Family physicians (FPs) play a key role in recognizing symptoms of and diagnosing patients with Alzheimer Disease (AD) and/or a condition known as Vascular Dementia (VaD). But how can FPs easily and confidently make such diagnoses when AD and VaD clinically appear very similar?

The reality is that mistakes happen. Last year, 83,000 Canadians developed AD or a related dementia.1 By the year 2011, there will be 111,600 new cases of dementia diagnosed on a yearly basis.1 Obviously, the potential for misdiagnosis is increasing on a larger scale. On a more positive note, however, there are some Canadian researchers working towards making it easier to differentiate between AD and VaD.

One such researcher is Dr. Mary Tierney. Dr. Tierney does research at the Sunnybrook and Women’s College Health Sciences Center in Toronto, Ontario and also is an Associate Professor in the Department of Family and Community Medicine at the University of Toronto.

Dr. Tierney and her colleagues at the Sunnybrook and Women’s College Health Sciences Center have been working on finding a simple and accurate way to distinguish between AD and a form of VaD known as Subcortical Ischemic Vascular Dementia (SIVD). The researchers published a study in the October 2001 issue of Archives of Neurology2 and their article was then submitted to the Alzheimer Society of Canada (ASC) to be considered for the 2002 Claude P. Beaubien Award of Excellence. The article has been chosen as this year’s winner.

The Beaubien Medal was established in 1993 in memory of Claude P. Beaubien, former Vice President of Alcan. The award honours biomedical research or social/psychological research (alternating yearly) and is granted to the principal author of an article which has been published in a major, peer-reviewed journal and whose findings substantially advance the understanding of AD or its effects on the individual or family. The winner also must be a Canadian scientist who has shown excellence in research related to the understanding of AD, the diagnosis or care of individuals with AD, or the family caregivers of individuals with AD.

Dr. Tierney was granted the award for her biomedical research in determining “which of 10 neuropsychological test scores can accurately differentiate patients with probable AD from those with SIVD, for use in evidence-based clinical practice.”

Patients with suspected dementia were referred to the study by FPs, geriatricians and neurologists. Thirty-one patients with probable AD and 31 patients with probable SIVD were included. Diagnosis was made on the basis of standard diagnostic methods, independent of the neuropsychological test results. There were no significant differences between the groups in terms of age or Mini-Mental State Examination (MMSE) scores.

Logistic regression analyses identified two neuropsychological tests that best distinguished the groups: the recognition memory component of the Rey Auditory Verbal Learning Test (RAVLT); and the Controlled Oral Word Association Test (COWAT) (sensitivity 81%; specificity 84%; positive likelihood ratio 5.1).

The RAVLT is a word-learning test where patients are verbally presented a list of 15 words, which an examiner reads aloud at the rate of one word per second. The patient’s task is to repeat all the words he or she can remember, in any order. This same list of words is presented in five trials and the number of words recalled correctly is recorded. After a delay, the patient is given another list of
words which includes some new words, along with some of the same words from the first list. The patient is then asked to identify which words were from the first list. It is this latter component of the RAVLT that measures recognition memory.

The COWAT is a word fluency test evaluating how many words, beginning with a specific letter, an individual can produce within a time limit.

In their study results, Dr. Tierney and her colleagues revealed a clear dissociation whereby the SIVD group did better on the recognition memory test whereas the AD group performed better on the oral association test. The conclusion of the study is that these two neuropsychological tests, when administered and interpreted correctly, can distinguish between probable AD and probable SIVD “with a high degree of accuracy.”

According to the investigators, results of the study are consistent with previous patterns noted in the literature on this subject,3,4 which also found that tests of recognition memory and oral fluency distinguish AD from SIVD. However, Dr. Tierney et al’s work goes further because a formula is presented in their article to calculate the probability of AD or VaD. The results of this study are unique and show exciting promise in this area.

Tests that distinguish between AD and SIVD are important for several reasons. The most important reason relates to time. FPs want to make accurate diagnoses of their patients in order for appropriate treatment to take place as quickly as possible. In some cases, it is possible to slow the progression of VaD with the right treatment; the earlier that treatment begins, the better. However, in remote centres, a physician may want to conduct a computed tomography (CT) scan to confirm a diagnosis of VaD but have to wait up to six months, which delays treatment.

If a test could indicate probable AD, after careful clinical review with respect to what is appropriate for the patient, an FP may decide to forego a CT scan and immediately prescribe one of the drugs approved for treating AD. If it is necessary to refer the patient to a neurologist, the waiting time may be close to one year or longer.

Further, an early and accurate diagnosis is important because the family will react differently and need to make different lifestyle decisions, depending on the nature of the diagnosis.

Finally, tests that distinguish between AD and SIVD are beneficial in terms of cost savings. In short, it will cost less if the appropriate diagnostic examinations are performed on the right patients.


References: