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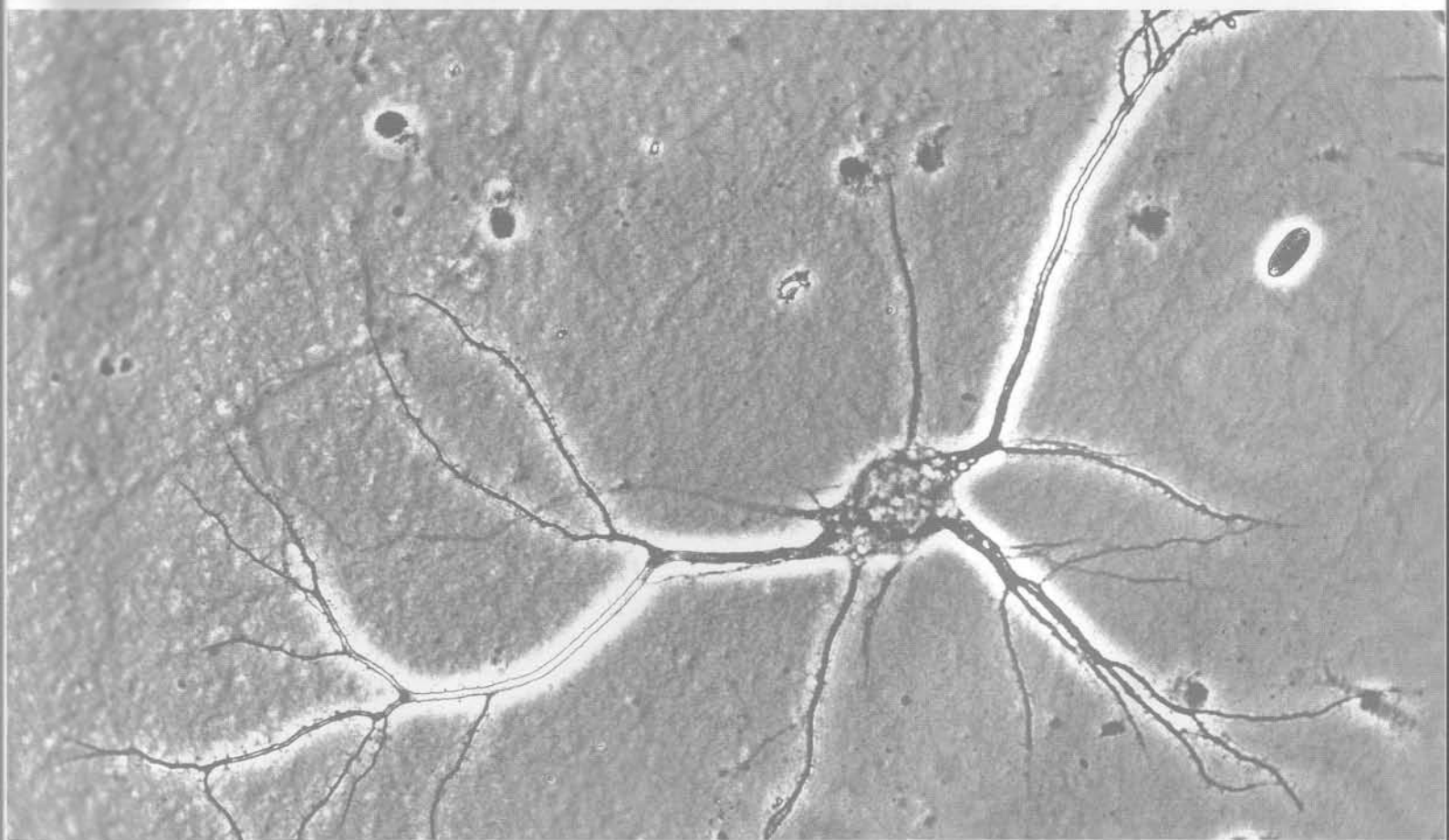
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Accuracy of Fototest to diagnose dementia in neurological patients: FOTOTRANS study

C. Carnero-Pardo, R. J. de la Vega, A. Zambrano Toribio, M. Goñi Imtzcoz, E. Franco Macías, F. Moreno Izco, C. Sáez-Zea, M. T. Montoro-Ríos on behalf of the FOTOTRANS Study Group

Objectives: The Fototest (www.fototest.es) is a simple short (<3-min) test applicable to illiterate subjects and its results are not influenced by age or educational level. Preliminary studies demonstrated its diagnostic accuracy (DA) to detect dementia. FOTOTRANS is a cross-sectional multi-centre study with the objective of evaluating the DA of the Fototest under routine clinical conditions.

