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The Importance of Neuropsychological Assessment in the Diagnosis of Dementia in the Elderly

Pedro Antonio Gomes Maciel¹ Renata da Silva Adonias Dantas², Jussara Evila Pinheiro Bastos³, André Luis Sant'Anna⁴, Raimunda Tânia Pinheiro de Oliveira⁵, Hermes Melo Teixeira Batista⁶ **Abstract:** The causes of forgetfulness episodes in the elderly can occur for a variety of reasons, among which we highlight the presence of dementia, which can negatively infer senile cognition, memory, language and communication. Dementia is a condition in which the individual loses part of the brain functions, causing neurological deficits that directly affect his quality of life. This study discusses the importance of Neuropsychological Assessment as a fundamental tool for the diagnosis of degenerative disease, before the complaints of oblivion related to the advancing age. The results indicated that the use of this method of examination can indicate the therapeutic intervention in an adequate time, allowing the improvement of the quality of life for the elderly.

Keywords: Neuropsychological assessment, dementia, neurological defict

Introduction

The aging process is followed by a series of physiological, neuropsychological and social changes that mark the individual, and in which may cause, among the most diverse consequences, the memory lapses. The causes of forgetfulness episodes in the elderly may occur for many reasons, among them the presence of dementia, which can negatively influence senile cognition, memory, language and communication.

¹Medical student at the Estácio Medical School of Juazeiro do Norte (FMJ), Ceará, Brazil.

² Graduation in Nursing at the Faculty Santa Emília de Rodat. Brazil

³Graduation in Nursing at the Terra Nordeste. Brazil.

⁴ Graduated in Medicine at the University Gama Filho – RJ. Residency in Orthopedics and Traumatology at Hospital Municipal Barata Ribeiro - RJ. Contact: euamoortopedia@gmail.com;

⁵ Raimunda Tânia Pinheiro de Oliveira⁵ – doctor student in Health Sciences from the Faculty of Medicine of ABC - SP. Brazil. t.biologa@gmail.com.

⁶ Doctor by the Federal University of Ceará. Medical doctor from the Cariri Regional Hospital and Professor at the Faculty of Medicine of Juazeiro do Norte-Estácio. Master's Degree in Health Sciences from the Faculty of Medicine of ABC - SP. Contact: hermesmelo@oi.com.br.

The disease when established affects the autonomy of the person, interfering in the social and professional performance, causing a certain need for a care with the elderly person. In Brazil, the number of elderly patients suffering from the disease varies from 1.6%, between 65 and 69 years, and 38.9%, to people over 84 years old (Herrera et al, 1998, p.70).

The World Health Organization defines the elderly as having 65 years old for developed countries and 60 years old or over for underdeveloped countries (Canada, 1994), and the elderly age group is the one that more grows in the world. In Brazil, for instance, it is estimated that the number of elderly people will increase by fifteen times, based on the time span between 1950 and 2025, while the other age groups will increase by only five times. Given this scenario, we seek to provide quality of life of the senile population, mainly because of their physical and mental fragility and because dementia symptoms can seriously reduce the person's autonomy (who, 1994).

Dementia is a condition in which the individual loses part of the brain functions, causing neurological deficits that directly affect the quality of life, since it entails mental disorders that can alter even the personality of the person. In fact, the aging process itself naturally causes a decline in the cognitive functions of the human being, because the brain undergoes morphological changes that cause its selective neuronal loss and decrease the resistance to degeneration (Quevedo et al, 2006). Thus, neuropsychological assessments are useful and necessary to identify the presence of dementia or even other mental disorders.

Thus, the dementia state has a common clinical picture of early personality and behavioral changes, as well as changes in the language, causing problems in verbal fluency, stereotypies and echolalia, all progressive symptoms. In this set, visuospatial skills are relatively preserved. Behavioral changes can be verified with the presence of social isolation of the elderly, apathy, loss of critical sense, disinhibition, impulsive actions, excessive irritability, mental inflexibility, signs of carelessness, among others (The Lund and Manchester Groups, 1994).

In addition, episodes of somatic or motor preoccupations may occur, disinterest in everyday activities and by people close to them, ritual development or collectivism, hypermobility with anxiety, as well as the presence of depressive symptoms (Gil, 2002, p. However, it is necessary to comment that despite the causes of dementia are multiple, its diagnosis requires the presence of memory impairment, which can even be preserved in the initial phases (Caramelli & Barbosa, 2002).

Given the above, the importance of the present study is related to the importance of the use of neuropsychological assessments for the purpose of identifying the dementia status of the elderly, especially in the early stages - because early diagnosis can reverse the process or mitigate its consequences; with the objective of estimating the degree of neuropsychological impairment and guiding the appropriate treatment to be used with the aim of reducing the negative effects caused by this neuropsychological syndrome.

