Clinical diagnosis of 80 cases of dementia in a university hospital

Diagnóstico clínico de 80 casos de demência em um hospital universitário

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ABSTRACT

Objective: This study aims to estimate the prevalence of dementia subtypes and to assess the socio-demographic data of patients attending the outpatient clinic of dementia at Hospital das Clínicas from January 2008 to December 2009, in the city of Goiânia-GO, Brazil. **Methods:** Procedures provided for diagnosis included physical and neurological examination, laboratory tests, neuroimaging and DSM-IV. The functional capacity and level of cognitive deficit were assessed by Pfeffer Functional Activities Questionnaire (Pfeffer-FAQ) and Mini--Mental State Examination (MMSE), respectively. **Results:** Eighty patients met the criteria for dementia. The mean age was 63.48 (± 16.85) years old, the schooling was 3.30 (± 3.59) years old, the MMSE was 13.89 (± 7.79) and Pfeffer 17.73 (± 9.76). The Vascular Dementia (VD; 17.5%) was the most frequent cause of dementia, followed by Lewy body dementia (LBD) and Alzheimer's disease (AD) (12.25%). **Conclusion:** Considering entire sample and only the elderly over 60 years, VD, AD and LBD are the most common subtypes observed at both groups. Further epidemiological studies are necessary to confirm such rates, which may have a considerable impact on the organization and planning of healthcare services in our country.

RESUMO

Objetivo: Este estudo tem como objetivo estimar a prevalência dos subtipos de demência e avaliar os dados sociodemográficos dos pacientes atendidos no ambulatório de demências do Hospital das Clínicas, de janeiro de 2008 a dezembro de 2009, na cidade de Goiânia--GO, Brasil. **Métodos:** Os procedimentos incluídos para realização do diagnóstico incluíram exame físico e neurológico, exames laboratoriais, de neuroimagem e DSM-IV. A capacidade funcional e o nível de déficit cognitivo foram avaliados por questionário de atividades funcionais (Pfeffer) e Miniexame do Estado Mental (MEEM), respectivamente. **Resultados:** Oitenta pacientes preencheram os critérios para demência. A idade média foi de 63,48 (± 16,85) anos; a escolaridade foi de 3,30 (± 3,59) anos; o MEEM foi de 13,89 (± 7,79) e o Pfeffer foi 17,73 (± 9,76). A demência vascular (DV; 17,5%) foi a causa mais frequente de demência, seguida

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por demência do corpo de Lewy (DCL) e doença de Alzheimer (DA) (12,25%). **Conclusão:** Considerando toda a amostra e somente os idosos com mais de 60 anos, DV, DA e DCL foram os subtipos de demência mais frequentemente observados, em ambos os grupos. Estudos epidemiológicos futuros são necessários para confirmar essa prevalência, que pode ter um impacto considerável na organização e planejamento dos serviços de saúde no país.

INTRODUCTION

As the elderly population grows in Brazil, chronic and degenerative diseases become more frequent and dementia stand among them. The dementia syndrome is often subdiagnosed and poorly documented in the primary healthcare context[1]. The definition of clinical and socio-demographic characteristics of patients attended in a specialized service is an essential factor to understand its demand, generating comparative parameters with other services, in addition of possibility to develop therapeutic strategies and preventive actions. Although dementia is the most common among the elderly, it is also present in young adults and middle-aged.

In many countries, such as USA, the Alzheimer's disease (AD) is the main cause for intellection decline in elderly[2]. In some Asian countries like Japan, vascular dementia (VaD) predominates among the types of dementia studied[3]. In Brazil, epidemiological studies involving outpatients show that the AD is the most common etiology followed by VaD[4-8]. A study performed at Hospital das Clínicas – Unicamp showed that the VaD, followed by AD, was the most common subtype observed[9].

Only few Brazilian studies have evaluated the subtypes of dementia in university hospitals and none of them has been performed in Central Brazil. Thus, the aim of this study was to investigate the subtype of dementia in patients attended in Hospital das Clínicas of Federal University of Goiás (HC-UFG).

