The Hopkins Verbal Learning Test had high sensitivity and good specificity for detecting mild dementia in older persons

Frank RM, Byrne GJ. **The clinical utility of the Hopkins Verbal Learning Test as a screening test for mild dementia.** Int J Geriatr Psychiatry. 2000 Apr;15:317-24.

QUESTIONS

Is the Hopkins Verbal Learning Test (HVLT) a reliable and valid screening test for mild dementia in older persons? How does it compare with the Mini-Mental State Examination (MMSE)?

DESIGN

Blinded comparison of HVLT and MMSE results with *Diagnostic and Statistical Manual of Mental Disorder, Fourth Edition (DSM-IV)* diagnoses of dementia (the diagnostic standard).

SETTING

The Geriatric Psychiatry Service of the Royal Brisbane Hospital and District Health Service, Australia.

PATIENTS

56 patients (mean age 75 y, 63% women, mean education 8.5 y) participated. Exclusion criteria were age < 65 years, hearing impairment, aphasia, MMSE score < 18, insufficient ability to speak English, or inability to consent.

DESCRIPTION OF TESTS AND DIAGNOSTIC STANDARD

3 experienced registered nurses blinded to patients' diagnostic status administered the HVLT and the MMSE. The maximum HVLT total score was 36, and the maximum HVLT recognition score was 12. The maximum MMSE total score was 30. Each patient was assessed by an independent psychiatrist (blinded to HVLT and MMSE test results) for the presence of dementia and other psychiatric diagnoses using *DSM-IV* criteria.

MAIN OUTCOME MEASURES

Area under the receiver-operating characteristic (ROC) curve, sensitivity, specificity, positive and negative likelihood ratios, and interrater reliability.

MAIN RESULTS

26 patients had *DSM-IV* dementia, 15 had psychiatric diagnoses other than dementia, and 15 were normal control patients. The area under the ROC curve for both the HVLT and the MMSE was 0.93. By using ROC analysis, the optimal cut point for detecting dementia with the HVLT was 18/19; for the MMSE, it was 25/26. Sensitivity, specificity, and positive and negative likelihood ratios for each test are shown in the Table. The HVLT had better sensitivity than did the MMSE, but the MMSE had higher specificity. Interrater reliability was high (> 0.99) and comparable for the 2 tests. Both HVLT and MMSE scores were positively correlated with education level.

CONCLUSION

The Hopkins Verbal Learning Test had high sensitivity and good specificity for detecting mild dementia in older persons.

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For correspondence: Dr. G. Byrne, Department of Psychiatry, University of Queensland, K Floor, Mental Health Centre, Royal Brisbane Hospital, Queensland 4029, Australia. FAX 61-7-3365-5488.

Test characteristics for detecting mild dementia*

Scale	Cut point	Sensitivity (95% CI)	Specificity (CI)	+LR	–LR
HVLT	18/19	96% (80 to 100)	80% (61 to 92)	4.80	0.05
MMSE	25/26	88% (67 to 98)	93% (78 to 99)	12.57	0.13

* HVLT = Hopkins Verbal Learning Test; MMSE = Mini-Mental State Examination. Diagnostic terms defined in Glossary; CIs and LRs calculated from data in article.

COMMENTARY

The prevalence of dementia ranges from 6% to 10% in persons ≥ 65 years of age, an expanding percentage of the population. Recent pharmacotherapeutic and genetic advances have highlighted the importance of early diagnosis. Because the diagnosis is often missed, valid and reliable diagnostic screening instruments are needed. Targeted screening of at-risk groups allows secondary prevention measures to be initiated (1).

In a relatively small sample that was purposely selected to include patients with mild dementia, Frank and Byrne compared the HVLT with the MMSE. Their study suggests that with the HVLT, limitations imposed by such confounding variables as age do not occur, and in the case of educational level, they are less problematic. These findings warrant further evaluation in a larger sample size. Low educational level is a likely risk factor for dementia (2), which potentially complicates the picture. The comparatively greater sensitivity and lesser specificity of the HVLT suggest that more false-positive results occur with that test, and the positive likelihood ratio is less than that of the MMSE. By using the suggested cut-point scores in this study by Frank and Byrne, the MMSE is better at ruling out a diagnosis of dementia, whereas the HVLT is better at detecting it. The availability of 6 equivalent forms of the HVLT offers the potential to reduce learning bias during repeated assessments. The HVLT is therefore a potentially useful adjunct in assessing dementia, but the test requires further evaluation in larger, longitudinal studies and in those of different cultures. Results from cognitive screening must be interpreted in context; for example, cognitive deficit can also occur in delirium. The diagnosis of dementia therefore requires evaluation of the composite clinical picture, including a collateral history or informant questionnaire.

Peter G. Lawlor, MB, MMedSc
University of Alberta
Edmonton, Alberta, Canada

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