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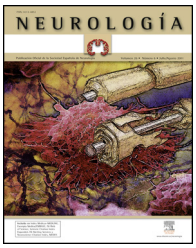

ORIGINAL ARTICLE

A new assessment for episodic memory. Episodic memory test and caregiver's episodic memory test☆

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Abstract
Introduction and objectives: The purpose of the episodic memory test and the caregiver's episodic memory test is to evaluate episodic memory according to its definition in a way that is feasible for families and achieves high degrees of sensitivity and specificity.
Methods and results: We administered a test consisting of 10 questions about episodic events to 332 subjects, of whom 65 had Alzheimer's disease (AD), 115 had amnestic MCI (aMCI) and 152 showed no cognitive impairment according to Reisberg's global deterioration scale (GDS). We calculated the test's sensitivity and specificity to distinguish AD from episodic aMCI and from normal ageing. The area under the ROC curve for the diagnosis of aMCI was 0.94 and the best cut-off value was 20; for that value, sensitivity was 89% and specificity was 82%. For a diagnosis of AD, the area under the ROC curve was 0.99 and the best cut-off point was 17, with a sensitivity of 98% and a specificity of 91%. A subsequent study using similar methodology yielded similar results when the test was administered directly by the caregiver.
Conclusions: The episodic memory test and the caregiver's episodic memory test are useful as brief screening tools for identifying patients with early-stage AD. It is suitable for use by primary care medical staff and in the home, since it can be administered by a caregiver. The test's limitations are that it must be administered by a reliable caregiver and the fact that it measures episodic memory only.

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PALABRAS CLAVE
Cuidador;
Deterioro cognitivo leve amnésico;
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Test episódico del cuidador

Un nuevo test para la valoración de la memoria episódica. Test episódico y test episódico del cuidador

Resumen
Introducción y objetivos: Valorar la memoria episódica, adaptándola a la definición del concepto, haciéndola asequible a las familias, y aplicándola con una alta sensibilidad y especificidad, es el concepto del test episódico y el test episódico del cuidador.
Métodos y resultados: Se aplicó un test formado por 10 preguntas relacionadas con hechos episódicos a 332 sujetos, de los cuales 65 tenían enfermedad de Alzheimer (EA), 115 deterioro cognitivo leve amnésico (DCLa) y 152 no mostraron alteración cognitiva, según la escala de deterioro global (GDS) de Reisberg. Se calculó la sensibilidad y especificidad del test episódico para detectar EA frente a DCLa y normalidad. El área bajo la curva ROC para el diagnóstico de DCLa fue de 0,94 y el mejor punto de corte fue 20, valour con el que se obtuvo una sensibilidad del 89% y una especificidad del 82%. Con respecto al diagnóstico de EA, el área bajo la curva ROC fue de 0,99 y el mejor punto de corte fue 17, con el que se obtuvo una sensibilidad del 98% y una especificidad del 91%. Un estudio posterior con similar metodología demostró resultados similares cuando el test era pasado directamente por el cuidador.
Conclusiones: El test episódico y el test episódico del cuidador son herramientas útiles como test breves de cribado para la captación de enfermos con EA en estadios iniciales, adecuadas para la utilización en atención primaria y en él domicilio, al poder ser pasado directamente por el cuidador. Las limitaciones del test vienen dadas por la necesidad de un cuidador fiable y por la medición exclusiva de la memoria episódica.

Introduction

Most patients with dementia have memory problems at the onset of the disease.[1] Memory refers to the mental process of recovering stored information after time[2]; rather than being a unitary construct, it includes interrelated subsystems.[3] Episodic memory refers to the system responsible for specific memories of episodes or experiences in our lives. These memories depend on context and each is associated with a specific time and place.[4] Episodic memory depends on neural networks essentially limited to the temporal lobes, hippocampus, and the frontal lobes.[3] The hippocampus is the crucial structure that consolidates information in long-term memory storage circuits. Lesions to the hippocampus result in failure to learn new material, although immediate and long-term memory will be spared.[2] Some scholars argue that recognition memory may be supported by 2 separate processes: recall and familiarity. 'Recall' is recovery of the context in which a prior event took place, including space—time placement, and it requires an intact hippocampus. This process is similar to the mental journey through time concept proposed by Endel Tulving.[4] In contrast, 'familiarity' is a non-contextual sensation of having had an earlier encounter, and it depends on the perirhinal cortex.[5–7] To cite an example, when watching films, we often think that we have seen an actor before, even if we are not able to recall any details about that person (familiarity). Furthermore, we all know the feeling of suddenly remembering where we had seen the actor before, or other items of information such as his name (recall). Our memory allows us to simulate and predict future events, two activities with important repercussions for planning and decision-making.[8–13]

In general terms, there are 2 types of episodic memory disorders: amnestic syndromes and memory recall deficits. Amnestic syndromes occur in patients (such as Alzheimer's disease (AD) patients) with medial temporal lobe, limbic system, and hippocampal dysfunction. Memory recall deficits are typical in patients with subcortical or frontal circuit dysfunction (frontotemporal dementia, Parkinson disease, progressive supranuclear palsy, corticobasal degeneration; most cases of vascular dementia, Lewy body dementia, and normal ageing). The classic test of verbal memory involves asking the patient to repeat a list of 3 to 10 words up to 5 times, or until the patient is able to repeat the full list without pausing. In the second phase of the examination, the patient is allowed to focus on the learned words and practice them silently for a minute, with no distractions, before repeating them. After a 5 to 10 minutes period during which he is occupied with other tasks, he is asked to repeat the words once again. Next, the patient identifies any omitted words from a list of target words (those learned previously) mixed with other words not included in the first task. Patients with amnesia will be unable to learn or store new information, and they have difficulty both repeating and identifying target words. Patients with memory recall deficits have trouble repeating words, but they are better at identifying the target words they missed. Another method of assessing recall involves providing semantic clues.[14–17]

Active, immediate, or working memory is an attention function based on actively maintaining information in the short-term. It is closely related to prefrontal network integrity and its subcortical connections, and to the ascending activating reticular system. The terms 'working memory' or 'short-term memory' refer to the type