



Cognitive rehabilitation of memory problems in patients with epilepsy

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Summary People with epilepsy often complain about their memory. Memory deficits are also most commonly observed during neuropsychological evaluation. Many patients with memory problems ask for some kind of memory training. General memory improvement is not possible, but learning mnemonics clearly will help to solve some of the most common everyday memory problems of patients. Most mnemonics follow the general rules for good learning or memory. In the design of a memory rehabilitation program some specific aspect should be taken into account, such as the need for psycho-education into the effects of cognitive deficits in daily life, the impact of personality and emotional reactions, and the individual perception of memory problems. Training goals must be tailor-made, small and as concrete as possible and fully adjusted to the needs and wishes of the patients. Generalization of the learned mnemonics is mostly modest or even absent.

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Introduction

People with epilepsy have more cognitive and behavioural problems than people without this condition. These include developmental problems like lack of social skills of low self-esteem, learning and educational problems due to cognitive impairments,

affective disorders like depression and anxiety and an increased risk for psychotic conditions, particularly schizophrenia-like and paranoid states.¹ In this article we will focus on the management of the observed cognitive impairments in epilepsy and more specific on the treatment of memory problems. Different cognitive disturbances are found in epilepsy such as, attention or concentration problems, mental slowing, language difficulties, deficits in executive functions and memory problems. Most commonly observed during neuropsychological evaluation are the memory deficits. In this article we will describe

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the current view of neuropsychological rehabilitation and focus on the cognitive rehabilitation of memory deficits. Furthermore, we will focus on the specific aspects that have to be taken into account when designing a memory rehabilitation program. Finally, this will be illustrated with the rehabilitation program that has been developed in Epilepsy Centre Kempenhaeghe in The Netherlands.

Memory problems in epilepsy patients

Patients with refractory epilepsies frequently complain about cognitive impairments. Memory impairments are the dominant complaints in clinical practice.^{2,3} The prevalence of memory problems in patients with refractory epilepsy has been estimated as high as 20–50%, and more than half of the patients who are referred for neuropsychological assessment reported memory difficulties in daily life.⁴ In our own study we analysed subjective memory complaints in a relatively large sample of 252 epilepsy patients with intractable seizures, using a standardized memory questionnaire for patients with epilepsy.^{3,5} They particularly complained about memory problems that reflect ‘absentminded behaviour’, such as forgetting where a certain object has been put, or often checking one’s pocket to find something. Secondly, they indicated the retrieval of complex meaningful episodic information (i.e. being able to remember an experience or story, or forget people’s names) as a specific memory problem. Although there are some methodological differences these results are comparable with other research.^{6,7} The pattern of memory complaints showed no relationship with epilepsy-related factors such as, age at onset, etiology, localisation of seizures, type of seizures, and anti-epileptic medication. However, we did find a strong tendency to present memory complaints for older patients, with higher intellectual functions, who subjectively experience more emotional problems in the area of neuroticism. Memory complaints may thus be seen as a general ‘psychosomatic’ reaction in patients who experience consequences of memory loss in their daily lives. As already described earlier in other brain-damaged patients, also in epilepsy patients memory complaints do not necessarily indicate memory deficits. In fact, only moderate correlations (i.e. 0.30–0.40) are found between self-reported memory problems and objective test results with standardized neuropsychological assessments.^{8,9}

Many studies have indicated that memory deficits are the most frequently measured cognitive impairments in epilepsy patients, and localized dysfunction, related to epileptic focal activity in the temporal areas of the brain, is one of the key

factors for memory impairment.^{10–12} Furthermore, within this group of temporal lobe patients we have shown that lateralisation of the epileptogenic focus is the crucial additional risk factor.¹³ Patients with a unilateral left temporal lobe epileptic focus have significantly increased risk of memory impairments, compared to patients with right temporal lobe epilepsy. These patients have specific deficits in the association and clustering of verbal information on their semantic correspondence, and on the acquisition of verbal episodic information that is presented auditory, which may be interpreted primarily as impairment in the storage process. The main effect of lateralisation appeared to be independent of the other epilepsy-related factors influencing memory, i.e. ‘seizure frequency’ and ‘total years with seizures’. A high seizure frequency specifically seems to impair the first encoding stage of the memory process. Patients having more than a total of 30 years with seizures, are more impaired in verbal and non verbal memory, and delayed recall. This is in line with other studies that showed that patients with a long duration of refractory temporal lobe epilepsy may show a slow deterioration of general intellectual functioning.¹⁴ However, other researchers argue that this cognitive decline in epilepsy patients progresses very slowly and must be regarded as a result of normal aging similar to that of people without seizures.¹⁵

Neuropsychological rehabilitation

The development of neuropsychological treatment programmes, which we will refer to as cognitive rehabilitation, is one of the most challenging tasks for neuropsychology. It is a promising field of work, but also a very complex one. The nature and severity of cognitive ‘handicaps’ not only depend on the extent and nature of the brain damage or dysfunction, but are also determined by (premorbid) personality characteristics (e.g. neuroticism), the psychological reactions of the patient (e.g. depression, anxiety), the environment of the patient (physical, other people) and last but not least what is expected of the patient (e.g. return to work or education, participation in the family). For this reason cognitive rehabilitation is never simple, in the sense that you only have to learn the patient one or more simple ‘learning tricks’ to get round with cognitive difficulties in daily life.

Wilson has defined cognitive rehabilitation as ‘any intervention strategy or technique which intends to enable clients or patients, and their families, to live with, manage, by-pass, reduce or come to terms with cognitive deficits precipitated

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