Neuropsychological profile of the major mental disorders that can be developed in senility

The episodes of forgetfulness of the elderly represent the cognitive decline associated with the aging process, which may be related to the presence of mild Cognitive Impairment or to some more serious mental disorder related to a degenerative process of the central nervous system.

In Mild Cognitive Impairment, the patient presents mental decline that does not necessarily compromise the performance of their daily activities. The disease can be verified by neuropsychological examination, but it can not be said to fulfill the defined criteria for dementia (Devanand et al, 1997), which is characterized by progressive loss of memory and at least one other cortical function such as language, praxia or vision. However, although the main clinical aspects of dementia are known, it is important that the confirmation of the diagnosis be made by Neuropsychological Assessment so that it is not be mistaken with other disorders, as well as to indicate the appropriate treatment depending on the case.

Along with the aging process it is normal to the person to undergo modifications in their cognitive sense, which is why it is important to perform annual neuropsychological assessments when the individual reaches the Old Age. In this context, these tests help the exploration and identification of these possible memory and cognitive imperfections, helping health professionals to correctly diagnose the illness.

The Neuropsychological Assessment examines all patient's cognitive complaints, examining brain functioning to check for possible lesions and neural dysfunctions that are interfering with the individual's behavior and understanding. The evaluation, as a rule, uses psychometric tests that induce the examinee to perform tasks that require the use of functions

in isolation; and the interpretation of the tests should be based on a quantitative and qualitative analysis of the results.

Among the main diseases that cause dementia in the elderly with 65 years or more, Alzheimer's presents itself as responsible for more than 50% of cases (Herrera Junior et al, 1998). The disease triggers a degenerative process that reaches from the hippocampus to the associated cortical regions and related to the preservation of the primary cortices. As for this early stage of dementia, exams should indicate the presence of language disorders as well as psychotic problems such as delirium and hallucinations.

Vascular dementia is the second cause of dementia development. In Western countries, it covers 10% of the cases, with the incidence in the elderly aged 60 years or more estimated at 1.2% to 4.2% (Herrera Junior et al, 1998). This disease triggers off several illnesses, among which we can find: (i) dementia due to cerebrovascular irregularities related to severe thromboembolic lesions caused by various infarctions; (ii) lesions at strategic sites, such as the thalamus, left angular gyrus and caudate nucleus; (iii) dementia associated with brain white matter lesions; (iv) amyloid angiopathy; (v) and cerebral hemorrhage due to vascular accidents (Román, 1993).

Dementia caused by Lewy bodies occupies the third place of the most dementiarelated illnesses and is characterized by the presence of two of the following symptoms: fluctuation of cognitive problems in a matter of minutes or hours, vivid and recurrent hallucinations, and symmetric Parkinson's symptoms (Mckeith et al, 1996); in addition, patients with this disease often have frequent episodes of falls.

Finally, we can cite frontotemporal dementia in the fourth position. This disease affects, as a rule, individuals in the pre-senile stage, that is, under 65 years of age; and has a hereditary character with probable pattern of dominant transmissive inheritance. In this group of diseases are present those related to Pick's disease, degeneration of the frontal lobes and amyotrophic lateral sclerosis (Bottino, 2000).

The tables below summarize the situations verified by the Neuropsychological Assessment that evidence the existence of the mental disorder and the possible degree that the dementia is:

Table 1 - Cognitive profile in the early stages of dementia due to Alzheimer's disease

Cognitive Function	Cognitive Profile
Memory	Committed the declarative memory, that is, the memory to evoke facts and
	events, especially those acquired more recently. Preserved non-declarative
	memory, that is, the learning of sensory-motor skills.
Visual	Preserved
Language	Difficulty naming objects and it may be difficult to analyze the speech and
	understand reading. Speech may be slow with repetition of words and phrases.
	Reduced verbal fluency.
Visuo-spatial	There may be spatial disorientation and difficulty handling complex apparatus.
Executive Function	There may be a deficit of selective attention or slowing in performance.
	Difficulty in planning may occur.

Source: Gil, G; Busse, AL, 2009, p. 47.

Table 2 -	Cognitive	profile in	vascular	dementia	of small	vessels and	cortical	infarcts
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	Cognitive Profile
Small vessels	Cognitive performance may seem adequate, slower. Slowdown is usually
	accompanied by a slight impairment of memory and executive functioning; mainly loss of mental flexibility and difficulty in dealing with complex situations
Cortical Infarctions	Articulatory and prosody deficits, with more content and less anomie.
Source: Gil. G: Busse, AL, 2009, p. 47.	

