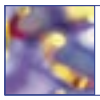

Diagnostic tests

Diagnosing dementia: mental status testing and beyond

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Summary

The rising prevalence of dementia in Australia means that general practitioners will have an increasingly important role in the timely and accurate assessment of this condition. Two tools that are commonly used for assessing dementia are the Mini-Mental State Examination and the Alzheimer's Disease Assessment Scale (Cognitive sub-scale). The utility of these tools is maximised by the inclusion of information from other relevant sources, such as the patient's carers, and from clinical evaluation of the patient. These tests are not as complete as neuropsychological assessments. Referring patients for a more detailed assessment is appropriate when the diagnosis of dementia is in doubt.

Key words: Alzheimer's disease, Alzheimer's disease assessment scale, mini-mental state examination.

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Introduction

The requirement that patients with Alzheimer's disease must be assessed before drugs such as donepezil can be supplied through the Pharmaceutical Benefits Scheme (PBS) has focused attention on psychological testing of cognitive status. As the prevalence of neurodegenerative conditions is increasing, early accurate diagnosis is important so that patients can be treated promptly or referred for further assessment as required. General practitioners can play a vital role in this assessment.

Assessment tools

Despite the many advances in our understanding of Alzheimer's disease, primary diagnosis still relies on the identification of cognitive decline.

The most widely used cognitive assessment tool in primary care settings is the Mini-Mental State Examination (MMSE, see www.minimental.com). It provides a brief evaluation of the cognitive domains affected in Alzheimer's disease, including orientation, registration, attention, recall, language and constructional praxis.[1] Patients' scores range from 0 to 30, with low scores indicating greater cognitive impairment. Scores less than 24 are conventionally interpreted as evidence of a dementing illness.

Another instrument, which has gained more attention after it was used in antidementia drug trials, is the Alzheimer's Disease Assessment Scale – Cognitive sub-scale (ADAS–Cog).[2] The primary cognitive functions sampled are similar to those of the MMSE, including components of memory, language and praxis. This test takes about 30 minutes. The ADAS–Cog is scored from 0 to 70, but in contrast to the MMSE, higher scores indicate greater cognitive impairment.

Although testing is required before antidementia drugs can be supplied through the PBS (see box) the availability of ADAS–Cog kits is now limited. The manufacturer of one of the antidementia drugs, which originally distributed the kits in Australia, is no longer doing so. Patients may therefore need to be referred to a neuropsychologist or other professional who is familiar with using the ADAS–Cog in the context of broader psychological assessment.

Problems with brief cognitive tests

Any brief screen or assessment of a complex behaviour such as cognition has limitations.

Authority prescriptions

The Pharmaceutical Benefits Scheme requires that the diagnosis of dementia must be confirmed by a specialist if donepezil, galantamine or rivastigmine is prescribed. Applications for authority prescriptions must state the result of the baseline MMSE and, if this score is at least 25 points, the application must also include the result of the baseline ADAS–Cog. After six months repeat prescriptions will only be approved if the MMSE score has increased by two points, or, in cases where the baseline MMSE is at least 25 points, the ADAS–Cog has decreased by at least four points.

Despite its widespread clinical use, and like all brief dementia-screening tests, the MMSE has been criticised[3] for:

- being insensitive to patients with mild cognitive impairment
- lacking diagnostic specificity
- not taking into account levels of education, premorbid ability, and other patient variables such as visual problems or poor command of English.

Dementia may be missed in some patients, and other patients without dementia may be misclassified. A normal score on the MMSE does not necessarily exclude a brain abnormality or dementia.

There is also some uncertainty about the clinical relevance of changes in MMSE scores, owing to relatively high measurement error. This limits the ability of the MMSE to document change in individual patients over time. Clinical studies have shown wide variability in the way the average MMSE score changes over time. In view of problems with accuracy and reproducibility, the MMSE may be of limited value in tracking change in patients with Alzheimer's disease who are followed up for less than three years.[3] Even in patients followed up for four years or more, 16% of patients with an initial diagnosis of probable Alzheimer's disease showed no meaningful decline in MMSE scores.[3,4]

The ADAS–Cog shares many of the limitations reported for the MMSE. Scores on the ADAS–Cog are also variable. For example, in the original clinical study of the scale, 27 patients with Alzheimer's disease and 28 normal elderly people were rated then re-tested 12 months later. The range of scores corresponding to one standard deviation from the mean in the Alzheimer's disease group was 0 to 31 at baseline, and 0 to 38 at 12 months, demonstrating wide variability in scores. Perhaps not surprisingly given this variability, only eight of the patients with Alzheimer's disease showed a significant increase in the severity of their dysfunction after 12 months.[2]

The need for more information

The limitations of the tests in indexing change highlight the importance of referring patients with suspected Alzheimer's disease for specialist psychological assessment. Comprehensive psychological assessment is necessarily a time-consuming process. It is not possible to capture a reliable sample of behaviour in a few minutes, particularly in anxious elderly patients. Thorough cognitive assessment may be more valuable in terms of diagnosis and long-term outcome. It may also provide important information about other confounding cognitive, mood or personality changes. Additional allied health assessments, for example by an occupational therapist, can provide useful information regarding functional capacities.

