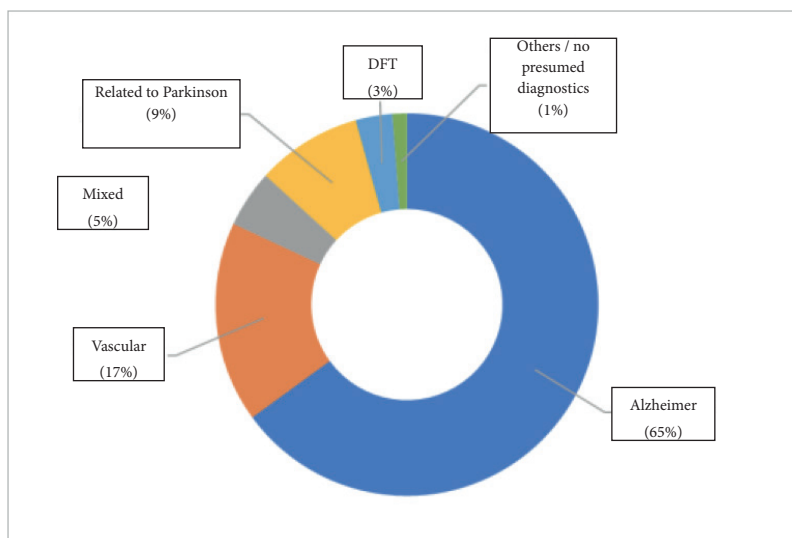


FIGURE 2 - PERCENTAGE OF ELDERLY PEOPLE ACCORDING TO DEMENTIAL SYNDROME.

Source: Elaborated by the author (2022)

Among the reported cases of dementia, the most affected age group was 66 to 80 years old, however, there was variation in the affected age group depending on the syndrome analyzed. It is noted that in Alzheimer's disease 62% of cases were in the age group between 66 and 80 years old, while in vascular dementia syndromes 42% of cases were in elderly people over 80 years old. In syndromes related to parkinsonism, most cases (69%)

were between 70 and 90 years old.

The majority of patients in the sample were stratified as mild dementia, with little influence on activities of daily living. However, the number of elderly people with a moderate degree of disability, CDR2, was relatively high, 204 patients, reaching 27% of the total number of people affected. The number of patients with total disability, severe dementia, was 39 patients.

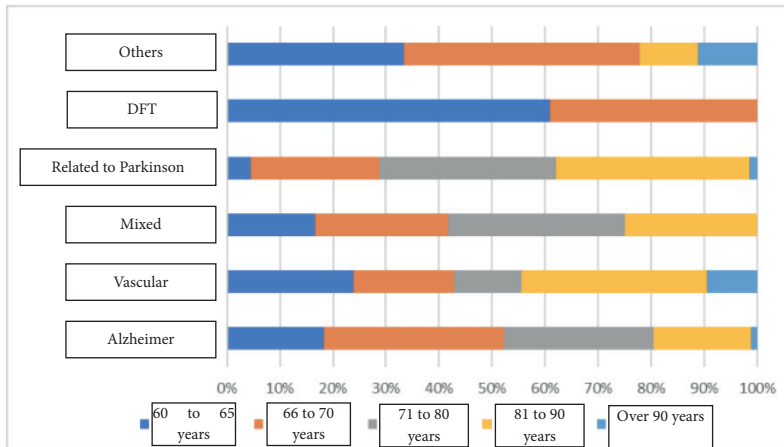


FIGURE 3 - PREVALENCE OF DEMENTIAL SYNDROMES ACCORDING TO AGE

Source: Elaborated by the author

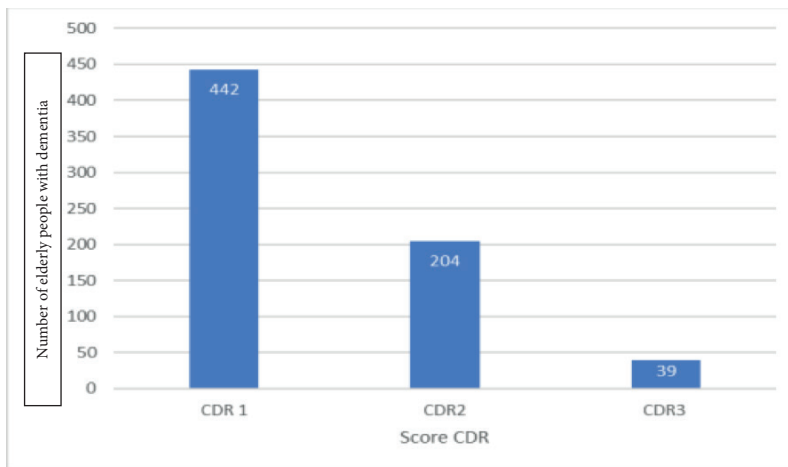


FIGURE 4 - DEGREE OF DEMENTIAL SYNDROMES - ABSOLUTE NUMBERS

Source: Elaborated by the author

In the analysis of comorbidities, it was noted that 62% (460) of patients had hypertension, 36% (267) had DM2 and 21% (155) were affected by both diseases. Furthermore, 26% (193) of patients had mental disorders and of these, 77% (148) had anxiety disorders.

