

# Graphesthesia Test May ID Early Alzheimer's

BY DAMIAN McNAMARA

Miami Bureau

BAL HARBOUR, FLA. — Impaired graphesthesia, a prevalent finding among patients with mild cognitive impairment, may be an early sign when considered with memory loss that a patient has preclinical Alzheimer's disease, according to a study.

Mild cognitive impairment (MCI) is generally accepted as a precursor to Alzheimer's disease. Some physicians screen MCI patients with a graphesthesia test, Edward Zamrini, M.D., said in an interview.

Graphesthesia is the sense by which people identify figures or numbers drawn on their hands with a dull-pointed object.

In an assessment for graphesthesia, people hold one hand out in front of them as if reading from it with the hand's long axis perpendicular to the midline axis of the body. While the patient's eyes are closed, the physician traces a number "1" on the patient's palm, asking the patient to identify the number out loud. Then the physician traces a second number on the patient's palm before repeating the process on the other hand. Patients who fail twice may be diagnosed with impaired graphesthesia.

Dr. Zamrini and his colleagues assessed more than 200 consecutive new patients at the Memory Disorders Clinic at the University of Alabama, Birmingham. Researchers identified patients by medical records between May 2001 and November 2002. Investigators took a detailed history, noted medications, and performed a thorough neurologic and cognitive assessment.

Examinations included light touch, pinprick, joint and position sense, vibration sense, and a Mini-Mental State Examination (MMSE).

Patients were 58% female and 83% white, and their mean age was 68 years. Results were presented during a



In the graphesthesia test, the patient, with closed eyes, tries to name the number being traced on the palm.

poster session at the annual meeting of the American Neuropsychiatric Association.

A total of 41 participants had MCI, 74 had Alzheimer's disease, and 96 were not diagnosed with either condition and were considered the control group. The control group included patients with vascular dementia, frontal lobe dementia, and other non-Alzheimer's dementias.

The prevalence of impaired graphesthesia was 54% in the MCI group, 79% in the Alzheimer's group, and 33% in controls. The finding of higher impairment in the MCI patients, "even compared with other dementia patients, suggests that what I am catching is an early form of

Alzheimer's disease, not only a memory loss," said Dr. Zamrini, a neurologist at the University of Alabama.

After incorporating such an exam into his practice, "I observed a disproportionately high number of my patients with MCI that have impaired graphesthesia," he said.

"It's just one more piece of evidence in support of the diagnosis of preclinical Alzheimer's disease, but you have to have the memory loss, too," Dr. Zamrini said. If additional studies support impaired graphesthesia as a predictive variable, it would be the first physical sign of preclinical Alzheimer's disease.

Although Alzheimer's disease affects memory areas first, the parietal lobes are a "close second," Dr. Zamrini said. The parietal areas are important to interpretation of senses, including graphesthesia.

Mean MMSE scores were 28 for the MCI group, 21 for the Alzheimer's disease group, and 26 for controls. The researchers grouped patients according to whether their MMSE score was 24 or greater or less than 24 to determine the effect of cognitive impairment on graphesthesia performance. There were significant differences in prevalence of impaired graphesthesia for participants scoring 24 or greater: 51% of the MCI group, 74% of the Alzheimer's group, and 24% of the control group.

It is easier for specialists to diagnose Alzheimer's disease than mild cognitive impairment, Dr. Zamrini said, because there are many reasons for memory loss. "Graphesthesia testing may help us in the future with that distinction," he added.

"Further research is needed to corroborate this finding and to determine the potential contribution of impaired graphesthesia towards progression to Alzheimer's disease," the authors wrote. Dr. Zamrini said, "It would be interesting to see as we follow a cohort of normal elderly if graphesthesia deficits develop independent of memory."

## Low Plasma n-3 Fatty Acids Associated With Dementia

BY KERRI WACHTER

Senior Writer

WASHINGTON — Higher intake of n-3 fatty acids may protect against cognitive impairment, according to data presented at the annual meeting of the Gerontological Society of America.