Supporting information

General practitioners can improve the sensitivity of clinical assessment by looking for other evidence of symptoms or evidence of functional change in everyday life. This evidence may come from the patients or other informants, such as carers.

Questionnaires completed by informants can be a helpful adjunct to cognitive assessment. They can quantify information about aspects of memory and broader intellectual function in everyday life. Informant accounts are not without limitations, including the complicating effect of the emotional state of the patient and of the informant, and the relationship between the patient and informant. However, research[4,5] on clinical and community samples of elderly participants suggested that using informant questionnaires and cognitive screening together yields more information and provides better sensitivity than either tool used alone. For example, compared to clinical diagnosis of dementia, the MMSE has a sensitivity of 0.75 and a specificity of 0.82. Combining the MMSE with the Informant Questionnaire on Cognitive Decline in the Elderly[6] increased sensitivity to 0.92 with a specificity of 0.78.[5]

Memory symptoms reported by patients may have some predictive validity if they are developing dementia.[7] However, the patient's affect has a strong influence on self-report of cognitive impairment. This can confound how they report their symptoms and needs to be carefully addressed. Signs of a mood disorder with or without cognitive symptoms therefore warrant treatment or referral for further assessment. In patients already taking psychoactive medication, the potential benefit of withdrawal of medication for a better appreciation of current cognitive status needs to be weighed against potential difficulties with ongoing management of mood.

Where to get help

Accurate and thorough clinical examination of patients with memory disturbance, incorporating a range of psychological investigations, is relatively time-consuming and expensive. The inherent time and cost pressures of primary care settings expose patients to the risk that dementia will be missed or misclassified by brief screening tests. Memory clinics at major hospitals may be a helpful referral point to assist primary care providers. Alternatively neuropsychological services may be accessed through private providers or the Australian Psychological Society referral service*.

For other helpful resources related to assessment and management of patients with Alzheimer's disease, general practitioners can refer to Alzheimer's Australia (www.alzheimers.org.au).

* Telephone (03) 8662 3300 or 1800 333 497

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Conflict of interest: none declared

Self-test questions

The following statements are either true or false (answers on page 23)

5. A high score in the Mini-Mental State Examination means the patient has probable dementia.
6. Memory is affected by mood.

Website review

Media Doctor website

www.mediadoctor.org.au

Mary Hemming, Chief Executive Officer, Therapeutic Guidelines, Melbourne

The reporting of new medical treatment in the lay media usually leaves much to be desired. So it is pleasing to see a website dedicated to improving the accuracy of such reporting.

The team behind Media Doctor consists of a group of academics and clinicians from the Newcastle Institute of Public Health. They have an interest in promoting better and more accurate reporting in the area of medical treatments.

Media Doctor reviews current news items about medical treatments, assesses their quality using a standardised rating scale, including criteria such as novelty of treatment, treatment options, disease mongering, evidence, and a quantification of benefits, harms and costs of treatment. The site presents reviews of good and bad examples of reports, the hope being that these independent and objective critiques will improve journalistic practices in reporting new medications and treatments.

Recently reviewed articles are listed on the home page and from each of the headings both the original article and the related review can be accessed. The site can be searched for articles by news source, intervention type, disease or specific words.

The site loads quickly, is easily navigable and each topic is clearly presented. However, there are several design elements that could be addressed that would improve the overall readability. For example, on the home page it would be more intuitive for the overview of the site to be displayed on the left hand side of the page, with the list of recent topics on the right, or even on a separate page. Also, it is jarring for major headings to be in a smaller font than lower level headings. Finally, the menu headings are a bit too cryptic to indicate content – a 'tooltip' window that appears when you hover your mouse over each menu option would resolve the problem.

The information that this website offers is extremely useful, but the burning question is – how is it being publicised? Ensuring target groups, especially senior editorial staff, are aware of the site is the only way for it to have an impact, but it is unclear from the site whether or how it is promoted.

This is an important initiative, but it needs significant public exposure if it is to achieve its aim.

PBAC questions: update

In the December issue of *Australian Prescriber* (Aust Prescr 2004;27:155) readers asked the Pharmaceutical Benefits Advisory Committee (PBAC) about the restriction on prescribing narcotic analgesics for chronic pain. The PBAC has now relaxed the requirements for authority prescriptions for increased maximum quantities and repeats of some narcotic analgesics.