Regarding the treatment instituted, it is noted that 52% (249) of patients with Alzheimer's disease were using anticholinesterases and

44% (211) of patients were on combined therapy (anticholinesterases and anti-NMDA). 4% (18) of patients were not taking medication due to the advanced stage of the disease, having already started palliative care, and another 1% (4) of patients were on anti-NMDA therapy alone, as they did not tolerate the use of anticholinesterase drugs.

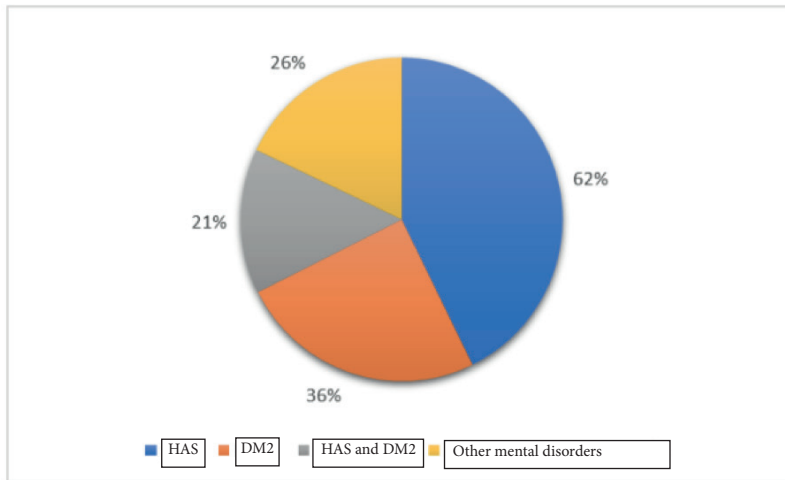


FIGURE 5 - PREVALENCE OF COMORBIDITIES IN ELDERLY PEOPLE WITH DEMENTIA.

Source: Elaborated by the author

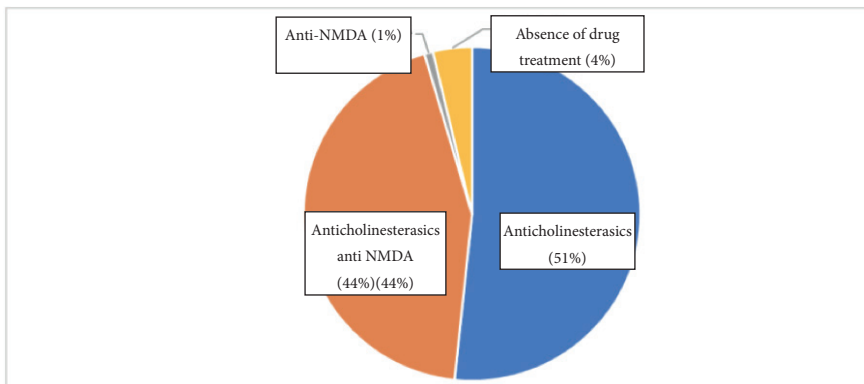


FIGURA 6 - PERCENTAGE OF ELDERLY PEOPLE WITH ALZHEIMER'S DISEASE ACCORDING TO MEDICATION USE

Source: Elaborated by the author

Of the elderly with dementia, 16% (119) of patients had behavioral fluctuations and were using psychotropic, neuroleptic or mood modulating medications. Of those diagnosed with dementia, only 8% (59) of patients performed cognitive training activities and none participated in cognitive rehabilitation programs.

DISCUSSION

The sample for this research was obtained from an Elderly Care Center, a local reference in geriatric neurology, corresponding to tertiary care. In the last census (2010) the elderly population of Balneário Camboriú corresponded to 12,756 people, thus our sample represents approximately 15% of the

elderly population of Balneário Camboriú.

The population of Balneário Camboriú, according to the last census, carried out in 2010, was mostly adults, aged between 20 and 59, with the elderly and young people corresponding to 11.8% and 26% of the population respectively. Compared to the 2000s, there was a tendency for the elderly population to grow, to the detriment of the young population.

