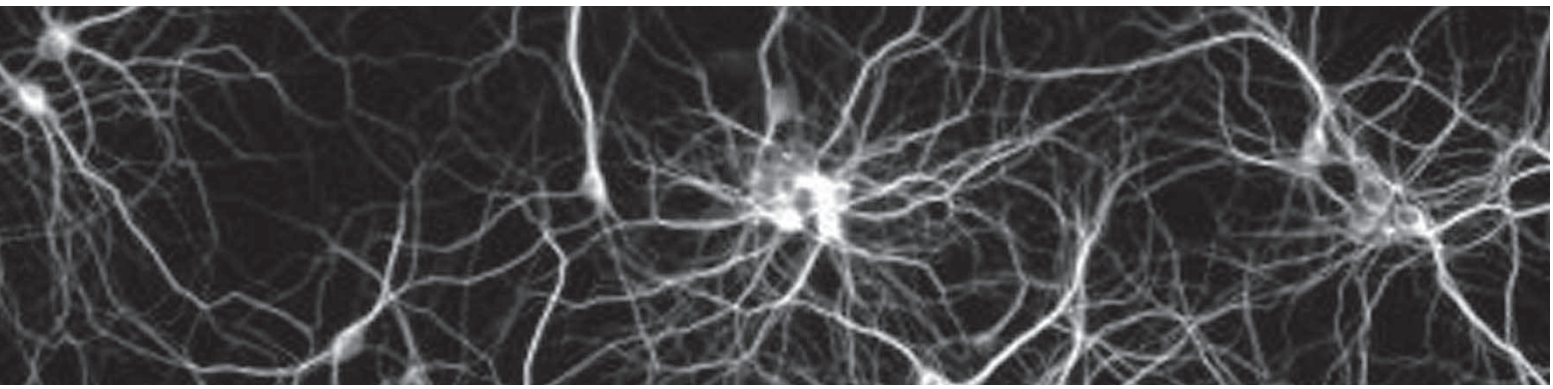

Cognitive assessment in dementia: initial approach in outpatient clinic

M. Gregorič Kramberger, S. Popović, Z. Pirtošek

ABSTRACT – A diagnosis of dementia should be made only after comprehensive assessment, which inevitably includes history taking, cognitive and mental state examination, physical examination, a review of medication in order to identify and minimize use of drugs that may adversely affect cognitive functioning, and other appropriate investigations. Clinical cognitive assessment in those with suspected dementia should include examination of attention and concentration, orientation, short- and long-term memory, praxis, language and executive function. As part of this assessment, formal cognitive testing should be undertaken using a standardized instrument. Formal neuropsychological testing should form part of the assessment in cases of mild or questionable dementia.

Key words: assessment, cognition, diagnosis, dementia

OVERVIEW

Dementia is a clinical state characterized by the loss of function in at least two cognitive domains. When making a diagnosis of dementia, features to look for include memory impairment and at least one of the following: aphasia, apraxia, agnosia and/or disturbances in executive functioning. To be significant the impairments should be severe enough to cause problems with social and occupational functioning and the decline must have occurred from a previously higher level. It is important to exclude delirium when considering such a diagnosis. When approaching the patient with a possible dementia, taking thorough history is crucial. Clues to the nature and etiology of the disorder are often found following careful consultation with the patient and carer. A focused cognitive and physical examination is useful and the presence of specific features may aid in diagnosis. Certain investigations are mandatory and additional tests are recommended if the history and examination indicate particular etiologies. It is useful when assessing a patient with cognitive impairment in the clinic to consider the following straightforward questions:

- Is the patient demented?
- If so, does the loss of function conform to a characteristic pattern?

Ljubljana University Medical Center, Department of Neurology, Ljubljana, Slovenia

- Does the pattern of dementia conform to a particular pattern?
- What is the likely disease process responsible for the dementia?

Due understanding of cognitive function and its anatomical correlates is necessary in order to ascertain which brain areas are affected. We shall illustrate how the history and examination, including bedside cognitive testing, are used in diagnosis (1).

TAKING HISTORY AND EXAMINATION OF THE COGNITIVELY IMPAIRED PATIENT

It is vital to obtain a history from a relative or close friend in addition to the patient history if they can provide one. It is useful to interview the patient and the accompanying person separately. The absence of a concerned relative or friend at the appointment may lessen the likelihood of dementia in a patient complaining of memory problems. Interviewing the patient separately enables the cooperation and language skills to be assessed without them being masked by interruptions or assistance from a third party. It also allows an assessment into the degree of insight of the affected individual. Conversation with the patient may be as important as any formal cognitive assessment (2).