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Table 3 - Cognitive profile altered in dementia by Lewy bodies

	Cognitive profile	
Altered	Memory, attention, psychomotor speed, visuospatial and visuo-constructive	
	ability, language and executive fuction.	

Source: Gil, G; Busse, AL, 2009, p. 48.

	Cognitive function and behavior
Preserved	Memory. Visuospatial skills.
Altered	Behavioral changes may present as social isolation, apathy, loss of criticism,
	irritability, shyness less, mental inflexibility and carelessness of personal
	hygiene. Language with reduced verbal fluency, stereotypies and echolalia.
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Source: Gil, G; Busse, AL, 2009, p. 48.

Main neuropsychological characteristics in senescence

The cognitive level of disability of the elderly presents variability depending on the level of education, physical health, forms of cognitive stimulation, etc. Specifically, regarding memory cognition, it should be observed which memory stage the patient is in and what types of memory still has, verifying it is part of the normal aging process.

The memory is classified into three stages: (i) acquisition, (ii) memorization (iii) and recall. Aging reaches the stage of information acquisition, so the elderly person has difficulty transforming, reorganizing and associating new information with existing ones, which is a sign of decline. In the memorization stage, it is important to use visual, auditory and semantic strategies for the assimilation of information, resources that are precariously used by senile.

As for the types of information, the elderly person does not usually have difficulty in the execution memory, since this does not demand the evocation of stored information; nor about explicit memory, which involves the ability to evoke voluntarily the semantic information already stored, which is why they can recall historical facts, food tastes and other memories acquired throughout life. To verify the types of memories that the elderly still has, tests such as letter completion (Pompea, 2003) and Wechsler's vocabulary test are used to measure execution memory and explicit memory, respectively, for check whether they are stable or not.

Different from the previously mentioned tests, tests to measure fluid skills, such as the Auditory and Verbal Learning Test (Rey, 1964) that demand new combinations and new learning, present the decline of these abilities as age, which reveals a significant difference between the performance of a young person and an elderly person when free vocabulary evocation, for example, demonstrating that the senile person has a diminished memory capacity (Camargo et al, 2006).

Also, in order to be able to trace the neuropsychological profile of the elderly as completely as possible, it is essential to take into account aspects such as the physical, psychological and social changes that occur in this age group, as well as the patient's particularities regarding the predisposition to develop depression, low self-esteem, identity problems, memory problems, quality of life and the social context in which the elderly are inserted.

Therefore, knowing the main features of the elderly profile is important so that a more complete evaluation and a more accurate diagnosis can be developed, with the ultimate objective of indicating the adequate professional follow-up, the need for psychotherapeutic procedures and the proper orientation to the relatives of how to treat the disease.

Neuropsychological evaluation of the elderly

In the third age the reduction of the cognitive functions of the individual begins. Some are more resistant to the process, such as motor skills, professional, personal and semantic knowledge, with the use and understanding of language; while others are reconfigured more quickly, such as the case of unfamiliar information, abstract contents and the act of decorating (Portuguez, 2002).

The Neuropsychological Assessment of the Elderly is performed through an examination of the cerebral functionalities, with the objective of verifying possible lesions or dysfunctions that are interfering negatively in senile cognition (Rozenthal, 2006). The use of these evaluations has proved to be effective in the identification of the disease and confirmation of the diagnosis, because the methods used allow the identification of the neuropsychological disorder, when other tests, such as x-ray and magnetic resonance, are not able to do so.

In this type of procedure, all the information provided, either by the elderly or any other source, is extremely important so that it is possible to establish the complete and reliable profile of the patient. Neuropsychological examination helps to identify the stage of the disease, revealing if the patient is in the primary stage, between mild cognitive impairment and dementia; with some instability, such as depression or dementia itself; or other syndromes, such as amnesia (Green, 2000).

During the evaluation, the performance and behaviors of the elderly person will be observed against the test situations presented, analyzing their strengths and weaknesses, limitations or possible deficiencies. From these data, it is possible to direct the best method of treatment of the elderly, aiming at their rehabilitation (Rozenthal, 2006). Thus, through these cognitive assessments, it is possible to identify the disease even if it is at an early stage or that is not perceptible through superficial clinical exams, through signs of abnormality that may result from some tests (Hogan, 2006).

In this context, the results of the neuropsychological analysis of the senile person, through the assessment of the patient's brain functions, such as attention, language and reasoning; together with neuroimaging tests, are considered indispensable for the identification of dementia or predisposition to develop the disease of the elderly person (Hototian et al, Lopes et al, 2006).