This trend follows that observed in Brazil and the state of Santa Catarina. According to the IBGE, life expectancy at birth in Brazil in 2019 was, on average, 76.6 years, 73.1 years for men and 80.1 years for women. The state with the highest life expectancy is Santa Catarina at 79.9 years.

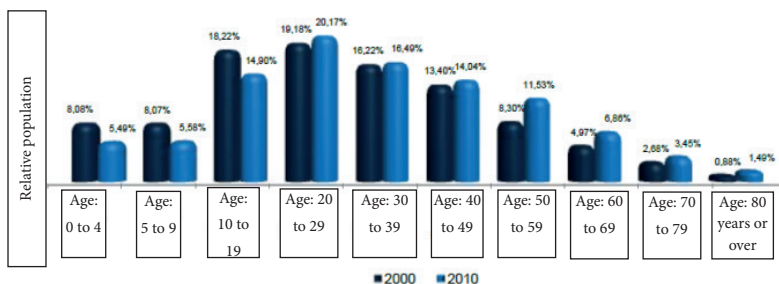


FIGURE 7 - RELATIVE DISTRIBUTION OF THE AGE OF THE GROUP OF THE POPULATION IN BALNEÁRIO CAMBORIÚ, IN 2000 AND 2010.

Source: SEBRAE 2013.

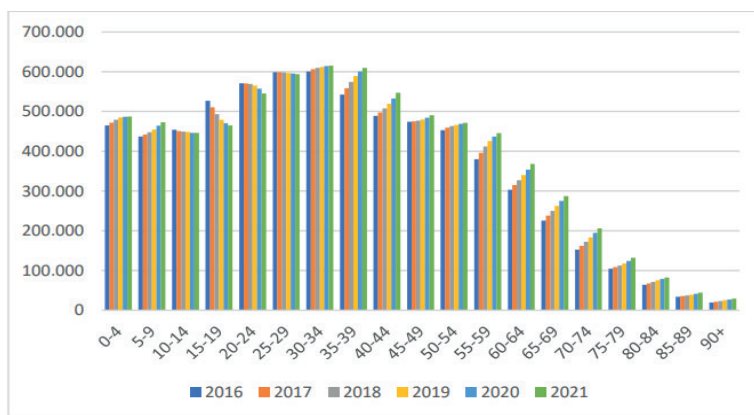


FIGURE 8 - RELATIVE PROJECTION OF THE AGE GROUP OF THE POPULATION IN SANTA CATARINA FROM 2016 TO 2021.

Source: Prepared by the author based on IBGE data

In 2000, the human development index (HDI) of Balneário Camboriú was the second highest in the state of Santa Catarina, reaching 0.867. In 2010, Balneário Camboriú had the fourth highest HDI in Brazil, being the highest in terms of longevity (0.894). It therefore consists of a population with an HDI considered to have Very High Human Development, comparable to the HDI of European countries such as Greece (HDI 0.861). (UNITED NATIONS DEVELOPMENT PROGRAM, 2021). These data may influence the prevalence of dementia found in our study.

In our study, the prevalence rate was 39% in the elderly referred. In another study carried out in a tertiary center by De Souza et al. (2019) the rate found was 68.8%, but considered patients aged ≥ 18 years old treated at the Memory and Behavior Disorders Outpatient Clinic, in the city of Curitiba in Paraná.

As expected, as it is a tertiary center, the data indicate a higher prevalence than estimated in Brazil, in people aged 65 or over, of 7.6%. (BURLÁ et al., 2013) and higher than that found in Latin America, by Sanchez et al. (2009) of 11%. It is also above the worldwide variation estimated by the WHO (WHO, 2012) of 5% to 7% in the population over 60 years of age.

In 2015, Alzheimer's Disease International (ADI) estimated that 9.9 million new cases of dementia are diagnosed each year around the world, with the majority of them in Asia and Europe. (ALZHEIMER'S DISEASE INTERNATIONAL, 2015). In Japan, OKAMURA et al (2013) analyzed 782 studies, estimating that the prevalence rate of all types of dementia would be between 2.9 and 12.5%, having increased significantly in recent years. Another study conducted in the Philippines, The Marikina Memory and Aging Project, found a 10.6% prevalence of dementia in the elderly. (DOMINGUEZ et al., 2018).

According to ADI estimates, in 2015 the regions with the highest number of people affected by major cognitive disorders were East Asia and Europe. The countries with the largest number were China, the United States of America, India, Japan and Brazil. Forecasts indicate that the elderly population will increase by 56% in high-income countries compared to 138% in middle-income countries, and 239% in low-income countries. (ALZHEIMER'S DISEASE INTERNATIONAL, 2015).

