Rehabilitation in Multiple Sclerosis

Introduction

Multiple Sclerosis (MS) is a chronic inflammatory-demyelinating disease of the central nervous system leading to progressive impairment of various CNS systems. During the course of the disease a wide range of functional impairments and disabilities may develop which lead to psycho-social handicap and reduction of quality of life. New drugs such as beta-interferons and glatiramer acetate can modify the long term course of the disease by lowering relapse rate and slightly slowing progression of disability. However, the progression course and early onset of MS with long survival time can have significant consequences on personal activities, social participation and quality of life. So for example, 15 years after disease onset 15% of MS patients need technical aids for walking and 29% use a wheelchair. During the first 10 years after diagnosis 50-80% are out of work and the socio-economic consequences of all this have only recently been addressed. The direct and indirect yearly costs amount to 90,000 Euros per patient per year, 17% of severely disabled MS patients requiring 50% of direct costs and 6.5% are living in institutions. Health related quality of life in MS patients with moderate and severe disability is generally low, leading to a high level of depression.

The goal of rehabilitation is to reduce the consequences of the disease on function, personal activity, and social participation in order to allow the patients as much independence as possible with the highest possible quality of life. Evaluation of efficacy of rehabilitation in MS is particularly difficult: the disease course varies greatly between and among individuals and is difficult to predict in different forms of the disease (relapsing-remitting, secondary progressive, primary chronic progressive). Triggers of relapses and progression are not well defined and the pathological processes (inflammation, demyelination, axonal loss, remyelination) may be heterogeneous and can not be discriminated accurately with standard neuro-radiological techniques, in particular, findings on MRI correlates poorly with the degree of disability. Therefore it is difficult to find a homogeneous patient group which satisfies scientific requirements for evaluating the efficacy of therapeutic interventions. This may explain the small number and methodological problems of studies published to date concerning the outcome of rehabilitation measures in Multiple Sclerosis. Earlier studies were mainly uncontrolled, and most were retrospective observations on small, heterogeneous patient groups. More recently a few controlled trials have been published on this subject, only some of them, however, assess the impact on quality of life.

Comprehensive inpatient rehabilitation

Although treatment modalities vary in different rehabilitation centres, a consensus has been reached concerning the requirements and most important components of a rehabilitation programme. Due to the broad spectrum of symptoms and disabilities, a comprehensive assessment of functional impairments and personal goals is essential in order to assemble an individually adapted, multidisciplinary, task and goal orientated therapy programme. The therapeutic interventions themselves are only one part of the rehabilitation programme but of equal importance is the careful informative instruction of patients and their relatives in order to plan the needs after discharge.
significant difference was demonstrated. In a prospective, uncontrolled study, 50 MS patients with chronic progressive disease were investigated every 3 months after inpatient rehabilitation (23 days duration) and a significant reduction of disability were investigated every 3 months after inpatient rehabilitation (23 days duration) and a significant reduction of disability and therefore an improved quality of life of patients and their relatives. Thus, the specific effect of various therapy modalities is only one aspect of the long term effects observed in rehabilitation.

**Specific therapy modalities**

Fuller et al were not able to demonstrate improvement on mobility after inpatient physiotherapy. The same group examined the effect of outpatient physiotherapy in a prospective controlled cross-over study of 40 MS patients, randomised over 8 weeks, either in a specialised rehabilitation setting, at home or without any therapy at all. A significant improvement of mobility and reduction of disability could be demonstrated during therapy phases in comparison to phases without therapy. Furthermore the frequency of falls could be reduced. This effect was of short duration and could not be demonstrated after 8 weeks. No significant difference was shown concerning therapeutic effects of an outpatient treatment in the clinic and treatment at home.  

A randomised controlled study (N=54) on the effect of aerobic training (3 times per week over 15 weeks) showed a significant improvement of aerobic capacity and of isometric strength compared to a control group. Furthermore transient improvement of psycho-mental factors (anxiety, depression) and of fatigue could be observed in this study. More recently it has been demonstrated convincingly that a short term exercise training programme had positive effects on aerobic fitness, fatigue, health perception and activity level of subjects with multiple sclerosis.

**Concluding remarks**

According to criteria of evidence-based medicine none of the studies cited above will reach a Level-I-Evidence. Nevertheless, these controlled randomised clinical trials showed a significant effect of aerobic training per se and of inpatient rehabilitation in the treatment of MS patients.

Several questions, however, remain. The optimal time, intensity, duration and specific components of therapeutic interventions in different MS patient groups are still to be determined. Concerning quality of life, controversies exist about whether generic assessment scales of health status are applicable in MS or whether more disease specific measures should be used.

**References**