Methods: The Fototest, Eurotest and verbal fluency test (VFT) were applied to neurological patients aged >60 years with an established diagnosis; the Mini-Mental test (MMSE) was also applied to a sub-sample. Patients were classified as "Non-Demented" (ND) or "Demented" (DEM) [DSM-IV criteria]. We calculated sensitivity (Sn) and specificity (Sp) values with their corresponding 95% interval and the area under the ROC curve (AUC), which was used to compare the DA of the different instruments.

Results: Twenty neurologists selected a total of 627 subjects: 467 ND, 122 DEM and 38 excluded patients (due to incomplete data or protocol violations). Out of the 589 study subjects, 41 (7%) were illiterate and 230 (39%) lacked formal education. Out of the ND subjects, 106 (22.7%) had cognitive impairment (CI) and another 75 (16%) reported memory loss. Out of the subjects without CI or DEM, 120 (33.2%) suffered a condition that can potentially induce CI and 76 (21.1%) received drugs that can induce CI. The best cut-off Fototest score was 26/27, with a Sn of 0.88 (0.81–0.94) and Sp of 0.87 (0.84–0.90). Both Fototest and Eurotest showed a high DA (0.94 ± 0.01 , $AUC \pm SEM$) that was superior to that of VFT (0.90 ± 0.01) and MMSE (0.91 ± 0.03), although the difference was only significant with respect to that of the VFT ($p < 0.01$).

Conclusions: In this large and naturalistic sample of neurological patients with very low educational level, the Fototest showed a high diagnostic accuracy for dementia, similar to that of the Eurotest and MMSE, despite being much easier to apply and taking less than three minutes.

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Detection of cognitive impairment in the FOTOTRANS study

C. Carnero-Pardo, M. Llanero Luque, M. S. Barquero Jiménez, I. Casado Naranjo, F. Castellanos Pinedo, A. Frank García, A. Zambrano Toribio, R. J. de la Vega on behalf of the FOTOTRANS Study Group

Objectives: The diagnosis of cognitive impairment (CI) allows therapeutic measures to be applied to normalise the patient or prevent or delay the onset of dementia. However, the most widely used screening tests are not useful to detect this clinical condition. Our objective was to evaluate and compare the CI diagnostic accuracy (DA) of screening tests used in the FOTOTRANS study.

Methods: The FOTOTRANS is a cross-sectional multi-centre study of neurological patients aged >60 years with an established diagnosis, who were administered with the Fototest, Eurotest and a verbal fluency test (VFT); the Mini-Mental test (MMSE) was also applied to a sub-sample. The patients were classified as "Non Cognitive Impairment" (NoCI) or "Cognitive Impairment" (CI), which included subjects with dementia (DSM-IV-R criteria) or mild cognitive impairment (GENCD-SEN criteria). The DA of the instruments was compared by using the area under the ROC curve (AUC).

Results: Twenty neurologists selected a total of 627 subjects: 361 NoCI, 228 CI and 38 excluded subjects (due to incomplete data or protocol violations). The DA of the Fototest (0.86 ± 0.01 , $AUC \pm SEM$) was superior to that of the Eurotest (0.84 ± 0.01), VFT (0.78 ± 0.02) and MMSE (0.83 ± 0.04), although the difference was only significant with respect to that of the VFT ($p < 0.001$).

Conclusions: All screening tests showed only a modest DA (<0.90), therefore a strategy of dichotomized results (positive/negative) cannot be effective for the detection of CI with these instruments. The Fototest has the advantages of simplicity, speed and the non-influence of educational factors.