From the data presented, some points for discussion emerge, such as:

- Could the higher prevalence rate of dementia found in this study reflect the demographic characteristics of our sample?
- Could the high prevalence be due to the greater longevity of the elderly in our region?
- Could the education and income levels of our population be influencing our prevalence?
- Would the increase in the number of elderly people in our region be responsible for the higher prevalence compared to what was found by Bulá et al (2013)?
- Would the difference between the period analyzed in this study and that analyzed by Bulá et al (2013) be an indication that the prevalence of dementia syndromes was increasing in Brazil?
- Would the prevalence found be justified solely by the sample being taken from a tertiary health center?

Regarding the subtypes of dementia found, we note agreement with the study De Souza et al. (2019). Both studies show a higher prevalence of Alzheimer's syndrome, followed

by vascular dementia. This data is consistent with what has already been documented in other publications. According to the WHO and ADI (WHO, 2012), the four most common subtypes of dementia in the world are, in order of frequency, Alzheimer's disease, vascular dementia, Lewy corpus dementia and frontotemporal dementia. Rizzi, Rosset & Roriz-Cruz (2014), in a review article, estimated that Alzheimer's disease accounts for 60% of dementia cases in Western countries and vascular dementia is in second place with 20% of cases. In Latin America, in a review of cohort studies carried out by Nitrini et al (2009), prevalence rates among dementias also showed a higher prevalence for Alzheimer's disease followed by vascular dementia.

The Alzheimer's Association (2019) estimates that one in ten people over the age of 65 lives with Alzheimer's disease, with this percentage increasing with age. This is consistent with what was found in our sample, in which 62% of Alzheimer's disease cases were aged between 66 and 80 years. Frontotemporal dementia, on the other hand, was predominant in younger individuals, aged 60 to 65 years, with no cases in patients over 70 years of age in our sample. The incidence in younger patients is characteristic of this syndrome. (SIVASATHIASEELAN et al. 2019) (RICHARDSON & NEARY, 2008) (GAGLIARDI & TAKAYANAGUI, 2019).

The high rate of hypertension (62%) and DM2 (36%) observed in this study is consistent with the literature. Both hypertension and DM2 are already established risk factors for the development of Alzheimer's and other dementias. (LIVINGSTON et al, 2020). This reinforces the importance of measures to prevent dementia, focusing on already well-established risk factors.

In the prevalence of mental disorders, a large percentage of depressive disorders

would be expected, since depression is one of the 12 risk factors identified in the literature. (LIVINGSTON et al, 2020). However, a 77% prevalence of anxiety disorders was found among patients with mental disorders. There is evidence that a diagnosis of anxiety disorder increases the risk of developing dementia, but there are not yet enough studies to support this statement. (KURIN; MATHIAS; WARD, 2020).

An important fact found in our sample is that the majority of patients treated were classified as CDR 1, mild dementia. This demonstrates that the majority of patients sought care, or were referred, in the early stages of the disease, which allowed early intervention and a possible improvement in the quality of life of patients and caregivers.

The use of medication was common in patients diagnosed with Alzheimer's, with only 4% of patients not using medication because they were already in palliative care. The majority of patients, 52%, were using anticholinesterase medications, consistent with the predominant classification of mild dementia found. (TISHER, SALARDINI 2019) (BREIJEHAND, KARAMAN 2020) (STAHL, 2014).

Of the elderly people with dementia, 119 patients were using psychotropic, neuroleptic or mood modulating medications, as they presented psychological and behavioral symptoms.

Only 59 patients performed cognitive training activities and none participated in cognitive rehabilitation programs. Several studies indicate the benefits of non-drug interventions in the treatment of Alzheimer's disease. (BREIJEHAND; KARAMAN, 2020) (DYER et al, 2019). This may highlight an opportunity to expand therapeutic resources for the treatment of patients in our sample.

CONCLUSION

Dementias have a high prevalence among the pathologies treated in the neurology service of the Elderly Care Center of Balneário Camboriú, the main one being Alzheimer's disease.

The prevalence found above the national average may be related to some demographic factors of our population, such as the high longevity rate of Balneário Camboriú, and the fact that it is a tertiary care outpatient clinic. However, the increase in the prevalence of dementia cannot be ruled out as a global trend.

Although the majority of patients in our sample had mild dementia and had access

to drug treatment, non-drug supportive therapies are not typically available. These data emphasize the need for greater attention when implementing future health policies.

The rate of comorbidities in patients with dementia is high, which can serve as a warning and guide for the development of prevention actions within the municipality.

The panorama of dementia is complex and multifactorial, and it is important to carry out more epidemiological studies addressing other factors that can influence the development and prevention of this syndrome, such as analyzing patients' income, education, alcohol consumption and smoking, to better understand it.

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