

Editorial

Immunotherapy is not Enough: the Impact of Symptomatic Treatment, Rehabilitation and Physical Exercise

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Since several decades neuroimmunology, immunopathogenesis, magnetic resonance imaging as well as the development of new immunotherapies are the cornerstones of scientific activities in Multiple Sclerosis (MS). The result of these activities is a story of great success. We now have far deeper insights into the pathogenetic processes of MS, the diagnosis of MS can be established more accurately and – very relevant for the start of immunotherapies – earlier, and we have numerous and increasingly effective drugs. It now seems to be within reach to tailor MS immunotherapy to the individual patient. Nevertheless the scientific findings relate predominantly to relapsing-remitting MS whereas patients with progressive disease have not the same benefit from these results. Following the new classification of phenotypes of MS patients with progressive disease are „active and with progression”, “active but without progression” (formerly PP-MS), “not active but with progression”, and “not active but with progression” disease (formerly MS-SP; [1]).

Unfortunately the number of persons with MS (PwMS) beyond a solely relapsing-remitting course is significantly high and these patients have to face a slow accumulation of symptoms and resulting disabilities since they do not benefit from immunotherapies. In order to gain new knowledge on pathogenesis, biomarkers of progression and other topics a world-wide initiative called „ Progressive MS Alliance “has been founded recently. This alliance will also deal with the development of effective programs for rehabilitation.

Treatment of symptoms

MS causes symptoms and disabilities which – predominantly in later stages of the disease - often will have a negative impact on gainful employment, on social and leisure activities, activities of daily living (ADL) and single abilities of PwMS like mobility, dexterity, or communication thus resulting in a sometimes dramatic impairment of autonomic living. Moreover the sequels of single symptoms may cause complications, f.e. degenerative disorders of the spine and disc herniation due to longstanding impaired walking, or recurrent bladder infection due to neurogenic bladder dysfunction.

Treatment of single MS symptoms has been dependent on the

personal knowledge of neurologists for a long time and only a few drugs were available which had been introduced earlier for the treatment of similar symptoms of other diseases. Fortunately during the past 10 years several consensus guidelines for symptomatic treatment have been developed and published by national and international neurologic societies [2,3] or by governmental health authorities. Similarly the treatment of numerous single MS symptoms with drugs or non-drug interventions has been analysed systematically, especially in Cochrane reviews. Recently two “new” drugs for treatment of MS-induced spasticity (Nabiximols) and for impaired walking ability (Fampridine) have been authorized for marketing. Taken together treatment of MS symptoms is now much more clear and to a higher degree evidence-based and expertise-based.

Physical exercise and rehabilitation

For decades every MS patient was cautioned against physical activity. Now it has become quite clear that regular exercise and physical activity not only is innocuous in most cases but it may have a positive impact on the immune system and may ameliorate existing symptoms, f.e. via neuroplasticity processes. Whether regular physical activity could even promote slowing of MS progression is still a matter of debate [4].

Rehabilitation may be defined as “a problem-solving educational process aimed at reducing disability and handicap (participation) experienced by someone as a result of disease or injury” [5]. Furthermore, rehabilitation is fundamental for improving the individual’s independence. Basis for multimodal rehabilitation of PwMS is the International Classification of Functioning, Disability and Health (ICF). By means of an ICF Core Set for PwMS it is possible to detect and treat impairments rapidly [6]. Single treatments and activities include amelioration of impaired mobility and arm function, impaired cognitive function, fatigue, bladder and bowel dysfunction, dysfunction of speech and communication as well as of swallowing, mood disorders due to MS, vocational rehabilitation, and social counselling, among others. These treatments are delivered by different, well educated specialists like rehabilitation physicians, physiotherapists, occupational therapists, neuropsychologists, and others. Rehabilitation is therefore always an interdisciplinary process [7].

Originating especially from the scientific findings from stroke rehabilitation numerous new treatments had been developed for MS rehabilitation during the past years especially for amelioration of mobility and hand-arm function. Moreover several other symptoms including fatigue may be influenced by functional treatment. Underlying mechanisms of rehabilitation – among others – are recovery by remyelination as well as by plasticity changes. For example the contralesional hemisphere can take over motor control

and the premotor cortex can substitute for the motor cortex to control motion.

Physical exercise has now become a common recommendation for nearly all PwMS. Hundreds of studies have been published and are subject to reviews and meta-analyses. In one of these reviews it was stated that endurance training at low to moderate intensity and resistance training of moderate intensity will not only be tolerated but causes elevation of aerobic capacity, reduction of fatigue, amelioration of health-related quality of life, better performance of daily activities as well as amelioration of walking ability and walking speed thus offering huge benefit to the patients [8].

Interestingly there are some initiatives in different parts of the world who try to even overcome boundaries of physical capacity of PwMS such as a 5-day expedition to Machu Picchu within the Andes mountains on altitudes between 1900 and 3900 meters, a daily walking time between 3 and >8 hours and a daily walking distance between 3 and 16 kilometers [9]. Of course this event is not recommended for every PwMS but it surely highlights the ability of persons with even longstanding MS to extraordinary feats of endurance and iron will.

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