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A degree of Alzheimer's disease severity influences performance on implicit procedural learning task

A. Klimkowicz-Mrowiec, A. Slowik, L. Krzywostanski, R. Piernop-Krywoszanska, A. Szczudlik Jagiellonian University (Cracow, PL); Academy of Physical Education (Cracow, PL)

Objectives: Studies of memory organization in humans and experimental animals give evidences that memory is organized in multiple, parallel memory systems. Based on the type of information processing, purpose served by each system and their anatomical localization, explicit and implicit memory systems were distinguished. Although anatomically and functionally dissociated, both systems interact during learning. The nature of this interaction is still a fundamental question. Studies of implicit learning in Alzheimer's disease (AD) patients provide an unique opportunity to better understanding mutual interactions between explicit and implicit memory systems.

Methods: We examined three different hypotheses of interaction: independence, competition and cooperation between both memory systems. We tested patients with explicit memory impairment due to AD and healthy controls on modified, more difficult version of a weather prediction task that depends on implicit system.

A total of 87 subjects participated in the study: 36 with a mild AD (MMSE: 25.06; DS 2.66) (19 females, age 75.81, range: 60–91), 15 with a moderate AD (MMSE: 18.59; SD 6.25) (9 females, age 73.53 range: 62–88), and 36 controls (MMSE 27.54; SD 1.96) (21 females, age 72.36, range: 60–82).

Results: Patients with moderate explicit memory impairment performed the implicit procedural learning task significantly better than those with mild AD and controls.

Conclusion: Results of our study support hypothesis on competition between implicit and explicit learning systems in humans. This results, for the first time reported in humans, are very important, not only in regard of the nature of interaction between systems but also because they give a chance for a possible rehabilitation strategies for people with Alzheimer's disease.

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Mild cognitive impairment – a clinical assessment of different drug therapies

I. Buraga, I. Davidescu, S. Nica University of Medicine and Pharmacy (Bucharest, RO)

Background: Dementia is a serious brain disorder that interferes with a person's ability to carry out everyday tasks. The key feature of dementia is a decline in cognitive functions: mental processes such as thinking, reasoning, learning, problem solving, memory, language, and speech. In recent years, the term minimal cognitive impairment (MCI) is commonly used to refer to a stage of cognitive impairment prior to attaining clinical criteria for dementia in Alzheimer disease (AD) and related disorders. In fact, the relatively recent formulation of MCI follows previous attempts to characterize cognitive decline associated with aging, including benign senescent forgetfulness, age-associated memory impairment, and age-associated cognitive decline.

Objectives: to assess the clinical improvement of higher functions after 2 years of treatment with different drugs.

Methods: We followed up, during 2 years, 30 patients with mild cognitive impairment, having mild, slowly worsening memory loss, and less common symptoms as disturbances of language (word finding), attention (poor concentration), and orientation (disorientation in familiar surroundings), as MCI is a transitional zone between age-related memory loss and Alzheimer disease. There were 17 women and 13 men with a mean age of 67.96 years. There were nor physical or imagistic changes, and we excluded all potentially curable situations as: thyroid disorders, chemical imbalances, vitamin deficiencies, and infections. The mean score of MMSE was 24.70. We made three lots: one treated with donepezil (Aricept), one treated with rivastigmine (Exelon) and one treated with Piracetam.

They were examined every 3 months by MMSE, Clock Drawing Test (CDT) and The Short Test of Mental Status (STMS).

Results: The mean score of MMSE after 2 years improved by 2.4 points in the lot treated with donepezil, by 1.9 in those treated with rivastigmine and with 0.2 in those treated with piracetam.

Conclusions: We concluded the benefit of cholinesterase inhibitors in improving cognition function, clinical global impression and activities of daily living, comparing with the patients treated with Piracetam. Cholinesterase inhibitors stop the breakdown of this neurotransmitter and they increase the amount of acetylcholine in the brain, improving and stabilizing cognitive functions in MCI, also having positive effects on behavior and every day activities. The most positive effect is that they may slow down conversion of MCI into dementia.