DemTect effective in screening for mild cognitive impairment and mild dementia

Q Does the DemTect reliably detect mild dementia and mild cognitive impairment in older adults?

METHODS

Design: Prospective cohort study.
Setting: Three centres in the UK; timeframe not stated.
People: 121 people aged 45–92 years with possible mild to moderate Alzheimer’s disease (NINCDS-ADRDA criteria; Clinical Dementia Rating scale (CDR) 1 or 2). 97 people aged 45–92 years with mild cognitive impairment (Peterson criteria; CDR 0.5). 145 people aged 45–89 years with no cognitive impairment (CDR 0). Control group was divided into <60 years and ≥60 years. Alzheimer’s disease group was divided into Mini-Mental State Examination (MMSE) ≥21 and MMSE <21.
Test: The DemTect includes five short, easy to administer tasks that are sensitive for diagnosing dementia (word list; delayed recall of word list; number transcoding; semantic word fluency task; digit span reverse).
Diagnostic standard: Full clinical assessment plus CDR to assess dementia and Peterson criteria to assess mild cognitive impairment.
Outcomes: Sensitivity and specificity of DemTect and MMSE in classifying people with mild to moderate Alzheimer’s disease and mild cognitive impairment compared with full clinical assessment.

MAIN RESULTS

The transformed total DemTect score is independent of age and education and performed well when compared with MMSE. At a DemTect cut off score of 13, overall classification rate, sensitivity and specificity were high (see table 1; score of 13–18 represents appropriate cognitive power for age). Additional cut off scores were useful for predicting mild cognitive impairment and dementia (mild cognitive impairment; 9–12 points; dementia; 0–8 points; total classification rate: 85.4%).

Table 1  Sensitivity and specificity of DemTect and MMSE compared with full clinical assessment

<table>
<thead>
<tr>
<th></th>
<th>MMSE</th>
<th>DemTect (cut off score of 13)</th>
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<tbody>
<tr>
<td></td>
<td>Mild AD</td>
<td>MCI</td>
</tr>
<tr>
<td>% of people with condition correctly identified by test</td>
<td>89.0%</td>
<td>73.0%</td>
</tr>
<tr>
<td>Sensitivity %</td>
<td>92.0%</td>
<td>69.0%</td>
</tr>
<tr>
<td>Specificity %</td>
<td>86.0%</td>
<td>77.0%</td>
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</tbody>
</table>

AD, Alzheimer’s disease; MCI, mild cognitive impairment; MMSE, Mini-Mental State Exam.

Conclusions

The DemTect is a useful scale for identifying mild cognitive impairment and early dementia in older adults. It is easy to administer and accepted well by participants.

Commentary

Clinicians are increasingly recognising the importance of detecting the presence of mild cognitive impairment (MCI) in their patients, as MCI is associated with a five to tenfold increased risk of developing dementia compared with cognitively healthy individuals. Diagnosis of MCI requires both a clinical interview and detailed psychometric testing. In order to identify individuals who require further assessment, clinicians need to be able to screen for MCI using sensitive screening tools.

The DemTect was designed for this purpose. Kalbe et al report the development and clinical effectiveness of the English version of the test. The strengths of the DemTect include: (1) short administration and scoring time (<8–10 minutes); (2) assessment of multiple cognitive areas sensitive to MCI and dementia, including immediate and delayed memory, number transcoding, semantic fluency, and working memory; (3) high sensitivity in detecting MCI and early Alzheimer’s disease, as identified with the Clinical Dementia Rating Scale, and (4) a large range of scores in the mild impairment range, allowing detection of subtle changes over time.

The DemTect would appear to be a good tool for the reported purpose of screening for MCI, and seems to be superior to the Mini-Mental State Examination (MMSE) for this purpose—that is, individuals with MCI obtain scores below the normal range on the DemTect, but generally within the normal range on the MMSE. On the other hand, the DemTect alone would not be sufficient for the diagnosis of MCI, because diagnosis requires psychometric evidence of both a mild memory impairment (which DemTect can provide) and intact general cognitive functions (for example, naming, visual construction, attention, which DemTect does not provide).

For the DemTect to be used clinically, the actual test materials and the scoring and transforming rules (not provided in the article) will have to be published. Future research should examine the validity of the DemTect score range indicative of MCI (9–12) by comparing it with a full neuropsychological assessment. DemTect may also be useful in screening for early or mild cases of other memory disorders, although validation studies would need to be done.

Angela K Troyer, PhD, CPsych
Department of Psychology, Baycrest Centre for Geriatric Care, Toronto, Ontario, Canada


For correspondence: Elke Kalbe, Max-Planck-Institute for Neurological Research, Cologne, Germany; elke.kalbe@pet.mpip-koeln.mpg.de
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