METHODS

Sample

The sample was composed of patients from the Dementia Unit of Hospital das Clinicas, Federal University of Goiás, School of Medicine (HC-UFG), which met the diagnostic criteria for dementia. We conducted a cross-sectional observational analytic study. We evaluated 150 consecutive patients who are referred by other services with suspect of dementia, during the period from 2008 to 2009. Patients with other psychiatric disorders like schizophrenia, bipolar disorder, major depressive episode, psychoactive substance use, delirium and other were excluded. This study was approved by the local ethics committee from the Ethics Committee for Research at the Federal University of Goiás (protocol number: 006/05). The patients (or legal guardians) agreed to participate by signing a consent term.

Experimental procedures

To attend the inclusion criteria, all patients underwent a clinical overall evaluation according to protocol by Nitrini *et al.*[10], which included medical history, physical and neurological examination, neuropsychological and psychopathological evaluation, as well as laboratory (blood test, creatinine, urea, thyroid stimulating hormone, veneral disease research laboratory [VDRL], serum glutamic oxalacetic transaminase, glutamic pyruvate transaminase, erythrocyte sedimentation rate, vitamin B12, folic acid) and neuroimaging tests (magnetic resonance imaging, single photon emission computered tomography) to define the etiological subtypes.

The dementia diagnosis was based on the Diagnostic and Statistical Manual of Mental Disorders – 4th edition (DSM-IV)[11]. Other criteria and instruments were made according to the diagnosis considered for each case[12-15]. Assessment and final decision of the diagnosis was conducted by a single neuropsychiatrist.

Probable and possible AD have been grouped and defined by criteria developed by the National Institute of Neurological Diseases in the United States (NINCDS-ADRDA)[13]. Possible and probable VaD were grouped and defined according to criteria developed by the National Institute of Neurological Disorders and Stroke (NINDS-AIREN)[16]. Probable and possible DLB were also grouped and defined according to consensus guidelines[14].

The socio-demographic data were obtained directly from the medical records. All patients underwent the Mini-Mental State Examination (MMSE)[17]. The caregivers filled out the Pfeffer Functional Activities Questionnaire (Pfeffer-FAQ)[18].

MMSE is a brief 30-point questionnaire test that is used to screen for cognitive impairment. It is commonly used in medicine to screen for dementia. It is also used to estimate the severity of cognitive impairment at a specific time and to follow the course of cognitive changes in an individual over time, thus making it an effective way to document an individual's response to treatment[17]. In about 10 minutes it samples functions including arithmetic, memory and orientation. Pfeffer-FAQ is a scale composed of ten topics that demonstrates functionality through the degree of independence to perform instrumental activities of daily living (ADL). The minimum score is 0 and the maximum is 30. The higher the score, the more severe the patient's dependence considering the functional impairment from a score of 30[18].

Statistical analysis

The statistical design allowed for evaluation of the etiologic subtypes of dementia. All results are given as mean values and standard deviation, frequency and percentage. Moreover, we used chi-square test to verify differences between genders. The data analysis was performed using the SPSS v. 15.0 for Windows.

RESULTS

Eighty patients with dementia were evaluated and met the clinical diagnosis of dementia. Regarding their characteristics (Table 1), the age ranged from 24 to 93 years old (mean 63.24 ± 16.85). Most of them were older than 60 years (67.5%). About 20% were between 40 and 60 years old, and 12.5% between 24 and 40 years old. With regard to gender, 56.25% of the participants were male and 42.5% female. The years of education ranged from 0 to 15 years (mean 3.3 ± 3:59, 30% were illiterate). The MMSE mean was 13.87 (SD ± 7.79). In Pfeffer-FAQ, the mean was 17.73 (SD ± 9.76). Both ranged from 0 to 30.

Table 2 shows that VaD was the most common dementia type found in the sample (17.5%), followed by AD and DLB, with 12.25% prevalence. Frontotemporal and depressive pseudodementia corresponded to 7.5% of the sample, the Huntington's disease (HD) to 6.25%, and mixed dementia (MD) to 5%. The corticobasal degeneration (CD), multiple system atrophy (MSA), dementia by traumatic brain injury (TBI), normal pressure hydrocephaly (NPH) and Korsakoff's syndrome (KS) were found, each one, in 3.75% of patients. We also observed that dementia was present mainly among the elderly over 60 years old (66.25%) and the prevalence of dementia subtypes coincide with the whole sample (Table 3). Already in middle age (41-60 years old), Depressive Pseudodementia was more frequent. In young adults (24-40 years old) HD was predominant.