Thus, the etiological diagnosis of the disease is based on the evaluation and tracing of the neuropsychological profile characteristic of the elderly, as well as the use of laboratory and neuroimaging exams; and Neuropsychological Assessment is particularly important for diagnosing the degree of dementia presented and should be performed as carefully as possible in order to avoid serious diagnostic errors, such as confusing a simple cognitive impairment with the early stages of dementia (Izquierdo, 2002). Thus, detailed neuropsychological tests should be used mainly against the suspicion of the initial stages of the disease, since simple analyzes may present a borderline result, not identifying the presence of the disease.

The method should objectively assess the cognitive functions of the patient. Initially, a brief and general neuropsychological examination is performed and, only if there is any anomaly detected, more specific tests will be performed. The abbreviated assessment uses the following instruments: (i) MMSE or mini-mental state examination, in which the individual's temporal and spatial orientation will be analyzed by examining the memory, attention, speech, mathematical abilities among other points that will indicate if the patient should be subjected to the more detailed evaluation; (ii) Clock Drawing Test, in which the existence of some parietal lobe dysfunction will be verified, when analyzing the visual and spatial functions, the ability to plan, the visuconstruccional ability, as well as the executive function of the patient; (iii) Verbal Fluency Test, through which the presence of semantic memory impairment can be verified; (iv) Questionnaire of functional activities, which is used as an instrument to detect some impairment in the daily tasks of the elderly; (v) Scale for Geriatric Depression, which accuses the presence of depressive symptoms (Folstein et al, 1975, p 189, Critchley, 1953, p 480, Mendez et al, 1992, p.1095, Wolf-Klein et al, 1989, p 734; Pfeffer et al., 1982, Yesavage et al, 1982-1983, p.37).

There is an urgent need to comment on the existence of other important aspects to be considered in the evaluation, since they may interfere with diagnosis, such as age, gender and age. This is because aging tends to make the person more predisposed to developing the disease; attention must be paid to differences such as women possessing greater verbal ability, while men are more likely to develop mathematical calculations; as well as the level of high schooling is presented as a preventive factor in triggering the disorder in the elderly phase (Banhato & Nascimento, 2007).

In this context, genetic factors, possible cranial trauma and the presence of vascular diseases should also be considered, since they increase the risk of dementia (Green, 2001).

Therefore, the Neuropsychological Assessment aims to be performed should be contextualized with the reality of the patient analyzed and should be attentive to the presence of three main patterns, namely, the stage of development in which the human being is, the local population in the which it is inserted and other external criteria. It should be emphasized that advanced age significantly influences the performance of the individual in terms of execution, focus and memory, since there is a loss in the speed of processing of brain functions, which is why older people need more time to perform the tasks. tasks (Banhato, 2007).

Finally, according to Charchat et al. (2001), the diagnosis of the dementia condition should be established after the appropriate clinical evaluation and screening tests have been carried out and must be confirmed by neuropsychological tests and analyzes and, in the end, properly documented; to avoid doubts about the presence of the disease in the elderly.

Final considerations

The present study carried out a bibliographical review about the main neuropsychological characteristics of the elderly person and the importance of performing the Neuropsychological Assessment to identify possible mental disorder, especially in relation to the dementia's findings.

The advancement of age leads to a set of neuropsychological, morphophysiological, biochemical, psychological and sociocultural changes; where the Neuropsychological Assessment consists of an instrument of analysis of the cognitive functions of memory, language and reasoning of the individual; and that we understand to be effective in the identification of possible neurological disorder in the senile, verifying, even the altered brain areas and the presence of some neurological syndrome, as the dementia; which are difficult to recognize by superficial clinical examinations such as magnetic resonance and electroencephalogram.

The neuropsychological examination presented as a useful and effective instrument in the identification were useful in identifying the initial stages of dementia in the elderly, through the analysis of factors related to sensory acuity and motor alterations. We understand that this evaluation should consider neuropsychological factors, such as cognition, memorization, communication capacity, attention and reasoning; as well as the cultural, educational and socioeconomic parameters in which the patient is inserted.

Thus, the main criteria for identifying dementia in the elderly are known, Neuropsychological Assessment appears as an instrument that favors the diagnosis of a possible degenerative condition or the identification of mere forgetfulness complaints related to the advancing age. In addition, the evaluation contributes to the diagnosis already in the initial stages of the disease, as well as to the reduction of possible confusions between the situations of suspicion and those in which the disease is effectively established. In the end, the use of this method of examination has the scope to indicate the appropriate therapeutic intervention and, consequently, to improve the quality of life for senile patients.

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