In a study of almost 1,000 people aged 65 years and older, those with dementia had significantly lower plasma levels of n-3 fatty acids, said Antonio Cherubini, M.D., of the Institute of Gerontology and Geriatrics in Perugia, Italy.

The n-3 fatty acids are an important component of the neuronal membrane, influencing membrane fluidity and all the related functions, such as signal transduction and enzyme function. Fish—particularly fatty fish, such as mackerel and albacore tuna—are the primary source of n-3 fatty acids.

Dr. Cherubini presented data from the Aging in Chianti [Italy] (InCHIANTI) study, a population-based trial conducted between 1998 and 2000.

The 935 volunteers were categorized as having normal cognition (725 subjects), cognitive impairment without meeting the DSM-IV criteria for dementia (153 subjects), or dementia (57 subjects). Cognitive function was screened using the Mini-Mental State Examina-

tion. The subjects with age- and education-unadjusted scores lower than 26 on the examination underwent more detailed tests. Plasma fatty acid levels were determined using gas chromatography.

Subjects with dementia had the lowest n-3 fatty acid plasma concentrations—as a percentage of total fatty acid plasma concentrations in mg/L—with a mean of 2.7%, compared with 3.0% for the cognitively impaired group and 3.2% for the normal cognition group.

Subjects with dementia had the highest plasma concentrations of saturated fatty acids—as a percentage of total fatty acid plasma concentrations in mg/L—with a mean of 31.4%, compared with 30.1% for the cognitive impairment group and 30.3% for the normal cognition group.

"Subjects in the second group—those who have cognitive impairment but not dementia—tended to have intermediate values in many of the fatty acids," Dr. Cherubini said.

The finding of lower n-3 fatty acid plasma concentrations persisted only in subjects with dementia after adjusting for age, gender, education, smoking status, cholesterol and triacylglycerol levels, alcohol, fatty acid and total energy daily intakes, and total plasma levels of fatty acids. ■

## Smoking, Estrogen Therapy Combo Increase Risk for Alzheimer's Disease

MIAMI BEACH — The risk of Alzheimer's disease declines by almost half among postmenopausal nonsmokers who use estrogen therapy, but nearly doubles among those who both smoke and use estrogen therapy, Rosebud O. Roberts, M.B., said in a poster presented at the annual meeting of the American Academy of Neurology.

Dr. Roberts, of the Mayo Clinic, Rochester, Minn., also found that estrogen use at a young age might be a predictor for Alzheimer's in postmenopausal women; in contrast, estrogen therapy later in life appears to be protective. But these conclusions may have more to do with premenopausal estrogen levels than postmenopausal estrogen therapy, she said in an interview.

"What I suspect is that smoking may lead to lower estrogen levels premenopausally, which could lead to brain neurons that are less viable and more likely to die early. Those who initiate therapy earlier probably have less [endogenous] estrogen, and more symptoms, while those who initiate therapy at a later age—because they had fewer symptoms or less severe symptoms—probably had more premenopausal estrogen."

Dr. Roberts and her associates conducted a case-control study of 216 women with natural menopause who developed Alzheimer's disease during 1985-1989. They were compared with 210 cognitively intact controls who had similar ages at menarche and menopause. A similar percentage of

women in both groups used estrogen therapy for at least 6 months (11.6% of cases, 14% of controls). Of the 54 women on estrogen, the 25 with Alzheimer's started estrogen therapy earlier than

the 29 controls (50 years vs. 53 years), and had a shorter lag time between menopause and the initiation of estrogen therapy (1 year vs. 4 years). Estrogen users had a 20% reduced risk of Alzheimer's disease, but this was not statistically significant.

Smokers and nonsmokers differed significantly in the Alzheimer's risk, depending on their estrogen use. The odds ratio of Alzheimer's was 1.93 in smokers who used estrogen therapy and 0.54 in nonsmokers who used estrogen therapy. More than 3 years of estrogen had a protective effect in nonsmokers, reducing the risk of Alzheimer's by almost 70%.

—Michele G. Sullivan



**Smoking may lower estrogen premenopausally, leading to early death of brain neurons.**

**DR. ROBERTS**