The mean age of AD patients was of 76.12 years old (SD ± 9.99), 62.5% were male, the MMSE mean was 10.57 (SD ± 7.66) and Pfeffer-FAQ mean was 17.14 (SD ± 9.85). The

Table 1. Characterization of patients with dementia at Hospital das Clínicas-UFG

	Median	SD	CI (95%)
Age (years)	63.24	16.85	59.79|——|67.17
MMSE	13.87	7.79	12.17|——|15.57
Pfeffer-FAQ	17.73	9.76	15.59|——|19.87
Education (years)	3.30	3.59	2.52|——|4.08
	58.75%	41.25%	χ² Test
Gender	Male	Female	p = 0.146

mean age of VaD patients was of 66.78 years old (SD ± 16,60), 57.14% were female, the MMSE mean was 8.28 (SD ± 7.97) and Pfeffer-FAQ mean was 20.78 (SD ± 9.97). The profile of patients with LBD corresponds to an mean age of 79.87 years (SD ± 16.49), predominant sex: female (62.5%), MMSE mean: 10 (SD ± 7,59) and Pfeffer-FAQ mean: 24.12 (SD ± 9.95).

Table 2. Prevalence of dementia types

	Number of diagnosed cases	Frequency (%)
Vascular dementia	14	17.5%
Alzheimer's disease	08	12.25%
Lewy body dementia	08	12.25%
Frontotemporal dementia	06	7.5%
Depressive pseudodementia	06	7.5%
Huntington's disease	05	6.25%
Mixed dementia	04	5%
Corticobasal degeneration	03	3.75%
MSA	03	3.75%
Dementia by TBI	03	3.75%
NPH	03	3.75%
Korsakoff syndrome	03	3.75%
Miscellaneous	14	17.5%
Total	80	100%

NPH: normal pressure hydrocephaly; MSA: multiple-system atrophy. Miscellaneous: 2 patients each of progressive supranuclear palsy, plus Parkinsonism, Parkinson's disease, herpetic encephalitis, multiple sclerosis, hypothyroidism, neurocysticercosis.

Table 3. Prevalence of frequency in dementia subtypes at different ages

Age groups		
24-40 years n = 11 (13,8%)	41-60 years n = 16 (20%)	> 60 years n = 53 (66,2%)
Huntington's disease (45,5%) Dementia by TBI (18,2%) Others (36,3%)	Depressive Pseudodementia (25%) Korsakoff syndrome (12,5%) Others (62,5%)	Vascular dementia (24,5%) Alzheimer's disease (15,0%) Lewy body dementia (15,0%) Others (45,0 %)

TBI: Traumatic brain injury, n: number of patients at sample.

DISCUSSION

The aim of this study was to investigate the diagnoses of dementia diseases in a developing country. The study was performed at tertiary hospital in the State of Goiás. The Dementia Clinic of Hospital das Clínicas, at the Federal University of Goiás, School of Medicine (HC-UFG) is a service that assists patients selected by previous screening. The patients' cases are highly complex and could not be solved in primary care. Thus, this is a study on complex cases with difficult to diagnose. In Brazil, there are a few studies about dementia care[9].

Contradicting other studies[5,9,19,20], the female group was not prevalent in most of the papers analyzed. The risk of developing dementia increases with age and the female sex is usually prevalent in older age groups. The female predominance in dementia must be a bias in elderly samples, because of the longer women's life expectancy. As the mean age of sample was lower than most of the studies used in comparison we did not have this bias.

Our sample has a significant number of potentially reversible dementia with a prevalence of the 16 patients (20%). Six out of 16 patients showed Depressive Pseudodementia; while three were suffering from NPH and two patients each of herpetic encephalitis (HE), multiple sclerosis (MS), hypothyroidism, neurocysticercosis. None of the patients were diagnosed with neurosyphilis. The prevalence in our study is higher than three Brazilian studies[6,21,22]. Takada *et al.*[21] showed a prevalence of potentially reversible dementia was 8% of total sample in a university hospital. Vale and Miranda[22] found 32 (17.2%) cases of potentially reversible dementia among 186 patients (16 cases of alcoholism, 10 of NPH, 4 cases of neurosyphilis and two of depression). Nitrini *et al.*[6] found 8% of potentially reversible dementias in a sample of 100 patients: 6 for hydrocephalic dementia (HD) and 2 for neurosyphilis. In the later study, the dementia by vitamin B_{12} was excluded of the potentially reversible dementia group.

Concerning to the mean age in the sample, the result showed a sample of younger people than that of several other studies that showed medians higher than 70 years old[5,19,23-25], despite of most of them were older than 60 years (67.5%). The study by Silva and Damasceno[9], also in a tertiary care service showed similar results to ours. Studies by Vale and Miranda and Nitrini *et al.* reached similar results: 67.40 ± 13.21 and 67.6 ± 11.7, respectively[6,8].

In developing countries, it is estimated that half of the population over 65 years old is illiterate[26]. In this study, the illiteracy rate was high (30%), but close to the one found in other studies realized in Brazil (35.2%[20], 25%[9], 38.3%[24]). Concerning the prevalence of different types of dementia, most part of Brazilian studies have found AD as the prevalent type of dementia, followed by VD[4-6,8,9,19-21,24], in contrast our study. Vascular Dementia is predominant over the sample, with 17.5%. Alzheimer's disease makes up to 12.5% of the sample. The AD showed same prevalence as LBD, although less prevalent than VaD. Such a difference could be explained by the absence of a cut-of age point in our study that included not only elderly patients but also middle age and young patients (in whom AD is not so common), as well as the use of MRI more selectively detects cases of subcortical vascular dementia in detriment of AD. Therefore, the data from most Brazilian studies may reflect an overdiagnosis of AD to the detriment of vascular dementia, since individuals with silent cerebrovascular disease or even subcortical cerebrovascular disease may not be detected without using MRI scans. Mo-

reover, the difference found among the proportion of dementia subtypes probably took place as it is a tertiary hospital, which receives complex cases requiring a more detailed and difficult diagnosis[9].

The study by Silva and Damasceno[9], also in a tertiary care service, was close to our study. They conducted a study with patients from a university hospital in the state of São Paulo, Brazil, and resulted in a prevalence of VD (24.9%) higher than AD (23.7%).

Vascular dementia (17.5%) was the most frequent type of dementia, followed by Lewy body dementia (LBD) and Alzheimer's disease (AD) (12.25%). These proportions contrast with literature, probably as these are more severe cases received by a hospital of tertiary complexity, and also by the presence of younger patients in the sample, unlike other studies. The sample studied is similar to a study also reported in a university hospital[9].

The results of this study must be considered in the light of some limitations. First, the study is based on patients referred for dementia diagnosis at hospital, which were not followed. Consequently, it is not purely community-based epidemiological study. Second, dementia subtypes should be considered with carefully because we did not perform pathological confirmations. Besides, our patients had extensive evaluations, including neuropsychological, clinical, neuroimaging and laboratory investigations. Thus, we believe that our diagnosis was the most accurate possible. Finally, the small sample size does not allow generalizations.

CONCLUSION

Dementia was present mainly among the elderly over 60 years. Vascular dementia, Lewy body dementia and Alzheimer's disease predominated in both the entire sample and in the elderly group. Already in young adults, a rarer genetic disease such as Huntington's disease was more prevalent. In middle age, depressive pseudodementia was more frequent.

The epidemiology of dementia is a recent research line in Brazil, but it must develop quickly to enable appropriate public healthcare strategies to our population. Caution should be taken related to the prevalence rates of each dementia form, since some of them are almost exclusively diagnosed with neuroimaging methods as is the case of MRI for the correct diagnosis of an important and frequent form of dementia: subcortical vascular dementia.

There is need for prevalence studies of dementia in other regions of Brazil, since the most of them were performed at southeast. Further epidemiological studies may help to confirm such rates, which may have a considerable impact on the organization and advising of healthcare services in our country.

INDIVIDUAL CONTRIBUTIONS

All authors participated in the definition of the study design and the protocol.

Renata Teles Vieira and Leonardo Caixeta – Managed the literature searches.

Renata Teles Vieira, Leonardo Caixeta, Norami de Moura Barros, Sergio Machado, Adriana Cardoso Silva and Antonio Egidio Nardi – Wrote the first draft of the manuscript.

All authors contributed to and have approved the final manuscript.

CONFLICT OF INTEREST

There is no conflict of interest to declare.

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