In brief cognitive assessment, which should be done in all cases, the presence of word finding difficulties, paraphasic errors, and inappropriate behavior should be sought. The assessment must be divided into a number of domains or systems and each of them has to be examined. These are:

1. Alertness and arousal
2. Attention and concentration
3. Orientation
4. Memory
5. Language
6. Visuospatial and constructive functions
7. Frontal lobe and fronto-subcortical functions
8. Other dominant (left) hemisphere functions: calculation, praxis, right-left orientation, finger gnosis
9. Other nondominant (right) hemisphere functions: dressing apraxia, neglect phenomena, agnosias
10. Insight and judgment

Assessment of the level of consciousness and attention processes is crucial as disturbance in these domains can influence the performance on other tests. Familiarity with the common bedside tests for each function is important (Hodges, 1994). For most purposes, a screening battery such as Folstein's Mini-Mental State Examination (MMSE) is a good starting point. It tests orientation, immediate and recent memory, concentration, arithmetic ability, language and praxis (5). It is easy to administer and takes only 5-10 minutes. It has reasonable sensitivity but low specificity, and may be used for serial evaluations. The score is out of 30, and 27 or less is indicative of impairment. A score less than 25 is definitely abnormal. The MMSE may be normal in the presence of subtle impairment, and if this is suspected, detailed evaluation is recommended.

It is useful to combine the MMSE with the Clock Drawing Test in which the patient is asked to draw a clock-face and draw in the hands to indicate 11:10. This tests the patient's constructional abilities and, more importantly, planning and organization or frontal lobe function. Examination of the frontal lobes is central to many neuropsychiatric disorders and the following clinical tests for this are suggested:

1. Observing behavior: impulse control, motivation, affective regulation, relationships.
2. Motor and expressive language.
3. Primitive reflexes: grasp, palmomental, snout, pout, glabellar tab.
4. Verbal fluency: letter-saying as many words-not proper nouns-as possible in one minute beginning with the letter F or A or S), category (naming as many objects from one category as you can in one minute, such as animals).
5. Motor sequencing: Luria's hand sequences (e.g., alternating repeatedly between making a fist and a ring with one hand and then the other-fist-ring test, alternating between a fist, palm and cut movement with one hand and then the other).
6. Reasoning and conceptualization: similarities, differences, proverbs.
7. Planning and organization: clock drawing (ask the patient to draw a clock face and put in numbers and hands to indicate 11:10.

With regard to the tests used, it is important to remember that tests are rarely pure, and usually are influenced by a number of cognitive functions. For example, simple tests like 'serial sevens' may be in-

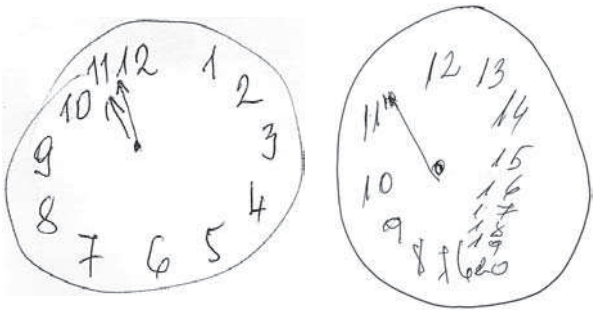

Fig. 1. *Abnormal clock drawing test.*

fluenced by impairment of attention, short-term memory, and calculation ability. A battery of tests is therefore necessary to determine which function is really disturbed. Failure on one test must be followed up with other tests before a dysfunction is established. All cognitive tests are designed to be administered in a particular manner. Significant departure from a standard administration may render the test invalid. Repetition of the same test may lead to an improvement in performance because of what is known as 'practice effect'. For detailed assessment, a referral to a clinical neuropsychologist is necessary. We should also be aware that bedside testing has the potential of confounding the formal assessment of a neuropsychologist if that were to follow. Therefore, one should use only the tests that are meaningful for bedside assessment.

