Group therapy for memory impaired patients: A partial remediation is possible

Introduction

Memory Disorder is a neuropsychological deficit of immense social and psychological meaning. The number of memory-disordered people is increasing and will increase during the next decades, since some of the diseases that cause memory disorders peak at old age. Currently, no generally accepted treatment of memory deficits is available, which directly remediates losses of performance. Some studies have shown that external memory aids may help memory impaired people to cope with their handicap (Broek et al. 2000; Wilson et al. 1997). However, there are only a small number of direct treatment studies of memory disorders, which are scientifically well-designed (for a review see Majid et al. 2000; Thöne and Cramon 1999; Robertson and Murre 1999; Matthes-v. Cramon and Cramon 1995; Kaschel

Abstract

Background and purpose To analyse the prospect of memory training for patients with organic brain damage. Methods Sixty-two patients with memory disorder were assigned to three different groups: a control group (n = 16) with low dose memory training, a process oriented memory training group (POT) (n = 24) and a group (ST) who was taught to compensate for memory problems with different strategies (n = 22). Most of the patients had suffered a stroke. Inclusion criteria were medium to weak memory impairment defined by the patients’ performance in the California Verbal Learning Test. Patients with complete amnesia were excluded. Specific care was taken that the groups did not differ in age, time since illness, duration of rehabilitation effort, verbal and performance IQ, memory and attention performance. The two treatment groups received 20 hours memory training, the low dose memory training control group 7 sessions. Results The treatment groups improved in verbal and prospective memory, but only the group with POT experienced a significant improvement compared with the control group. Training effects were specific, i.e. they affected verbal memory, but were not encapsulated, i.e. generalized to the recall of prose passages and of appointments. The POT group also showed a statistically weak outperformance compared with the ST group and some attentional improvement as well. Conclusion Memory training is effective in patients with organic brain lesion, but only if applied frequently. Comparing the two training high intensity treatments, a POT focus seems to be superior to teaching a set of compensation strategies.

Key words rehabilitation · memory impairment · group treatment · stroke
in stroke patients, for example, have all been conducted from these patient groups for all patients with memory dysfunction almost exclusively on severe amnesic patients. Ball et al. (2002) demonstrated for six patients with traumatic brain injury on a neurobiological level reorganization of memory functions. For elderly people it has been shown that memory training may have a significant effect lasting up to two years (Ball et al. 2002). A combination of memory training and in motor rehabilitation, the number of training sessions often approximates to forty or even more. Furthermore, the training schedule is focused on a few weeks, i.e. motor training is highly intensive. For the rehabilitation of language impairment, it has been shown that the intensity of treatment matters for outcome efficacy (Pulvermüller et al. 2001).

There is still another aspect, which may have negatively biased previous research on memory rehabilitation. Wilson (1987, 1995) focused in her seminal contribution almost exclusively on severe amnesic patients. However, it may be misleading to generalize the results from these patient groups for all patients with memory disorders. Studies on the plasticity of the motor system in stroke patients, for example, have all been conducted with subjects suffering from a unilateral stroke lesion and included patients who are still able to move their arms or legs to a considerable degree (Kobb et al. 1999; Mittner et al. 1999). Prospects for treating patients with a total function loss, for example in hemiplegia, are still negative (Götte and Vaterrodt 1999; Kamper et al. 2002). Animal studies have shown that symmetrical bilateral lesions show minimal recovery if any at all (Kolb 1995). Therefore, the common view of a negative prospect in functional memory rehabilitation may result from a specific subgroup, in which reorganization is very difficult to achieve, and may have been influenced negatively by studies with too few training sessions.

The fact that functional memory rehabilitation may work for some patients cannot only be deduced from such indirect arguments; there are some recent reports that document partial long-term recovery from amnesia. Henke et al. (1999) investigated the memory performance of a patient with carbon monoxide poisoning and found an improvement of memory functions in most, but not all aspects, in the course of a year. Levine et al. (2002) demonstrated for six patients with traumatic brain injury on a neurobiological level reorganization of memory functions. For elderly people it has been shown that memory training may have a significant effect lasting up to two years (Ball et al. 2002). A combination of memory training and occupational activities seems to reduce intellectual decline of patients with early stages of the Alzheimer disease (Ishizaki et al. 2002). Therefore, it seems to be necessary to re-examine the prospect of functional oriented memory training for patients with organic brain damage. Taking into account the recent developments in neurological rehabilitation, it can be argued that an ideal patient group to investigate should have medium memory impairments due to unilateral lesions, the function to be treated should be used often, and the treatment should be intensive. These criteria were exactly the starting point of our trial on memory rehabilitation, which was conducted in an in-patient rehabilitation unit setting.

Patients and methods

Patients

The study was conducted at a neurological rehabilitation unit, approved by the local ethical commission. All study patients gave their informed consent. The age of the eligible patients was between 30 and 81 years. Inclusion criteria were: (1) an organic memory disorder of acute and recent onset, (2) a memory performance of at least one item in short term free recall of the California Verbal Learning Test (CVLT, Ilmberger 1988) and of maximal 9 items in the fifth learning trial or of 8 words in short term free recall. Patients with Broca or Wernicke aphasia or an additional drug treatment for the memory disorder (i.e. treatment with donepezil) were excluded.

In the beginning, the patients were randomly assigned to one of the treatment groups or to the control group. After including half of the target number of patients, we assigned them to groups according to two pre-defined variables: age and memory performance at admittance. This was done to obtain three well-balanced groups for statistical evaluation of intervention effects (see Table 1). The median score for the fifth learning trial of the CVLT was 8 for both treatment groups and 7.5 for the control group. The median score for short-term free recall was 5 words in all three groups.

In the beginning, each treatment group consisted of 27 patients and the control group of 16 patients. Because of treatment with donepezil, we had to exclude four patients, a further two because they not only suffered a stroke but additionally suffered from multiple sclerosis and two patients because they had an additional traumatic brain injury some years before the event which led to the actual treatment.

No patient dropped out of the treatment program because of a lack of compliance.

Evaluation of treatment effects

We measured the patients’ intelligence and attention for any unspecific influence on training success. The abridged version of the WAIS-R was used for the investigation of intelligence, including block design, picture completion, similarities, and information (Dahl 1986). Attention was investigated by the digit/symbol test of the “Nürnburger Altersinventar” (Oswald and Fleischmann 1986). By means of the sixth test of the “Leistungsprüfsystem” (Horn 1983), we measured phonological word fluency. Categorical word fluency was measured by presenting the subjects with three concepts, each of them for one minute. The memory investigation comprised the digit span forwards and backwards for short term memory and working memory (Wechsler 1987) two different versions of the first four tests of the Rivermead Behavioural Memory Test (Wilson et al. 1992) for the prospective memory and the memory for names, the two versions of the map test of the “Lern- und Gedächtnistest” (Bäumer 1974) for visual spatial memory, two German versions of the CVLT for verbal memory, and two self-constructed stories for logical memory. Both stories encompassed 56 text elements, which could be maximally reproduced. Reproduction performance was standardized for a group of 20 healthy controls and z-scores were used for the evaluation of patients’ performance. In the case of the CVLT and text reproduction only short delay retrieval was assessed.