RATING SCALES

The widely used MMSE provides useful information in grading established dementia but does have limitations, particularly in detecting early disease. It contains a crude test of delayed recall, with only three items being employed and not enough time allowed between registration and recall. It lacks a timed test to detect problems with verbal fluency (3). The Addenbrooke's cognitive assessment has been developed to address the deficiencies of the MMSE (7). It also has the advantage of being brief enough to allow the clinician to use it within the time constraints of a new patient appointment. It should be noted that even the Addenbrooke's cognitive assessment is no match for formal neuropsychological assessment. Such services are, however, patchy, and in some services are non-existent, so the clinician must remain competent at assessing cognition.

The focused examination of the patient with dementia is central in cognitive assessment. Aside from the mental state examination and specific tests of cognitive function, it is important to examine the neurological system in any patient with possible cognitive impairment. Neurological examination is, however, often normal in the early stages of many neurodegenerative dementias and specific abnormalities may point to rarer or potentially treatable causes of dementia. It is important to assess the patient at rest for any involuntary movements, including chorea, tremor, dystonia, and myoclonus (which may be spontaneous or stimulus sensitive). The muscles should be observed for fasciculations. The presence or absence of primitive reflexes (frontal release signs) should be determined. Ocular examination should involve careful assessment of visual acuity, papillary responses, eye movements, optic discs, and visual fields. Assessment of speech and swallowing may reveal the presence of bulbar features. Examination for pyramidal or extrapyramidal signs is important and gait should be assessed wherever possible. Ataxia is unusual in Alzheimer's disease, dementia with Lewy bodies, and frontotemporal dementia; its presence should raise the possibility of a different cause. The presence or absence of apraxia should be assessed by asking the patient to perform alternating hand movements or copy gestures (4). Peripheral neuropathy may be present and when cooperation allows signs of this should be sought.

Examination of other systems is also useful in looking for evidence of multisystem disease. In addition to neurological examination, patients should be assessed for signs of immune compromise (predisposing to opportunistic infections such as progressive multifocal leukoencephalopathy, toxoplasmosis or primary cerebral lymphoma possibly indicating HIV/AIDS). Features of systemic disease may indicate an underlying neoplasm, vasculitis, infection, or a metabolic disorder. Uveitis may indicate sarcoidosis, Behcet's disease, or multiple sclerosis. The presence of cardiac disease, hypertension, or a previous transient ischemic attack or stroke may suggest cerebrovascular disease. Armed with the above theoretical knowledge regarding memory and its subdivisions along with how to elicit information from history taking and examination, we can now return to trying to achieve a diagnosis in a patient with possible dementia (6).

CONCLUSION

It is impractical to examine everything in cognitive assessment, and as in most other areas of neurology, the history remains pre-eminent in guiding subsequent examination. The central role of an in-

formant, and the ability to immediately test the hypotheses generated during history taking, distinguish this means of neurological assessment. In some patients, it is not possible to reach a firm diagnosis after a single cognitive assessment, even when combined with a formal neuropsychological report. This is particularly true for the mild stages of neurodegenerative diseases, and reflects the relative insensitivity of both clinical and imaging assessment to early pathology. Longitudinal follow up and repeated assessment in such cases is invaluable, and should not be forgotten.

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Address for Correspondence: Asist. Prof. Milica Gregorič Kramberger, MD, Ljubljana University Medical Center, Department of Neurology, Zaloška 2, 1000 Ljubljana, Slovenia. www.kobz.si/en; e-mail: milica.krambeger@gmail.com

Procjena kognitivnog stanja kod demencije: prvi pristup u ambulanti

SAŽETAK - Dijagnozu demencije trebalo bi postaviti tek nakon sveobuhvatnog pregleda koji neminovno uključuje povijest bolesti (anamnezu), ispitivanje kognitivnog i mentalnog stanja, fizikalni pregled, osvrt na terapiju u cilju identificiranja i smanjena upotrebe lijekova koji bi mogli negativno utjecati na kognitivno funkcioniranje i druge odgovarajuće pretrage. Ako se sumnja na demenciju, klinički kognitivni pregled bi trebao obuhvatiti ispitivanje pažnje i koncentracije, orijentacije, kratkoročnog i dugoročnog pamćenja, praksije, jezičnih i egzekutivnih funkcija. U okviru te procjene trebalo bi poduzeti formalno kognitivno testiranje korištenjem standardiziranih instrumenata. U slučajevima blagih demencija ili kada se demencija dovodi u pitanje u procjenu bi trebalo uvrstiti formalno neuropsihološko testiranje.

Ključne riječi: kognitivno stanje, demencija, dijagnoza, procjena